

Francisca Amonua Quayson

Oil City? The Role of Sekondi – Takoradi in Ghana's Emerging Oil Industry



Map from: <http://crossedcrocodiles.wordpress.com/2009/07/16/ghanas-jubilee-oil-field/jubilee-fieldmap/>

Master Thesis for the Award of Master of Philosophy (MPhil) in Development Studies, Specializing in Geography

Trondheim, Spring 2012

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(MPhil) in Development Studies, Specializing in Geography**

Department of Geography

Norwegian University of Science and Technology

Trondheim, June 2012

DECLARATION

I Francisca Amonua Quayson hereby declare that in exception of references used, which were duly cited and acknowledged, this dissertation is an outcome of a research conducted under the supervision of Professor Stig Jorgensen of the Department of Geography in the Norwegian University of Science and Technology, Trondheim, Norway.

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June, 2012
Trondheim, Norway

DEDICATION

I dedicate this work to my maker and to my family who have been very supportive of me. To my parents, thank you for being there for me. To my brothers Oppong, Ekow and Ebo, I love you all. I also dedicate this thesis to the memory of my late grandpa who passed on while I was writing this thesis. Benya Kumah, you did not write a thesis yourself, but you raised a woman whose daughter has written one today. May your soul rest in peace

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ABSTRACT

Ghana's recent oil discovery in 2007 has brought with it anticipation for economic growth. Subsequently, there have been policies that seek to guide various aspects of the industry.

This study explores the socio-economic and infrastructural role that Sekondi-Takoradi, the nearest big city to the Jubilee oil field, is playing to facilitate oil activities offshore, although it has no formal government recognition as Ghana's oil city.

Cluster theory and structural functionalist theory are used together with the concepts of cities and infrastructure to analyze results.

The study uses the snowballing method to select 23 informants from a network of oil companies and oil service providers, government institutions and relevant associations. Interview guides were used to obtain primary data while observation and figures were used for elaboration.

Findings indicate that Sekondi-Takoradi is evolving as a location for an oil industry cluster. Intense horizontal and vertical linkages between firms in the core oil industry and with other supporting businesses show characteristics of an industrial cluster.

The city transportation and social infrastructure helps with the coordination of offshore and onshore activities albeit to a limited extent due to the lack of governmental policy intervention, urban primacy and inadequate infrastructural development.

Local businesses are limited to the periphery of the oil supply chain due to their size, capacity and the general preference of oil companies for larger suppliers and companies.

It is prudent for government and local planning authorities to formally recognize the city's role and expand its infrastructural base to adequately support the industry. Local participation (businesses and labour) can be increased through capital investment, training and enforcement of local content policy goals to facilitate the anticipated economic growth.

Key words: Ghana, Sekondi-Takoradi, City, Oil, Jubilee oil field, Infrastructure, Transportation, Cluster, Structural Functionalism.

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LIST OF ACRONYMS AND ABBREVIATIONS

ANADARKO	Anadarko Petroleum Corporation
ANGLOGOLD	AngloGold Ashanti Limited
ASHANTI	
ATS	Allterrain Services Group (Ghana)
BAKER HUGHES	Baker Hughes Inc.
CSIR	Council for Scientific and Industrial Research Institute, Ghana
ENI	ENI S.p.A
EO	EO Group Ghana Limited
EU	European Union
EXPRO	Expro International Group
FBOs	Farmer Based Organizations
FPSO	Floating Production Storage and Offloading
GAF	Ghana Air Force
GFZB	Ghana Free Zones Board
GHACEM	Ghana Cement Limited
GHS	Ghana Health Service
GIPC	Ghana Investment Promotion Centre
GNPC	Ghana National Petroleum Corporation
GOGSPA	Ghana Oil and Gas Providers Association
GPHA	Ghana Ports and Harbours Authority
GSS	Ghana Statistical Service
GSSPPMU	Ghana Mining Sector Support Programme Management Unit
GTPCWU	General Transport, Petroleum and Chemical Workers' Union (Ghana)
GTUC	Ghana Trade Union Congress
HESS	Hess Corporation
ICM LOGISTICS	ICM Logistics Pvt. Limited
KIA	Kotoka International Airport
KOSMOS	Kosmos Energy Limited
LPG	Liquid Petroleum Gas
MACRO	Macro Logistics Company Limited

MELCOM	Melcom Ghana Limited
MODEC	Mitsui Ocean Development and Engineering Company Limited
MOFA	Ministry of Food and Agriculture
NYAME YIE	Nyame Yie Cold Store Limited
OCEANEERING	Oceaneering International Inc.
PRIMA	Petroleum Revenue Management Act 815
RAYBOW HOTEL	Raybow International Hotel
SABRE OIL	Sabre Oil and Gas Inc.
SAEMA	Shama Ahanta East Metropolitan Assembly
SCHLUMBERGER	Schlumberger Limited
SDA	Shama District Assembly
SEAWELD	Seaweld Engineering Limited
SIGMA BASE	Sigma Base Technical Services Limited
SINTEF	Stiftelsen For Industriell Og Teknisk Forskning
STC	State Transport Corporation
STELLAR LOGISTICS	Stellar Logistics Pvt Limited
STEPRI	Science and Technology Policy Research Institute, Ghana
STMA	Sekondi-Takoradi Metropolitan Assembly
T Poly	Takoradi Polytechnic
TECHNIP	Technip USA Incorporated
TNCs	Trans National Companies
TULLOW	Tullow Oil Ghana Ltd.
UMaT	University of Mines and Technology, Tarkwa
VANCO	Van Dyke Energy Company
VRA	Volta River Authority
WAGPCO	West African gas pipe line company
WARA	West African Rescue Association

LIST OF TERMS

AIRBASE	Takoradi Air Force Base
BAYCOURT	The compound of former British American Tobacco Company in Takoradi which is now home to the offices of several oil companies such as GNPC, Tullow, Baker Hughes and Oceaneering.
CHAMBER AND HALL	A one bedroom apartment
CHOPPER	A helicopter
DUTCH DISEASE	A situation where the non oil sectors of an oil producing nation become less competitive due to high currency's exchange which makes goods expensive and unable to compete on the export market.
FIXED WINGS	An air craft with wings permanently attached to the plane's body and that requires a landing strip.
LOCAL	Depending on context, refers to Ghanaians or indigenes of the Western Region
NAVAL BASE	Sekondi Naval Base
SHORE BASE	Tullow's Office at the Takoradi Port
TWIN CITY	The Cities of Sekondi and Takoradi which together form the capital city of Western Region.

LIST OF UNITS

API	A unit of radioactivity used for measuring natural gamma rays in the ground. The radioactivity of a typical shale is 100 API units.
Bcf	Billion Cubic Feet
GH¢	Ghana Cedi
United States of America Dollar (USD) \$1= Ghana Cedi (GHS) ¢1.92	

CHAPTER ONE

GENERAL INTRODUCTION TO THE RESEARCH

1.1 Introduction

In the second quarter of 2007 Ghana made the biggest discovery of crude oil and associated gas after exploration attempts since 1986 (GNPC, 2011). The crude oil was discovered in commercial quantities offshore at the Cape Three points - Tano Basin. This oil field has been named *Jubilee oil field* in commemoration of Ghana 50 years of independence celebrated that year.

The discovery has been met with mixed reactions of optimism and cynicism. Optimists have high anticipation that this discovery will play a major role in accelerating Ghana's growth 'big push' as has been the case in countries such as Chile, Oman, Norway, Venezuela, and United States of America (BBC News, 2007; Breisinger et al, 2009; BBC Africa, 2011). First of all it will cut down the need for crude oil import and make Ghana a net exporter of crude oil and crude oil products, generating revenue through taxes, royalties and export (Ofosu-Appiah, 2007; Asiamah, 2010; Petroleum Revenue Management Act, 2011). Secondly, it is expected to create employment in the upstream, midstream, downstream industries and within auxiliary businesses (Ministry of Energy, 2010; Nkrumah, 2010; BBC Africa, 2011). It is also expected that Ghanaian businesses would develop and expand within the industry, thereby boosting the nation's industrial capacity and output (ibid). Finally, the revenue generated would enable the nation to develop its infrastructure base, hence bringing overall development (ibid).

Cynics are more critical of the new socio-economic problems ('resource curse') that this discovery could introduce into Ghana. They include inflation, the Dutch disease, political instability, increased inequality and poverty levels, corruption, among others and have called on the government to put in measures to avert these potential problems (Ofosu-Appiah, 2007; Cavnar, 2008; Breisinger et al, 2009; Egon, 2010; UN Integrated Regional Information Networks, 2010).

However, in the midst of these new policies by government, calls on the need for tight economic regulations, suggestions over how to avert the resource curse phenomenon, infrastructural

development there seem to have been an oversight of placing the anticipated and potential socio-economic developments in a spatial context.

1.2 Background

Economic activities do not happen in a vacuum. This makes it imperative to consider space and location in the discussion of economic activities (Holloway & Hubbard, 2001; Pacione, 2001; Kotler et al., 2002). The role of cities in economic activities cannot be over emphasized (Jacobs, 1984; Glaeser, 2000; Caves, 2005). They facilitate economic development by serving as centres for industrialization, aiding resource extraction and development (Henderson et al., 2001).

In Ghana, one can find cities and towns that have developed around mineral extraction. Indeed, there seem to be a reciprocal relationship between the development of mines and the cities (Songsore, 2003; Owusu, 2005; Songsore 2009). The western region of Ghana has the largest concentration of extractive industries mining bauxite, manganese, iron ore, diamonds, and glass sands in the region's interior (Ghana Sekondi-Takoradi Regional Chamber of Commerce & Industry 2010; Ghana Government Portal, 2011b). These activities have led to the development of towns such as Tarkwa and Prestia (Owusu, 2005).

Along the coast, the development of towns and cities has also been mainly due to industry, transportation, administration and tourism (Ghana Mining Sector Support Programme Management Unit, 2005; Owusu, 2005). Sekondi-Takoradi therefore flourished as a port city, the Western regional capital and an important transportation point on Ghana's western railway lines (ibid).

The closest settlement to the oil discoveries and the Jubilee oil field is Effasu, a rural fishing community, 60 km from the Jubilee oil field (see Figure 4.2). Effasu has no air port, sea port, extensive roads, nor the necessary infrastructure to support the oil activities offshore (Lui, 2010).

The nearest city to the Jubilee oil field is Sekondi-Takoradi which is about 188km from Effasu while Accra, the nation's capital and biggest city is 215km further east of Sekondi-Takoradi.

1.3 Justification / Problem Statement

Following the discovery, there have been several videos, discussions, articles, reports and publications on the topic albeit not extensive.

Several media reports have shown expressed optimism about the potential for economic development and industrialization through the oil find (BBC News, 2007; Ofosu-Appiah, 2007).

Several articles have traced the potential socio-economic and environmental problems and made suggestions as to the way forward (Ofosu Appiah, 2007; Cavnar, 2008; Breisinger et al., 2009; Irvine et al., 2009; Lui, 2010; Zotorvie; 2010).

There have been expectations, discussions and government policies over how to manage these expectations and guide development through the oil find (Ministry of Energy, 2010; Nkrumah, 2010; BBC Africa, 2011; Petroleum Revenue Management Act, 2011).

Abuabey-Dortey (2009) has outlined the necessary infrastructural developments needed to support the oil activities offshore to ensure overall national development. Halcrow Engineers (2010) reviewed the necessary infrastructural developments needed at the ports to serve the oil industry.

As mentioned earlier, economic activities happen in a spatial context. However, amidst the literature reviewed about the emerging oil industry, there has been a lack of focus on space.

Invariably, the government's policies on local content, petroleum revenue management and the Ghana's oil policy have failed to recognize the role that an important and proximate city to the oil field (Sekondi-Takoradi) could play to facilitate these socio-economic developmental objectives. Government has failed to strategically position or recognize Sekondi-Takoradi as Ghana's official oil city, to facilitate the development of the oil industry. This is unlike Norway, which made Stavanger an official oil city, initiating an inflow of both infrastructural developments and private investment to support the growth of Norway's oil industry and hence economy.

In the absence of such an important legislative provision, this study seeks to explore the existing infrastructure in Sekondi-Takoradi and how it is supporting the offshore activities. This is an attempt to document this aspect of the oil activity to bridge the knowledge gap on the one hand whilst drawing the attention of policy makers to the need to develop these structures to function better in supporting the growth of the industry with particular focus on Sekondi-Takoradi.

1.4 Statement of the Research Objective

Presently, there is more exploration towards the eastern coast of the Ghana making the entire shores of Ghana an oil exploration zone. However, initial exploration, discovery and drilling started at the Jubilee oil field making it the largest oil field in Ghana. This study shall focus more on related activities to the Jubilee oil field since it is the largest, most active oil field in Ghana at the time of this research.

The research seeks to identify the socio-economic role of Sekondi-Takoradi (the twin city) in Ghana's emerging offshore crude oil extraction (upstream) industry.

Research questions:

1. To what extent does the city provide a basis for related companies in the oil industry to cluster?
2. What role does the city play in the transportation of equipment and staff among the Jubilee oil field, Accra and Sekondi-Takoradi (including internal transport in the twin city)?
3. What social infrastructure does the city offer workers in the oil industry on the one hand and auxiliary industries on the other hand?

1.5 Organization of Chapters

Chapter one gives a general overview of the work in terms of background information about the study, the aims of this research, empirical questions put forward and a justification for the study.

Chapter two looks at the theories and concepts drawn to help shape and analyze this study.

Chapter three explains the methodological approach and considerations this study has taken into account, as well as the limitations therein. Chapter four gives a brief profile of Sekondi-Takoradi. It takes into account the history, demography, infrastructure, economic activities and socio-physical environment of the city. It also briefly traces the oil industry in Ghana. Chapters five, six and seven are dedicated to analyzing and answering the three research questions put forward.

Chapter eight sums the findings of this research, the recommendations put forward, limitations and a general conclusion to the study.

CHAPTER TWO

THEORIES AND CONCEPTS

2.1 Introduction, Epistemology and Positioning

According to Nederveen Pieterse, theory is ‘a distillation of reflections on practice into conceptual language so as to connect with past knowledge’ (2001, p.2). Thus, theories help to shape the research, systematically analyze, explain and make meanings of research findings based on existing knowledge (Pryke, Rose, & Whatmore, 2003). The relevance of the theories therefore in guiding a research cannot be over emphasized for ‘without theory, there is nothing to research’ (Kitchin & Tate, 2000 p. 32).

Geography as a subject has numerous subfields which influence the theories and methodologies applied. According to Gilbert, while ‘some geographers are described as being like “hard scientists”, others are seen as having much more in common with academics teaching in sociology, history, literature or cultural studies’ (2005, p. 105). Additionally, development as a subfield has been influenced by other social sciences which include economics, history and sociology (Nederveen Pieterse, 2001). Consequently, development geographers often draw from several geographical and social science theories during research. One major characteristic of these theories is that they are often dominant over a certain time frame, have counter theories and multiple applicability in explaining socio-spatial phenomena (Nederveen Pieterse, 2001; Casino, Thomas, Cloke, & Panelli, 2011).

Since this research is in the subfield of human geography, specifically within economic geography, I have explored some relevant theories and concepts that relate to human interaction with place/location, infrastructure, cities, development, and clusters.

As I will discuss in Chapter 3, I have adopted a qualitative approach which implies a subjective approach and soft data collection methods as opposed to a quantitative approach which favours objectivity, generalizability and quantitative methods (Nederveen Pieterse, 2001; Gatrell & Elliott, 2009; Casino et al., 2011). This is to maintain coherence between the theories employed; the methods (qualitative), and the qualitative analysis of the findings and therefore ensure the validity of results in this research (Kitchin & Tate, 2000).

2.2 Presentation of relevant concepts and theories

I have employed some concepts and theories to enable me present a holistic and detailed discussion of the main research findings. The main theories used in this research are Structural-Functionalism and Cluster theory. In addition the concepts of the city and infrastructure have been used to help in the discussion of findings. These concepts have some interrelation in the sense that cities are known for their extensive infrastructures such as transportation networks, houses, among others which make them attractive for economic activities.

2.3 Structural-Functionalism Theory

Functionalism has been applied variously in academia and for that matter, in human geography (Litva & Eyles, 1995; Givón, 1997; Darnell, Moravscik, Newmeyer, Noonan, & Wheatley, 1999).

Structural functionalists view society as a *system* comprising of functionally interrelated parts called social institutions (Ritzer, 1992; Urry, 2000). These *social institutions* are the building blocks or the core structure of society. They are the economic, political, religious, health, education and the family institution. These parts function to maintain social equilibrium.

Social institutions perform functional needs or prerequisites (Spencer, 2002). Functionalists recognize that structures are not static but rather evolve in response to what has been termed *selection pressures* (Ritzer, 1992; Spencer, 2002). They are productive, reproductive, regulative and distributive pressures. Productive pressures refer to the means of producing goods and services. Distributive pressures refer to the economic distribution of wealth whereas regulative refers to social control and coordination.

Merton looks at the *functions* of social institutions in relation to actors (Merton, 1968).

According to him, the individual (actor) may assume *multiple roles* based on his status set which is largely determined by the social structure. However, the individual is a system (an actor) within a larger system (Parsons, 1991). That is to say, an actor is influenced by the social institutions / social system on the one hand which on the other hand he has more or less helped to create and perpetuate (Parsons, 1991). This argument relates to the structuration theory, an offshoot of structural functionalist theory which further discusses the constraints and influence of actors within social structures (see Chapter 2 in Rigg, 2007).

Merton (1968) distinguished between manifest functions as the recognised and intended consequences of social actors and latent functions as those which are not. He also distinguished between consequences which are functional for the social system, those which are dysfunctional and those which are neither functional nor dysfunctional (ibid). Functional consequences could mean positive effects whereas dysfunctional consequences could mean negative effects.

Functionalism has been criticized for its positivistic approach, which contrasts the methods (qualitative) mostly employed in social anthropology and in this research. It has also been criticized for failing to further address the influence individual agents have on structures as has been done in the structure – agency debate (Stones, 2005; Rigg, 2007; Encyclopaedia Britannica, 2011).

2.4 Cluster Theory

As mentioned in Chapter 1, economic activities happen within a spatial context. The spatial agglomeration of firms is key in understanding national economic development and inequalities in the spatial location of economic activities (Henderson, Shalizi, & Venables, 2001). At the policy level, agglomeration has forward and backward linkages on infrastructural development and urbanization such that development can be stimulated through the strategic location of agglomerations (ibid).

A cluster according to Porter is ‘a geographically proximate group of interconnected companies and associated institutions in a particular field, linked by commonalities and complementarities’ (2000, p. 254). Clusters bring together specialized service providers, competitors, financial institutions, research and training institutions, trade associations, governmental regulatory bodies, specialized suppliers and infrastructure (Porter, 2000).

The reasons that firms cluster around a given area may be attributed to favourable location, profit maximization, proximity of auxiliary industries, access to skilled labour, access to natural resources, supporting infrastructure and technological knowhow (Porter, 2000; Fujita, Krugman, & Venables, 2001; Henderson et al., 2001).

The primary motive of a business entity is *profit maximization* and economies of scale. Such is the motivation of transnational companies (Dicken, 2007). Firms may locate in areas to gain

access to the *local market* or access to efficient transportation networks that facilitate access to inputs and markets (Fujita et al., 2001; Dicken, 2007).

Competition between firms, along with the presence of suppliers, buyers, research and development institutions could lead to *innovations* and *knowledge transfer* which enables firms through better technology to operate at reduced a cost and increase profits (Porter, 2000).

Knowledge may be classified into tacit and codified knowledge. Tacit knowledge is transferred through proximity, face-to-face dialogue and learning by observation, practice and adaptation (Lundvall & Maskell, 2000; Malmberg, 2003; Bathelt, Malmberg, & Peter, 2004). It is ‘sticky’ and difficult to disperse over long distances; as such the more knowledge intensive an activity is, the more spatially clustered it tends to be. Codified knowledge is easier to disperse over long distances through established pipelines or communication, intellectual property rights and documentation (Bathelt et al., 2004). Clusters provide a good environment for the transfer of *tacit knowledge*. between competing and complementary firms. This environment is what is termed a *local milieu* and the embedded knowledge exchanged by being a part of this community, a *local buzz* (Bathelt et al., 2004).

Karlsen and Lindeløv (2005) found that innovative activities are not only embedded in spatially proximate industries. Rather, innovative activities of clusters improve due to *linkage intensity* and research. Malmberg (2003) adds that clusters go well beyond local milieus. In terms of scale and variability, clusters may exist in parts of a city, a rural area, a small or large economy or across nations making some clusters go unnoticed (Porter, 2000; Henderson et al., 2001).

Malmberg (2003), elaborating Porter’s cluster approach distinguishes two main types of clusters; *spatial* and *industrial* clusters. Spatial cluster according to him lack ‘intense local interaction between firms and institutions even in cases when we face spatial clusters of similar and seemingly related activities’ (Malmberg, 2003, p.159). Industrial clusters on the other hand are more functionally interrelated, not spatially confined within local milieu, and therefore assume a more global connection (ibid).

The Figure below shows the vertical and horizontal linkages in an industrial cluster. Clusters create horizontal and vertical *linkages* by bringing together auxiliary and competing firms together.

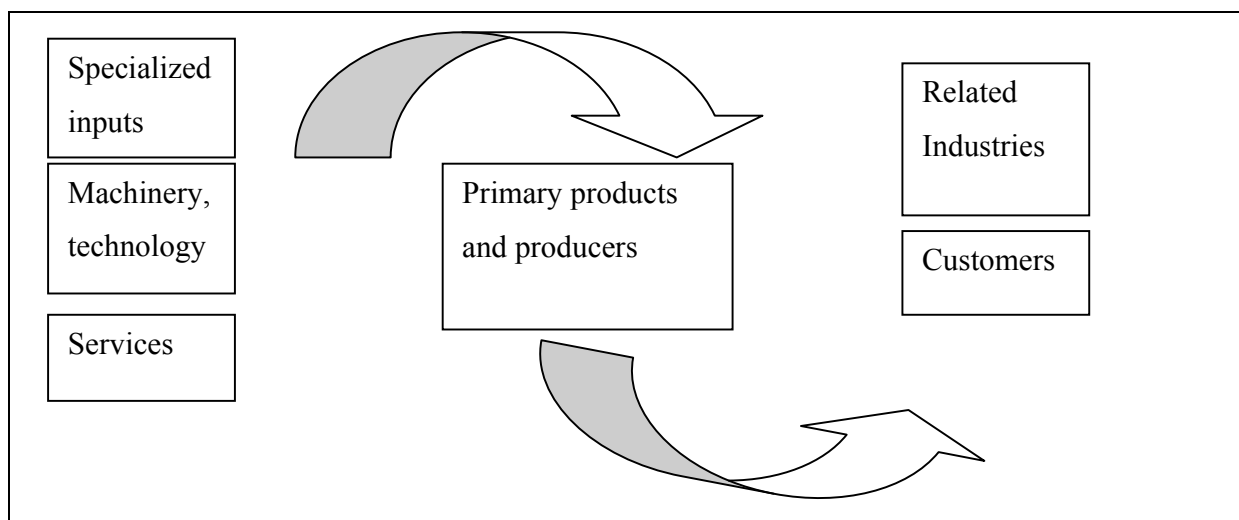


Figure 2.1: An adaptation of the cluster chart showing actors in an industrial cluster (Malmberg, 2003, p.147)

In addition, they bring together firms belonging to the *upstream* (primary producers and raw material suppliers), *midstream* (processing, refinery and intermediate firms) and *downstream* (distributors, customers and other support businesses) of an industry and even across multiple industries (Venables, 1996; Porter, 2000; Malmberg, 2003; Karlsen & Lindeløv, 2005). And often, midstream and downstream companies are merged together (ibid).

Another aspect of a cluster is *specialization*. While clusters give firms access to raw materials, it also enables firms to gain access to skilled labour (Hanson, 2000; Karlsen & Lindeløv, 2005). Indeed Malmberg (2003, p. 159) suggests that the ‘cement’ of clusters is that they form a market and a basis for attracting skilled labour. They also enable new businesses to form and grow while established ones can use collective bargaining and lobbying powers to benefit from government policy and public infrastructure and *specialized infrastructure* (Venables, 1996; Lundvall & Maskell, 2000; Porter, 2000; Henderson et al., 2001)

Additionally, as firms expand, they have more specialized units attending to different aspects of the firm. Those working in these units become more specialized. In the same vein, firms adopt the strategy of product differentiation or offering specialized services that target niche markets. They therefore perform the same tasks repeatedly and specialize in producing the same products over long periods. This poses the risks of overembeddedness, *path dependence* and consequently lock-in (Asheim, 2000; Karlsen, 2005).

Transnational companies that often rely on research and development from their native countries closely guard trade secrets and technology, reducing the risk of *unintentional knowledge transfer* to local industries (Hansen, 2008). Furthermore, clusters may lead to reduced profits as the benefits of firms locating within or outside the cluster levels off making it more attractive for firms to locate outside the cluster (Henderson et al., 2001).

2.5 The city as a concept

The terms urban and city have often been used interchangeably by urban geographers (Herbert & Thomas, 1990). A city may be defined as ‘a permanent and densely settled place with boundaries that are administratively defined’ (Caves, 2005 p.66). The classification of a city may vary and overlap as this may depend on the geographical location, settlement pattern, time/age, the city’s economic base, its function, population size and density (Herbert & Thomas, 1990; Caves, 2005). The type, growth and function of a city may be specific or diversified and may change over time (Kotler, Haider, & Rein, 2002; Caves, 2005).

A city’s importance is not just limited to itself but also functional to the surrounding towns and cities within a nation or region (Herbert & Thomas, 1990; Caves, 2005). Berry (1961) noted that larger countries are likely to have various cities performing specialized functions (Potter & Lloyd-Evans, 1998). A city may function as an industrial centre, administrative centre, transport node or commercial centre inter-alia. Most cities and towns in developing countries are the result and mediation of colonial and post-colonial processes or policies (Herbert & Thomas, 1990; Potter & Lloyd-Evans, 1998; Songsore, 2003; Songsore, 2009; Owusu, 2005). They may have served as administrative centres, transportation and commercial nodes or as resource extraction towns (Potter & Lloyd-Evans, 1998; Songsore, 2003; Songsore, 2009; Owusu, 2005).

2.5.1 The city as a basis for economic activities

Essentially, ‘every place performs a particular economic function’. (Kotler et al., 2002 , p.230). The economic importance of cities cannot be overemphasized as is the importance of economic growth to the city itself. Gallion and Eisner (1983, p5) as cited in Caves (2005) suggest that, ‘the city can be a center for industry, exchange, education, and government or involve all of these activities’.

Cities have a primarily non agricultural economic base often distinguished by a more industrial and service oriented economic base (Jacobs, 1984; Herbert & Thomas, 1990; Caves, 2005). They are economically efficient in that they are a location for dense economic activity (Jacobs, 1984). They serve as a place for mobilizing the production and consumption of goods and services.

According to Jacobs, any significant import substitution enables a city to expand economically in 5 ways: the city becomes a market for goods and services; job opportunities are created; there is technological improvement to ensure productivity; jobs are transplanted to hinterlands and capital is generated (1984, p. 47).

Cities' location and sheer populations have facilitated industrialization and economic development in two ways: by serving as an avenue for complementing and competing producers to cluster in order to enjoy economies of scale, take advantage of a common pool of skilled labour, knowledge and technological learning or development and access to necessary infrastructure; and by helping in the extraction, transportation or processing of natural resources (Henderson et al., 2001). Besides, a positive economic growth enables the city itself to expand in size and develop basic infrastructure which combined with better incomes leads to a higher standard of living, acting as an urban pull which attracts jobseekers and migrants (Jacobs, 1984; Potter & Lloyd-Evans, 1998).

Cities are centres of innovation and not surprisingly, there is a strong association between industrial agglomeration and urban growth (Glaeser, 2000, p. 138; Porter, 2000). Across space and time, cities have been pivotal in civilizations and reputedly, most cities in developed countries are characterized by industrial growth (Herbert & Thomas, 1990; Potter & Lloyd-Evans, 1998). Sadly, industrial growth, technological change and development are not the forces behind urbanization in many developing countries (ibid). Herbert & Thomas have described them as structurally weak and because of their inadequate economic bases are merely “formal” rather than “functional” entities’(1990, p.51). As a result, their urban population growth is largely the result of rural-urban migration and natural population increase (Herbert & Thomas, 1990; Potter & Lloyd-Evans, 1998; Ghana Statistical Service (GSS), 2005; Songsore, 2003; Songsore, 2009).

2.5.2 The city as a place

The city is the embodiment of an urban lifestyle characterized by individuality and impersonal relations (Herbert & Thomas, 1990).

The city is also distinguished from a village by its sheer numbers, retail outlets such as shopping centres, medical centres, offices, banks; public utilities, bright street lights, extensive transportation network, cars; and entertainment or leisure avenues such as golf courses, parks, pubs and restaurants (Herbert & Thomas, 1990; Potter & Lloyd-Evans, 1998; Caves, 2005; Williams, 2005). All these characterize the city as a place with meaning and value for its dwellers or simply having a 'unique 'spirit of place'' (Holloway & Hubbard, 2001 p 68). It is this sense of meaning and value that holds a point of significance for place marketing.

As cities are large producers and consumers, so are they large waste producers. Cities in general have social and environmental problems with those in developing countries often having a higher share of these. This could make them less attractive places for long term residence. Urban centres in developing countries are plagued with the problems of unemployment, underemployment, poverty, large informal sector and crime (Potter & Lloyd-Evans, 1998; Satterthwaite & International Institute for Environment and Development. Human Settlements Programme, 2002; Songsore, 2003). Again there is inadequate housing, waste management, urban sprawl, slums, pressure on existing infrastructure and traffic congestion which are exacerbated by poor planning and inadequate funding for infrastructural development and sheer population growth in cities (Potter & Lloyd-Evans, 1998; Zetter & White, 2002; Songsore, 2003; Wheeler, 2004; Baabereyir, 2009; Songsore, 2009; UN-Habitat, 2009; Owusu & Afutu-Kotey, 2010). Further, there is a continued increase in inequality between urban residents and between urban areas (Herbert & Thomas, 1990; Potter & Lloyd-Evans, 1998; Songsore, 2003).

Urban centres in developing countries lack intermediate cities between the biggest city and smaller cities. This marked difference between primate cities and other urban centres within developing countries has created the problem of urban primacy. Urban primacy refers to the 'condition where the largest city in a country is superordinate in both size and national influence' (Potter & Lloyd-Evans, 1998). It is typical in developing economies. The tendency for urban primacy to occur increases in proportion to a nation's size, population and other factors as political intervention, the city being a national capital or port city (Ades & Glaeser, 1995;

Henderson et al., 2001). As investments (both public and private), infrastructure and labour flow to the primate city, decentralization and the even socio-economic development in developing countries is seriously hampered (Owusu, 2005).

Urban systems continually grow and adapt their structures (Potter & Lloyd-Evans, 1998). A sustainable urban growth is however not limited to economic growth but must be coherent with efficient urban land use, security, low urban energy usage for transportation and domestic chores as well as an effective social infrastructure accessible to all dwellers (Portnov & Erell, 2001).

2.6 The concept of Infrastructure

The term infrastructure connotes the underlying structures 'base' of a society or economy that helps it to function and without which economic growth and overall development is severely hampered (Caves, 2005; Chambers, 2007). Chambers (2007) defined infrastructure as 'the physical structures, facilities, and networks which provide essential services within a community such as transportation, utility companies, water and communication systems as well as public facilities such as schools, hospitals, and government buildings' (p. 2).

Caves (2005) also attempts to distinguish different categories of infrastructure rather comprehensively as:

capital assets that traditionally have included public and privately owned providers of facilities and systems such as utilities (gas and electricity, water supply and sewerage, waste collection and disposal, stormwater management); public works (roads and bridges, dams and canals, ports and airports, railways, transit and other transportation services); community facilities (schools, parks, recreation, hospitals, libraries, prisons, civic buildings); telecommunications (telephone, fax, internet, radio, television, satellites, cable, broadband, multimedia); and knowledge networks (universities, research institutes, corporate research and development, government, philanthropic foundations, libraries, museums, archives) (2005, p.261).

The function and impact of infrastructure is better understood based on its spatio-temporal networks and organization. Indeed the quality and accessibility of requisite physical, social, and economic infrastructure is a tool for measuring the development level and even the classification of a community (such as slum, village or city) by both national and international bodies (Ghana Statistical Service (GSS), 2005; Baabereyir, 2009; Owusu & Afutu-Kotey, 2010).

On the other hand the development of a society also affects its infrastructure positively or negatively. Hence, it is important that among other things infrastructures are well managed, efficient, sufficient, and accessible to all who need it and are sustainable in the long term. However due to inadequate funding, lack of maintenance, lack of improved technology and long term planning, the realization of these goals have often been impossible in developing nations (Caves, 2005; Agyeman, 2009). Infrastructural development in urban centres, particularly in developing nations often lags behind demand and population growth (Herbert & Thomas, 1990). For the purpose of this study, physical structures would encompass transportation whereas social infrastructure would encompass housing, hospitals, schools and leisure facilities.

2.6.1 Transportation

Physical infrastructure includes the tangible structures such as roads, airports, ports, rail ways, telecommunication and communication among others.

The growth of cities together with trade and industry made it important to develop efficient and fast transport modes to link the various parts of the city as well as surrounding towns (Pacione, 2001). The underlying urban transportation structures in a city work to facilitate the movement goods and people (ibid). An efficient and sustainable transportation network ensures equitable access to necessary social amenities and facilitating business, trade and general economic growth whilst reducing environmental impacts (Caves, 2005; Williams, 2005; Agyeman, 2009).

Three main forms of transport can be observed: land, sea and air. The means of transportation particularly relevant to this study are roads (intercity and intra city links), air (fixed wings and helicopters) and sea (supply vessels) and to a very limited extent rail transport as will be demonstrated in subsequent chapters.

Of all the three air transport is the fastest and usually the most expensive. Air transport facilitates long distance travel, business and leisure. Sea transport however is commonly used for transporting bulk goods between international frontiers but is not a common means of transport for internal haulage (ibid). Intercity roads are responsible for majority of the people and goods transported within the country as it is the most developed, most accessible and cheapest. In addition, roads facilitate movement between neighbourhoods and between the city centre and its

outskirts although in large metropolitan cities, travel time is longer and hence rail transport to and from the city centre is more desired (Williams, 2005).

Some roads are too narrow or poorly connected for effective public bus transport. Third world countries usually lack a well developed and formal public transport system. They are often replaced by paratransit transport services operated by private bus companies (Pacione, 2001). Intracity public bus transport is also poorly developed and given the increased numbers of private cars which take more space without being able to transport more people, this causes traffic congestion (Herbert & Thomas, 1990; Agyeman, 2009).

There is also the problem of increased deterioration of the roads contributing to road accidents as the roads are not well suited for cars and especially, heavy trucks. Unfortunately, intra city road networks are often poorly constructed and poorly maintained. Other problems include environmental pollution and uncontrolled road accidents and restricted mobility (Williams, 2005).

Some of the proposed solutions to these problems include the development of sustainable public transport, urban compaction, strategic land use planning, provision of affordable energy efficient and demand oriented transportation, encouraging the use of non motorized and rail transport (Pacione, 2001; Williams, 2005; Kenworthy, 2006).

2.6.2 Social Infrastructure

The social infrastructures that foster human development and growth such as schools, libraries, community market/shopping centres and hospitals are essential for urban dwellers. Their differential availability can be assessed based on their *accessibility* and *quality* (Pacione, 2001). However in most developing cities access to these social infrastructure are still inadequate and underdeveloped (Potter & Lloyd-Evans, 1998).

Educational opportunities should also exist for continuous education and retraining of both skilled and unskilled labour (ibid). Access to leisure facilities such as golf courses, beach fronts, parks, and gym facilities are often limited to the rich either through their siting in rich neighbourhoods or accessibility.

It is also important to have access to social networks and information for businesses and organizations. Businesses, in particular need supporting social networks for economic exchanges, overall knowledge transfer and growth (see section 2.4).

2.6.3 Housing

Housing influences a significant aspect of urban behaviour, access to amenities, quality of life, social behaviour and attachment or meaning.(Herbert & Thomas, 1990).

Brand identified 6 components of a house. They are the site (the location) of the building, the structure of the building, the skin (the exterior) of the building, services (such as water supply and electrical wiring), the space plan which refers to the partitioning of the building and finally the stuff which encompasses furniture and interior decorative items (Brand, 1995, p.13).

Improper siting of houses creates both environmental, health and transportation problems for both users and the general public. Urban sprawl further affects transportation as government is forced to extend roads and amenities to the new settlements, further cutting down on the ability of government to use the limited funds to maintain existing roads and hence many governments are trying to increase inner city compaction while reducing urban sprawl(Herbert & Thomas, 1990; Williams, 2005). The facades and exterior designs of buildings also add curb appeal and value to it. However, the most aspect in the day to day running of buildings is the services in a building. For example, sewage, waste disposal, water supply, power supply and transportation access which all contribute to the viability and long term value of a house. Buildings that do not have access to these important services are often not appealing to high end residential consumers and most importantly, first class residential areas usually have the best of all these components (Potter & Lloyd-Evans, 1998; Satterthwaite & International Institute for Environment and Development.Human Settlements Programme, 2002; Songsore, 2003; Baabereyir, 2009; Owusu & Afutu-Kotey, 2010). Offices often tend to be concentrated within the city centre although to a smaller extent some may be located within suburbs (Herbert & Thomas, 1990)

A careful examination of all these constituents reveal that the quality of the house, its meaning to the user, adaptability of the house between users and across time, and the quality of life of users all depends on the overall quality and functionality of all these parts (Brand, 1995; Brand, 2009).

In order to encourage low income earners and first home buyers to own a house and also reduce the development of slums, unplanned and uncontrolled suburban housing development, buildings must not only be viewed as physical objects or symbols of personal achievement. (Brand,1995; Brand,2009). Housing projects, if approached properly, are tools for facilitating economic and social development by creating forward and backward linkages through the use of self help projects and affordable housing using local materials (Skotte, 2004).

2.7 Linking theory and concepts to the research objectives

The structural functionalist theory serves as a basis for examining Sekondi-Takoradi as a system with functionally interrelated parts. The study shall identify which structures in the city can be readily identified as playing a functional role in the oil activities offshore. The study also traces how these structures are developing to support the offshore activities.

Secondly, the study explores the characteristics of a cluster in order to establish the extent to which Sekondi-Takoradi can be called a location for a cluster. It assesses the kind of clustering in the city. The study also examines the vertical and horizontal linkages between businesses in the industry at all levels, upstream, midstream and downstream. It also assesses some of the effects of cluster development on businesses within the city. For example, increased specialization and access to local markets.

Clusters bring together associated institutions, regulatory bodies, and specialized service providers among others. Structural functionalists also recognize actors and roles. These terms will be related to some organizations in the industry and their roles.

Thirdly, the concepts of physical infrastructure (roads, rail, sea and air transport) have been used to explain the role that Sekondi-Takoradi plays in the transportation of workers and materials to and from the oil field. Here, I assess the quality, functions and accessibility of both social and physical infrastructure. I recognize that Sekondi-Takoradi as a city has three major means of transport: air, land and sea. I traced the manifest and latent functions (the intended and unintended consequences) of these infrastructures as a result of decisions and actions of actors and their repercussions for the industry's growth.

In addition, the concepts of social infrastructure (which include housing, health, education, recreational facilities, and shopping centres) have been used to explain the social infrastructural

support that the city has for oil workers on the one hand and auxiliary businesses on the other hand.

Regarding the use of the city as a concept, I have examined the historical role of Sekondi-Takoradi in Ghana and how it has played multiple functions as a city. Various aspects of the city have been examined. They include the city as a basis for industrial activities, its meaning for inhabitants and how it affects their attitudes, as well as issues of increasing urban inequality and the effects of urban primacy on Sekondi-Takoradi as an oil city.

CHAPTER THREE

METHODOLOGY

3.1 Introduction

The process of selecting relevant theories, data, informants and the analytical process must be done carefully to produce sound academic material in line with the objectives of the research. In view of this, I used a qualitative approach or a soft method to collect and analyze the data used for this thesis because it best suited the objectives and resources available for this research. Using interviews and observation I collected the primary data while secondary data guided, shaped and served as the theoretical concepts by which the data was interpreted. I have constantly examined myself as a researcher throughout the research process and have also ensured that I considered ethical issues during the process. Whilst the qualitative approach has been useful, it is also fraught with challenges which include the issue of researcher subjectivity.

3.2 Qualitative approach and Justification

The qualitative approach may be described as using soft methods such as interviews, observation and focused group discussions to collect primary data such as text, sounds and photos which do not assume a 'numeric format' unlike quantitative data (Kitchin & Tate, 2000, p.211; Gilbert, 2005,p.104; Mikkelsen, 2005). That is to say, this approach gives descriptive data or a 'thick description' to borrow the words of Geertz, in order to gain an in-depth understanding of the research topic (Geertz, 1973; Mikkelsen, 2005; Ponterotto, 2006).

I chose a qualitative approach not because it is common in the subfield of human geography where my study falls nor in an attempt to dodge statistics, but rather, to source, sort and uncover authentic data which would be useful in building a niche for this emerging area in academia – Ghana and Oil (Kitchin & Tate, 2000; Gilbert, 2005; Mikkelsen, 2005). As outlined earlier, my research objective has been to explore the socio-economic role of Sekondi-Takoradi in Ghana's emerging crude oil extraction industry. The literature also corroborates that the qualitative approach is the best suited for this kind of exploratory research where in-depth and descriptive information is desired (Geertz, 1973; Kitchin & Tate, 2000; Gilbert, 2005; Mikkelsen, 2005).

Although Ghana has a long history of oil explorations and minor discoveries, the discovery of commercial quantities of oil in Ghana is a very recent activity and hence, secondary data in this area is both limited and may be broadly described as *grey material*. Although this present discovery was made in 2007, infrastructures, associations, among others, are yet to be fully streamlined. For instance the Petroleum Revenue Management Act 815 (PRIMA) which was passed in April, 2011 was in its draft stage at the time of field work in 2010. This made it imperative as a researcher who is not part of the industry, *an outsider*, to adopt a soft approach in gaining access to information from credible sources in the industry.

By interviewing key informants with access to relevant information, I was able to gain access to internal documents (presentations, drafts, plans, handbooks, maps) which contained important data for the research but were yet to be released to the public. In addition, I was able to seek further clarification on *technical jargons* used at the Takoradi Port and Airbase which were hitherto unknown to me. They were further explained by virtue of my contact, interview and guided tour (observation) of activities on their premises. This would have otherwise been impossible if I had adopted a quantitative approach. The interpretation of the data I gathered could also be affected given my limited technical knowledge in this area.

Finally, a purposive approach was chosen in order to effectively use the time and resources available for primary data collection by limiting the number of informants used; as against a quantitative approach which would require more informants and hence more time and resources (Denzin & Lincoln, 1994; Kitchin & Tate, 2000; Mikkelsen, 2005).

3.3 Data Collection

Lindsay (1997, p.19) describes data as ‘materials from which academic work is built’. This research has drawn from both primary and secondary sources of data. Thus whereas primary data is ‘generated by the researcher (*self-constructed*)’, secondary data is ‘generated by another person or agency (*preconstructed*)’ (Cloke et al., 2004, p.4). The secondary data provided an overview of the existing literature in this field both published and grey material. It also provided framework for analysis and a guideline for the research. As observed by other development researchers, primary data in the form of interviews, photos and maps was to provide in depth information and understanding through illustrations on the major themes (Nichols, 1991).

3.4 Primary Data

Katz (1994, p. 67) notes that in order to conduct research, we need to ‘have “a field” marked off in space and time’. Therefore, the primary data was collected through formal interviews, observation, maps and photographs. Thus, the output of the primary data was in the form of audio and visual recordings of field data (Kitchin & Tate, 2000). The audio (semi-structured interviews) files were later transcribed for analytical purposes while photos of relevant sites and activities were used for illustration and to enable recollection of events, people and places in the field. In addition, the coordinates of important sites were taken to update a detailed map about the study area with reference to the topic of this thesis.

3.4.1 Gate Keepers

The success of this research has been due to a combination of hard work, luck and planning. Ghanaian society, as is the case with many developing countries is stratified and gendered (Nukunya, 2003). Most of my informants were busy cooperate and business executives who may not have the time to sit through an interview by a student conducting a research that they may not stand to benefit from. Therefore being an outsider, not part of activities in the industry and not part of their social network, I needed to use a tactful approach to gain access to informants. I decided the best way was to approach them through an already established network so as to come across as non-threatening, trustworthy and within the social elite class where they belong.

I used my network here in NTNU as a student, to contact a team of The Foundation for Scientific and Industrial Research at the Norwegian Institute of Technology (SINTEF) researchers who had already been to Ghana and were doing a research in the oil industry.

The SINTEF crew and their local research counterpart from Science and Technology Policy Research Institute (STEPRI) helped me to make initial contact with potential informants.

Commenting on access to informants, one gate keeper rightly noted:

In Ghana you do not walk into an office [as a researcher] and expect answers to your questions, you need to approach the person through a trusted associate to facilitate access to a timely interview appointment and accurate responses to questions. Informants will either be uncooperative, give inaccurate responses or become apathetic. Some secretaries would even put your letters aside and refuse to forward them to the potential informants.

Overall, the collaboration between the SINTEF researchers and I paid off in terms of speeding up access to informants in the field by tactfully breaking into the social network of important figures in the oil industry of Ghana, whose input in this research was imperative for its success.

3.4.2 Research Assistant

I did not plan to use a research assistant initially. However, upon contacting the Sekondi-Takoradi Metropolitan Assembly's planning section for maps on the metropolis, I realized the existing maps were hard copies on large papers which could not be easily photo copied for my research. In addition, the maps were outdated and did not clearly illustrate points of interest to this research which include the ports and Airbase area. I therefore decided to employ a research assistant who is also a former colleague to help me update and digitize a photocopied map from the Assembly as well as produce a second map showing the distribution of oil and auxiliary companies in Sekondi-Takoradi.

3.4.3 Informant Sampling and Characteristics

Before going to the field, I realized from my literature review and pre-field enquiries that there exists a diverse array of stakeholders in Ghana's young and fast growing oil industry (Zotorvie, 2010). New associations, pressure groups and factions had been formed and as such, I decided to categorize informants into subgroups that could help me answer my research questions in addition to providing different perspectives on activities in the field.

I used the purposive sampling approach which combined both quota sampling and snowballing. With *purposive* sampling, informants are sampled based on '... the sort of response that they are likely to give, and the responses the interviewer is looking for' (Kitchin & Tate, 2000, p.54). In other words I picked these informants based on their field of work, position at work, duration of stay in Sekondi-Takoradi and marital status which in my judgment influenced their knowledge and experiences that relates to this study.

I categorized informants into sub categories related to my research themes (refer to chapters 1, 5, 6 and 7) and allocated *quotas* to informants in each category. Upon a basic review of the potential informants, as well as their availability cum willingness to partake in the interview, I selected the potential interviewees. After interviewing an informant, I asked if they could show me people that they knew could fit the characteristics in a given category (*snowballing*).

One advantage with quota and snowball sampling (purposive sampling) is that it is affordable, less time consuming and requires less effort to find informants as compared to quantitative approaches which often require a larger and more diverse sample space and hence more resources (Kitchin & Tate, 2000). However, the problem with snowballing is the possibility of informants referring me to people with similar characteristics to them and hence a risk of conducting a biased research (Kitchin & Tate, 2000). In my case I was receiving more male referees than females though I tried to include both sexes in selecting informants albeit not entirely successful.

In all, I interviewed 23 informants. 19 were *key informants* and 4 were *primary informants*. With the exception of 5 informants, the rest were in middle to upper level managerial positions. Thus, majority of informants were busy people with very tight working schedules. Among the primary informants 2 were part of joint-interviews, one was a port official and the other was a Tullow employee.

In terms of *gender*, 19 were male and 4 were female. Among the male informants, 16 were in middle to upper level management whilst the other 3 were in lower level management. Among the females, 2 were in upper level positions and 2 were in lower level positions. In terms of *age*, 11 informants were below 40 years while the rest were above 40. Also, 4 were single while the rest were *married*. From my experience, I did not notice much difference between the responses of the male or female informants. However, in terms of marital status, the only difference I noticed was the kind of services the informants desired in the town if they lived with their families or not. In terms of *education*, all but 4 informants had reached tertiary level of education. The rest had vocational or technical training.

The sample space was quite diverse in terms of *ethnicity*. Two (key) informants were expatriates, one from Asia and the other from Europe. Three informants were Ghanaian returnees from abroad. Two returnees were employed in an oil company whilst the other hand set up a training school to supply labour to the oil industry. The rest were all based in Ghana with some having received part of their education abroad prior to the oil discovery.

Informants were selected from the ports, Airbase, Naval Base, district assembly and the regional headquarters *inter alia*. Two ports officials and two staff from Tullow stationed at the Takoradi

Port gave me their (service provider versus user) perspectives on oil related activities that the port supports. In a similar vein, one military Airbase staff and one employee from Tullow also gave me their perspectives on activities at the Takoradi Airbase. One transport officer of Tullow gave me his overall perspective of the Airbase, ports and general transportation activities within the city. One Informant from the Takoradi Naval Base also informed me of the complementary role that the base plays to the ports.

I also interviewed managers of businesses that worked with Tullow or other oil companies. I interviewed 8 informants from this category. 7 of them were key informants and the other was part of a joint-interview.

There was also one informant from the Sekondi-Takoradi Metropolitan Assembly. The Regional Economic Planning Officer from the Western Regional Headquarters spoke in lieu of the Western Regional Minister who at the time was away on ministerial duties.

Lastly, I interviewed the president and vice president of the Ghana Oil and Gas Service Providers Association (GOGSPA) in a joint-interview. I also interviewed the Area Manager of GNPC (Takoradi) which is part of the joint venture ship at the Jubilee oil field as well as a government regulatory body in the industry. Lastly, I interviewed the Regional Industrial Relations Officer for the General Transport, Petroleum and Chemical Workers' Union.

3.4.4 Interviews

Kvale (1996, p.2) describes an interview as 'an inter change of views between two persons conversing about a theme of mutual interest.' He likens the interviewer to a miner who goes digging for information on a subject, a method that I have found very useful since my undergraduate years.

For this research, I employed a semi-structured interview guide to 'dig' for data and to obtain in-depth information in tandem with what Geertz termed the 'thick description'. Thus, the interview questions I administered were open ended questions which sought to answer my research questions (refer to chapter 1) and to provide information for the themes I have discussed in chapters 5 and 6.

For example, related to research question 1, I asked some informants about how their companies transported workers, equipment and products among Sekondi-Takoradi, Accra and the oil rigs. The responses to exploratory questions such as this, were very detailed, descriptive and technical. Thus, I have used quoted excerpts and paraphrased responses from these interviews in combination with other data for this research.

By using this tool (interview guide), I was able to adapt questions to informants, the businesses they represented and to probe further for details and clarifications without losing focus of the research goals. I was also able to ask similar questions to gain different perspective views from informants (cross-interview). That is to say at the ports and Airbase for example, I asked authorities about the services they provided for the oil industry and I asked workers in oil related businesses that worked there the kinds of services they required and used at the ports.

On the down side, the interview process is not without challenges (Kvale, 1996; Kitchin & Tate, 2000; Mikkelsen, 2005). Some informants refused to be recorded on tape and so I had to write down their responses which made those interviews drudging. My solution to this challenge was to focus on getting the content and context of what informants said. In addition, as soon as the interview was over, I would re-write the notes I had made into a more comprehensive one to ensure clarity during the analytical process.

3.4.4.1 Joint-Interviews.

In three of the interviews, the informants invited another person to take part in the interview. Often, those invited were subordinates to the main interviewee and were to provide complementary or supplementary information to that of the main interviewee. This is because due to division of labour and the busy schedules of these business executives, they did not have petty and intricate details about daily happenings in different departments of the business. Thus, these subordinates who were called in were to provide these details.

Although these interviews provided rich details, they were longer than the one-on-one interviews because care was taken to solicit views from both interviewees.

I also feel informants may have withheld some sensitive information which they would otherwise discuss if they were interviewed alone.

3.4.5 Observation

While in the field, I systematically observed events using the participant and non-participant approach. My use of observation as an approach was to complement information that I had received from interviews on the one hand, and as a method I could not avoid while in the field – hence being a participant. I say my usage of observation was complementary to the interviews because without prior knowledge (through the interviews) of things I observed at the ports, Naval Base and Airbase, I would at best have misinterpreted what I saw (Bailey, 2007).

After conducting interviews at the ports and Airbase, I was taken on guided tours of the premises during which I took photos. During these tours, I was better able to understand how activities that informants had described to me in the interviews played out in real life. One interviewee (business operator) also showed me around his operations and training site. There, I observed the number of eager youth, mostly male who were eagerly training in welding to improve their chances of being employed by an oil company. At the ports and Airbase, I observed the conditions and usage of infrastructure on the premises, renovation works being done and how day to day activities played out before my eyes. I also visited the guest house, staff quarters and offices of some companies during which I made some important observations about their location and distribution discussed in chapters 5, 6 and 7. These brief tours were overt and non-participatory in nature.

However, my personal experiences while in the field and observing in my opinion were covert and participatory in nature. That is to say, no one else besides my informants and of course close relations knew that I was in the field and as mentioned earlier, participatory because I shared in living and experiencing life in Sekondi-Takoradi during the research. For instance, while on my way to interviews or back I noticed a slight change in the traffic situation and the distribution of oil related companies within the city, which some informants corroborated.

In all, I was in the field for four weeks observing events on the field while interviewing informants. The observations I made helped me seek clarification from informants between interviews and to also get a better understanding of issues discussed during the interviews. It also enabled me to take photos to aid in recollection of events as well as for elaboration.

3.5 Secondary Data

Secondary data sources were reviewed by their relatedness to the research objectives. They include news articles, internal documents, reports, maps and photos, some of which have been outlined below.

I collected an analogue map of Sekondi-Takoradi as well as a profile book from STMA. Unfortunately, the map I collected was on a large sheet and was not detailed and hence, I had to supplement information captured on it with my own construct from the field work.

In addition, I collected a ports handbook, power point presentation of the extension plans at the ports and an aerial photo of the ports from informants at the ports. These documents had information on the statistics of the ports and also development plans for the ports as well as an overview of daily activities at the ports area.

I also collected a power point presentation by the Regional Minister from my informant at the Western Regional Headquarters. Furthermore, I took a digital copy of the activity map of Jubilee oil field and it surrounding oil fields from my informant at GNPC. My informant from Macro Shipping also gave me useful newspaper and shippers journal articles he had collected concerning the oil activities.

Finally, I encountered an array of internet articles some of which were posted on Ghana web.com, modern Ghana.com and other websites with news articles from Ghana. Others were taken from the web pages of various companies that are involved in the oil activities to supplement information from the fieldwork.

Non-official sources (grey material) provide easy access to ‘factual data’ and ‘can open up which are inaccessible and relatively closed’ (Cloke et al., 2004 pp. 63-64). They are therefore important data sources for development researchers who often work in developing countries where obtaining data can be challenging. From the afore mentioned secondary data, it can be verified that I have used a good amount of grey materials in this research. Majority are unpublished internal documents and news items from reputable local and international news agencies such as BBC News. As such, the data obtained from these materials is fairly reliable.

3.6 Reflexivity

The nature of qualitative research puts the researcher into a social context (Katz, 1994; Dowling, 2000). As such, it was important for me to be aware of how I influenced the research process and negotiated power relations between my informants and I (Dowling, 2000) .

England (1994) as cited in Dowling (2000) has identified three power relations viz, reciprocal, asymmetrical and potentially exploitative relationships which researchers often encounter in the field. In my case, the relations I had with my informants may be broadly classified as an asymmetrical relationship, particularly at the initial stage of the field work. This is the situation where the informants are in an influential position relative to the researcher. I maintain that I was in an asymmetrical relationship with my informants for four reasons. Firstly, because I am not involved in their field of work, I found that they knew more technical information which I did not know by virtue of not being in their field. This brings me to the issue of insider/outsider which I discuss subsequently. Secondly, I am a student compared to these informants who are business executives in companies. Thirdly, I felt that I was younger compared to most of the informants; a position which in Ghanaian society often puts a person at a disadvantage in terms of social status as the young are not expected to question the actions of the old (Nukunya, 2003). Finally, all the interviews were conducted in the offices or work premises of informants where I was a guest and student researcher, sometimes sitting across the big office of a business executive whose phone is constantly ringing.

However, my gate keepers helped me to bridge some of these gaps. In addition, some informants who had previously studied in Norway could easily identify with my mission and so were forthcoming with information to help me collect data in the short time I spent in Ghana. As I became more acquainted with people in the field and with technical details I felt less intimidated.

Similar to the experiences of Winchester (1996) as explained in Dowling (2000), I realized my gender as a female student helped me to access information because in such an industry full of uncertainties, secrecy, politics and mistrust, I looked less intimidating and perhaps more trustworthy. Perhaps if I were male or not a student my informants would not grant me interviews nor extend the same patience they had in answering my rather naïve technical questions. The introductory letter from the school and my student card also helped to ameliorate issues concerning trust by establishing that I am a genuine researcher.

In my case, because of my uninvolvedness with the oil industry, I consider myself an outsider. On the other hand, I once lived in Sekondi -Takoradi and I am quite familiar with the city and the local language. So socially, I felt more like an insider, observing events. This position of not being an insider or outsider is what Katz termed “betweenness” (Katz, 1994, p.72).

3.7 Ethical Considerations

Dowling refers to ethics as the obligations that researchers have towards their informants, sponsors and the general public in the course of their research (Dowling, 2000). She discussed the issues of *consent*, *privacy* and *harm* which I have adopted as the ethical issues that I considered during this research.

Before I booked an appointment with informants for the interviews, I informed them of who I was and what this research was about. In the case of the companies included in this research, I sent a scanned copy of the introductory letter that the department gave me in addition to a brief description of the kind of informants I wanted to interview ahead of the interview. In a few cases, as with the Air Force administration, I sent a copy of the interview guide for an assessment prior to the interview. I also, sought the *permission* of the Takoradi Port and Airbase authorities to tour their premises and take photos. Before the interview began, I sought the permission of the interviewee to be recorded. In a few instances, the interviewee turned down my request to be recorded and hence, I had to write down their responses.

I have endeavoured to ensure the *privacy* of my informants and their responses. I stored the interview responses securely. For those informants who requested me to send them a copy of the interview I had with them, or photos I took with them or of their premises, I did so. Others requested anonymity, which I have ensured.

Katz noted that, while it is important to ‘...protect the anonymity of [informants], there may be times when this is not enough and data must be withheld or reported selectively’ (Katz 1994, 71), I had to withhold information about some informants to protect them from ‘*psycho-social harm*’ particularly where they gave sensitive information that could affect their job or business (Dowling, 2000). Also, since many of the informants are public figures, I sought their permission to use their titles to lend more credence to the data collected.

Finally, I maintained a good rapport with the informants after the fieldwork sending back information as mentioned earlier for clarification of information they gave.

3.8 Validity and Reliability

According to Kitchin & Tate (2000, p.34), 'Validity concerns the soundness, legitimacy and relevance of a research'. They categorized *validity* concerns into those relating to theory and practice. With respect to theory, they refer to the relatedness of theories and concepts pertaining to the research. Whereas the practical aspect pertains to the relatedness and soundness of the methods used in collecting the data for the research and its 'integrity'(Kitchin & Tate, 2000).

In conducting this research therefore, it was important to ensure the relevance of methods for collecting the data as well as the theories used to interpret the data. I made use of the structural functionalism theory and cluster approach which throw light on how the infrastructure in Sekondi-Takoradi has influenced the location and distribution of oil related businesses and activities. In addition, I have used concepts of infrastructure and cities to help analyze and interpret the findings of the research.

In *practice*, I adopted a qualitative approach which involved the use of interviews, observation and figures as explained earlier to collect the data. This approach enabled me to have an in-depth understanding of the data since my lack of technical knowledge could have hindered or distorted the interpretation of the data collected (Kitchin & Tate, 2000; Mikkelsen, 2005).

Related to the issue of validity is *reliability* which refers to the repeatability of the research findings using the same method, over time, or within the same period of time by other researchers (Kitchin & Tate, 2000). To this I would say that first of all, because my informants were educated and spoke fluent English, I had no use for an interpreter. Hence, I did not lose any meaning which could result from language translations.

In addition, I adopted a "cross interview" approach where I interviewed ports and Airbase authorities as well as the users of the facilities to ensure that I had both views in my research. During these interviews, I obtained further clarification on issues arising between interviews and from my observation, further reducing any misinterpretation of information on my part.

Qualitative methods have often been criticized for their lack of *generalizability* and *objectivity* (Kvale, 1996; Dowling, 2000; Gatrell & Elliott, 2009). This is because the sample sizes are smaller compared to quantitative research methods. In addition sampling methods such as purposive sampling could cause *biases* in the data collected (Gatrell & Elliott, 2009). Similarly, Katz in reference to positivism notes that, '...qualitative research [has] been required to conform to standards that are external to [it's] constitution' (Katz, 1994, p.69). Although this study may not be generalizable as a case study, in showing how cities in other countries may play a role in their oil industry, it shows the role that Sekondi-Takoradi plays in Ghana's emerging oil industry in particular. Additionally, generalization was not a focus of this study and hence the qualitative approach.

Furthermore, data interpretation and analysis using the qualitative approach has been criticized as being *subjective* (Gatrell & Elliott, 2009). However, this is part of the qualitative approach where the researcher is involved in the research process and hence makes it almost impossible to generate *objective* findings in tandem with the quantitative approach (Katz, 1994; Dowling, 2000; Kitchin & Tate, 2000; Mikkelsen, 2005; Gatrell & Elliott, 2009). I have been involved in the processes and interactions that produced the data which may have influenced some of the responses I obtained. I also agree that, as an outsider researching in this industry, I may have applied my own experiences and lenses in interpreting the data I collected.

Finally, because the industry is young and rapidly growing and changing, I do not anticipate that subsequent researchers in my field who adopt my approach would achieve the same results over time. However, it is very possible that certain activities such as the distribution of oil and logistic companies around the Airbase, ports and Naval Base will remain unchanged over the next couple of years.

3.9 Data Processing and Analysis

This research has been exploratory in approach due to the new nature of the oil industry and the abundance of grey material which is yet to be reviewed, classified and built into academic material in this sub field; hence a qualitative approach used here as mentioned earlier. As a result, I found it impracticable to attempt to test any theories at this point. Instead, the theories and concepts used here are to help shape the research in general and also to help interpret the data acquired.

My analysis of the data has employed the use of *intertextuality* which is ‘the construction of new texts by reference to other texts’ (Forbes, 2000p.124). Hence existing texts in the form of secondary data have formed the theoretical considerations which have been interwoven into a discussion of the responses from my informants.

In tandem with the concept of hermeneutics, I understand that I am interpreting these already existing texts as well as the data I obtained from the interviews to form a new text which would in turn be reinterpreted by the reader (Forbes, 2000). I have sorted and presented the data in sub themes coherent with my research objectives. Hence, I have used photos (figures) which I have commented on (*semiotics*) to further elaborate my discussions (Forbes, 2000).

3.10 Field Limitations

It was difficult to reach all the informants I had wanted to interview as some potential informants some of whom were female were either unavailable at the time of the research or they were too busy. Since I had little time to complete the research and return to school, I had to make do with those I could reach.

Secondly, it was challenging to obtain certain information which I felt could enrich this research. This was mainly due to the sensitive nature of this oil business, particularly involving upstream companies and partly due to the socio-political climate at the time. Laws and levels of authority had not been properly streamlined and as such individuals and businesses in their bid to protect themselves from socio-political harassment and their businesses, were reluctant to divulge sensitive details. Also, since I am not involved in the oil industry and consider myself an outsider, this may have affected my access to some of this sensitive information often regarding revenue, taxes and clientele.

Finally, it was challenging to sort and classify some grey materials I used as it was not clear which document category they fell under.

CHAPTER FOUR

STUDY AREA

4.1 Introduction

Ghana, located approximately 750km north of the equator is subdivided into 10 administrative regions namely: Greater Accra, Eastern, Western, Volta, Ashanti, Northern, Brong-Ahafo, Upper-East and Upper-West Regions.

Accra is the capital city and the most densely populated city in Ghana. It is also the biggest city in Ghana (Owusu, 2005). Besides Accra, the country has three other major cities all of which are regional capitals. They are Kumasi, Tamale and Sekondi-Takoradi which is the regional capital of Western Region (Owusu, 2005).

The Western Region covering about 23,921 sq. km. is a resource rich area (Ghana Government Portal, 2011b). The region is rich in minerals such as bauxite, manganese, iron ore, diamonds, and glass sands and has the highest concentration of gold mines in (Ghana Sekondi-Takoradi Regional of Commerce & Industry 2010; Ghana Government Portal, 2011b). The region is also Ghana's largest producer of cocoa, rubber, coconuts, oil palm and has the longest regional coastline (about 192km) which supports a local fishing industry and presently oil which has been found on its shores (ibid).

The region experiences warm temperatures (22°C-34°C) and is the wettest part of Ghana (Ghana Government Portal, 2011b). The rains are often heavy and characterized by slight thunderstorms whereas the dry season between December and February locally called the Harmattan, brings about foggy conditions and poor visibility in the early mornings (Ghana Government Portal, 2011b; Sekondi-Takoradi Experience Floods, 2011). This situation could pose challenges for local air transport which is run by small aircrafts.

The Sekondi-Takoradi Metropolis which covers 385km² is the smallest and most developed out of the 13 districts of Western Region (STMA, 2006). It is the third largest city in Ghana. It is located along the western coast of Ghana, about 242 km west of Accra and 280 km east of the

Cote D'Ivoire border to Ghana (ibid). It is the largest city on the western coast of Ghana and hence, its importance as the only metropolitan city closest to the Jubilee Oil field.

4.2 A Brief History of Sekondi –Takoradi

Sekondi-Takoradi is often referred to as Ghana's twin city because it is formed by two cities, Sekondi (locally called *Sekunde*) and Takoradi.

The area was first inhabited by Fanti fishermen from Central region who settled at present day Amanful, the area around Ayire estuary and the present Takoradi Harbour area (Danquah & Abakah, 2001). This perhaps explains why Fanti is the common local language spoken in the area even though the region has a large number of other ethnic groups.

Historically, Sekondi was a major fishing and trading town with its shopping centre at European Town (the commercial and city centre of Sekondi). It flourished in the 1900s after the construction of the western railway (minerals). It subsequently became a town council in 1903 under the Town Council Ordinance 26 (Danquah & Abakah, 2001; Ghana Mining Sector Support Programme Management Unit(GMSSPPMU), 2005).

The relocation of the Ghana Railway headquarters, the establishment of the Takoradi Port in the late 1920s coupled with a booming trade and commerce in Takoradi made it a large business and trading centre with a diversified local economy. It attracted many immigrants from within and outside the municipality and grew in size, robbing Sekondi of its importance hitherto. By this time, Takoradi was not recognized as a major city. It was a town in the Sekondi Municipality. In 1946, the Council added Takoradi to the Sekondi Town Council and by 1963 Sekondi and Takoradi were recognized as one and as a city, Sekondi-Takoradi (ibid).

Sekondi having lost its economic significance to Takoradi became a fishing, dormitory and administrative town, having over 90% of the government and administrative offices including The Western Regional office and the Sekondi Takoradi Metropolitan Assembly (STMA) office; whereas Takoradi became the commercial and service centre having the city's largest market (Market Circle) as well as many banks, industries, hotels and offices.

In 1994, the name of the Assembly was changed to Shama Ahanta East Metropolitan Assembly (SAEMA) by legislative Instrument 1316. It included the Shama, Sekondi, Takoradi and Ahanta

local areas. However, in 2008 the Ghanaian government in its bid to enhance the nation's decentralization process created more districts and separated Shama and Ahanta from SAEMA. Shama became an official district, Shama District Assembly (SDA) whereas Sekondi-Takoradi resumed its initial metropolitan status as STMA. STMA is bordered to the west by Ahanta West District, to the east by SDA, to the north by Mpohor Wassa East District and to the south by the Sea. Presently, there are 3 sub metros within STMA viz: Sekondi -Takoradi, Essikado-Ketan and Effia-Kwesimintsim.

4.3 Demographics

With an average population growth rate of 3.2 %, the estimated total population of Sekondi-Takoradi is 379,385 (Ghana Health Service, 2010 p.8). In 2000, a reported 114,157 lived in Sekondi whereas 175,436 were living in Takoradi (Ghana Statistical Service (GSS), 2005 p.126)

Cities by virtue of their economic importance, infrastructure and administrative importance attract migrants (GSS, 2005 p.352). The vibrant local economy created by the now defunct Takoradi Railway Station and Pioneer Tobacco Company as well as the Ports and other local businesses attracted migrants from other parts of Ghana and abroad (BBC Africa, 2011). As such the city has a uniquely rich urban culture developed from mixed ethnic groups, influence of foreign cultures and religious affiliation (ibid).

Kundum, the main traditional festival is celebrated in June and July by the local ethnic groups in the metropolis. The twin city is also known for its annual Street Carnival during which various Masquerading groups dance on the major streets (STMA,2010; BBC Africa, 2011).

Although the *Takoradi Fanti* (a blend of Fante, English and French) is the widest spoken language of the area, the major indigenous ethnic groups are the Ahanta, Nzema, Aowin, and Wassa as well as immigrants from other regions in Ghana (STMA, 2010). The majority (83.1%) are Christians, 8.9% are Moslems whilst 9% practice indigenous religion or other religions (Zotorvie, 2010; Ghana Government Portal, 2011b).

50% of the economically active are employed by a public or private employer within transportation, sales, services and industries in the Metropolis whilst the other 50% are self-employed (Ghana Government Portal, 2011b). However there are more unemployed males in the Metropolis compared to females (ibid).

4.4 Economic Activities

4.4.1 Agriculture

Agriculture employs about 18% of the economically active in the metropolis (Ministry of Food and Agriculture (MOFA), 2011; STMA, 2010). Of this number, 11 percent are engaged in fishing while the rest are into crop and animal farming. Over 50% of the land is cultivable but due to increasing competition for land for housing, most of these lands are being developed for housing.

Oil Palm, Sugarcane, Coconuts and Citrus are some cultivated cash crops. Cassava, Maize, Rice, Yam, Cocoyam and Plantain are among the major non cash crops cultivated. The rearing of sheep, goats, local and commercial poultry are usually on a subsistence basis. Non-traditional commodities including grass cutter, beekeeping, mushroom, snail and agro-forestry/woodlots have also gained increasing prominence.

The average farm size is about 2 acres with varied per acre. Currently, there are about 13 registered Farmer Based Organizations (FBOs) and enterprises. The Sekondi-Takoradi Agricultural Development Unit under the Ministry of Food and Agriculture is in charge of ensuring increased productivity in the metropolis (MOFA, 2011).

The major food items that undergo processing are fish, grass cutter, snail, cassava, coconut, palm nut and sugarcane. Fish, snail and grass cutter are mostly smoked in communities such as New Takoradi, Nkotompo, Aboadze and Shama. Small scale food processing industries also process Cassava into *gari*. Palm and coconut produce are processed into vegetable oil for local consumption and export. There are also a couple of distilleries such as Animens Limited and Rush distilleries which process citrus and sugarcane into fruit juices and alcoholic beverages (Danquah & Abakah, 2001; MOFA, 2011).

Presently, the influx of oil workers and expatriates has necessitated changes in the way some local agri-businesses operate.

4.4.2 Industry

Sekondi-Takoradi has been an important gold trading centre since the 15th century and is the third most industrialized city in Ghana (Danquah & Abakah, 2001). The local economy can be classified into three sectors namely industry, agriculture and services.

The industrial sector employs about 19% of the working population. Beside large manufacturing companies such as Ghana Cement Limited (GHACEM), the manufacturing sector of the region is mostly driven by small and medium scale private companies such as Pas Timbers, Primewood and Stanwood which process timber mainly for export. The Western Castings Limited, the largest iron and steel foundry in Ghana fabricates machine parts for the mining and timber industry among others (Danquah & Abakah, 2001).

In addition, there are local artisans who are into furniture production, pottery and wood carvings. *Kokompe* is a local scrap and auto repair market where cars are locally repaired and scrap materials are traded and recycled to meet local demand.

The Sekondi export processing zone has been declared a Ghana Free Zone (GFZ) for industries since May 1996 (Ghana Free Zones Board (GFZB), 2011). It lies 3km from the Mpintsin Junction on the Accra- Cape Coast highway. The area covers about 2,015.25 acres and has been divided into about 100 plots to accommodate a cluster of mineral processing industries including an alumina refinery to process bauxite from Awaso and Kibi (Tetteh, 2010). It will be serviced by water from a proposed dam on river Pra, electricity, roads and telecommunication (ibid).

The GFZ scheme has generous and protective incentives established in the Ghana Investment Promotion Centre (GIPC) Act 478 and the GFZ Act 504. They include protection against nationalization of the industry, total exemption from duties on all imports for production, tax free profits for 10 years, metropolitan property tax exemption for up to 6 years among others (Danquah & Abakah, 2001).

4.4.3 Service

The service sector employs the almost 60% of the working population. The main commercial activity of the city is largely from the ports and harbor with its ancillary businesses and previously from the railways. As the biggest city on Ghana's Western coast, Takoradi has a good number of banks, savings and loans, insurance and telecommunication companies concentrated

around the central business district and harbour area which offer services and employment opportunities to the people.

Takoradi has a good range of modest hotels, restaurants, beach resorts and guest houses that cater to tourists who visit tourist sites in the interior of the region. The southern part of the city has golf courses, beach resorts; swimming areas and nice views overlooking the sea (Briggs, 2004). Some hotels offer customized tours of tourist sites within the region as well as golfing and swimming. Although previously these services were few and catered mostly to tourists, new ones are now being built and the old ones being expanded to meet demand from visitors and staff from oil related companies (Danquah & Abakah, 2001; Fieldwork Observation, 2010). There are a few local and Chinese restaurants that offer continental and local dishes. Some companies have located within the city to provide catering services for onshore and offshore staff of oil companies (ATS, 2010). New pubs, casinos and night clubs have also been built and mainly attract expatriates and oil workers (BBC Africa, 2011; Vienna City News, 2011).

There are small scale local businesses that provide services in hair dressing, auto repair, masonry and tailoring. Some of these businesses have undertaken expansions and upgrading of facilities to attract rich customers, mostly from the oil companies (BBC Africa, 2011).

Due to oil drilling and exploratory activities off the western coast some oil related companies have opened their operational offices in the twin city. In addition, there are now commercial airline companies flying passengers to Accra and the oil rigs that were hitherto nonexistent in Takoradi. A few skills training schools have also been established to train and bridge the local labour deficiency gap for the oil industry.

4.4.4 Takoradi Market Circle

The Takoradi Market Circle is a major landmark in Takoradi and the largest shopping/trading centre in the metropolis and entire Western region. It is built in a circular form with a road around the whole market and connected with other roads to the other parts of the city (refer to Figure 4.1). It blends the traditional and contemporary African market setting with a large open area enclosed by two storey stalls (Egon, 2010; BBC Africa, 2011). It has electricity, water, public toilets and showers, waste bins and a police station albeit inadequate. The market is at the

heart of the city's business centre and commerce, having shops and stalls allocated to traders, banks, filling stations, car parks and convenience stores.

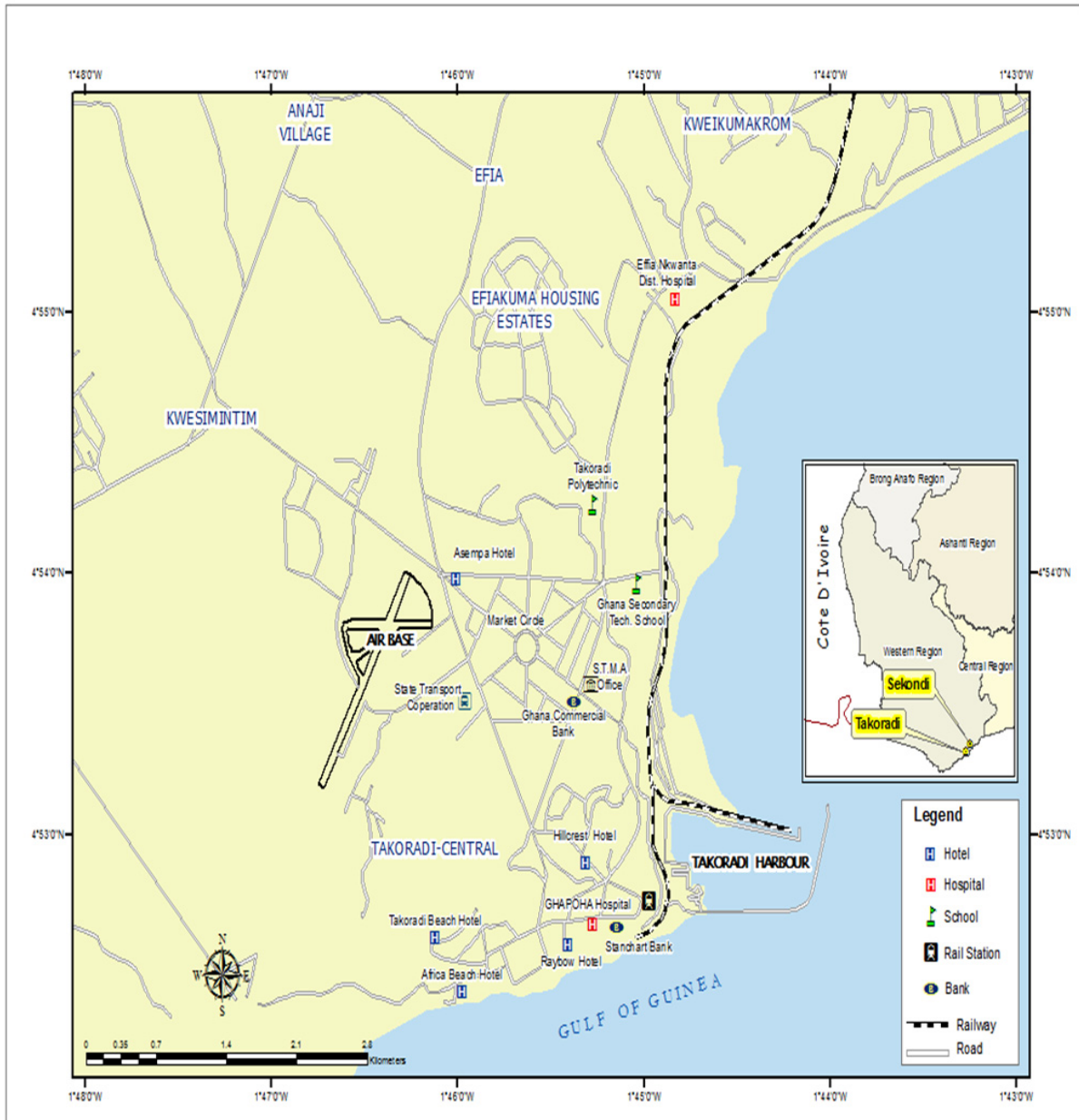


Figure 4. 1: A road map of Takoradi Showing Major Infrastructure and Landmarks

The shops are either into wholesale or retailing. In the main market, some items on sale include fresh and processed food items, clothing and jewelry. There are also shops providing services

such as hair dressing, tailoring, electronic sale and repair, music and movie rental, photo studios, photo copying and printing among others.

The market, like many others in Ghana, is heavily congested. Sellers have also refused to relocate to the Aprembo market which was built 10 km away from the current market to ease the congestion. Presently, the city authorities are planning to increase the height of the buildings encircling the market in order to create more stalls for vendors (BBC Africa, 2011).

Due to the open nature of the market, inadequate sanitary conditions, its congested nature among others, it is often unattractive to expatriate workers and other high end shoppers. As such, supermarkets such as Melcom and Garden Mart that stock processed foods, cosmetics, soaps and basic home appliances which are mostly imported bridge this gap by adapting their services to the shopping needs of middle to upper class customers as well as expatriates who demand certain imported food items not found in the local markets (Garden Mart Shopping Centre, 2011).

In addition, there are shops and service providers such as boutiques and hair salons often located close to the city centre or in first class residential areas that attempt to attract elite and wealthy clients by providing high end products and services (BBC Africa, 2011).

4.5 Social Amenities

4.5.1 Health

The literature does not state the number of health centres for the metropolis alone. The entire region has 325 health facilities which constitute 26 hospitals, 2 polyclinics, 55 health centres, 92 clinics, 114 functioning community health posts and 36 maternity homes with a high concentration within the Sekondi-Takoradi Metropolis (GHS, 2010).

professionals, and research work. It provides basic services such as general surgery, obstetrics and gynaecology, pediatrics, general surgery, dental, ear, nose and throat, psychiatry, urology, orthopedics and laboratory services (ibid). However, it battles with problems of understaffing, congestion in the wards, inadequate vehicles and lack of technical support (ibid). There are plans to upgrade the facilities at the regional hospital to perform better healthcare services.

The Essikado and Kwesimintsim polyclinics which are the only polyclinics in the region are also found in Sekondi-Takoradi. The GPHA Hospital originally built for ports officials and their

families and European hospital, originally built to serve the health needs of expatriates in Takoradi, are also important local hospitals. Also an emergency and medical service provider West Africa Rescue Association (WARA) has two clinics in the metropolis that provide specialized and emergency services for business executive, staff of oil companies and most importantly, expatriates (WARA, 2011).

Other private clinics (79), mission hospitals (24) and industrial hospitals (2) all play important roles in taking care of the health needs of people in the region especially since the two major causes of hospital admissions and deaths, malaria and anaemia can be treated at most of these health centres (ibid).

The Effia Nkwanta Regional hospital located in the metropolis is the regional hospital of Western region. Among others it provides clinical care, public health care, training of health

The metropolis also has a proposed new hospital that will be equipped with a heliport and modern medical facilities to step up the quality of medical services that the metropolis offers for its increasingly affluent residents (Fieldwork, 2010).

4.5.2 Education

There are both public and private pre secondary and secondary schools in the metropolis (Zotorvie, 2010). The public schools are usually crowded and perform poorly compared to their private counterparts. In the 2010-2011 academic year for example, all candidates from the 5 public schools in the metropolis failed their Junior High School final exam and hence could not progress to Secondary School (Obuoba.fm, 2011). It is therefore not surprising that middle and working class people prefer to send their wards to private pre-secondary schools such as Young Christian and Chapel Hills Schools.

Most of the secondary schools and teachers in the region are concentrated in Sekondi-Takoradi (Zotorvie, 2010; Obuoba.fm, 2011). STMA has one technical school (Takoradi Technical Institute, TTI) and a few private vocational and nursing training schools. However, inadequate teaching materials, staff and infrastructural constraints make them unattractive to the wards of high class and expatriate workers.

Takoradi Polytechnic is the only polytechnic. There is no University in STMA, so secondary school graduates will have to travel to Tarkwa School of Mines to pursue mining related programmes or go to University of Cape Coast and other Universities outside the region. The situation has made it important for staffs in the metropolis who seek additional certification and training to either follow online courses or make frequent travels to institutions in other parts of Ghana where these courses are offered.

4.5.3 Housing

Housing in the twin city is provided by statal, parastatal and private entities albeit most houses in the metropolis are privately owned (Baabereyir, 2009; Zotorvie, 2010). They are either constructed by individuals, families or real estate developers such as SSNIT, State Housing and Regimanuel (Regimanuel Gray Group, 2009). 47% of residents live in large compound houses with single rooms and shared toilets. 32% live in detached and semi-detached houses. 11% live in flat apartments in high rise buildings often constructed by real estate developers. Only 2.1% live in mud and wood houses.

Access to basic amenities such as water, electricity and sanitation facilities contributes to the quality and value of houses. Majority of residents have access to electricity. Liquid petroleum Gas (LPG), fire wood and charcoal are the major sources of fuel for cooking. The Aboadze thermal plant located 17km east of Sekondi –Takoradi was built to supplement the country's electricity generated from the Akosombo and Kpong dams (Volta River Authority (VRA), 2006).

The entire metropolis has good access treated water but there are problems with waste management due to the metropolitan assembly's limited resources to manage waste collection (Baabereyir, 2009; Zotorvie, 2010). Waste collection has been sub contracted to private waste collection companies who often have limited resources in recycling solid and liquid waste (Baabereyir, 2009).

There are four classes of residential facilities in the metropolis. First and second class residential areas are located in old settlements which are now within the city centre whereas third and fourth class residential areas are suburban areas and small village enclaves initially located far from the city centre and hence were villages or farmlands but are now increasingly being converted into urban residential. First class residential areas have mostly state owned estate houses some of

which have been sold out to private owners. These areas are characterized by low population densities, large plot sizes, plush lawns, good infrastructure and sanitation. They include Palm Lands Estate, Beach Road, Anaji Estate, Chapel Hill, Airport Ridge and Windy Ridge. Many of these areas as can be seen from Figure 5.2 now have staff houses, guest houses, hotels and resorts that cater to staff from oil companies (Fieldwork, 2010, STMA, 2010)

Second class residential areas also have good access to infrastructure and sanitation facilities but have higher population densities compared to the first class areas. This is perhaps due to their location close to the city centre. They include Sekondi, Mpintsin Ridge, Effia Nkwanta and Takoradi. Many of these areas are home to middle and working class people in the metropolis, many of whom are being evicted by landlords who either want to rent the place out to higher income earners or to businesses (Egon, 2010; BBC Africa, 2011).

Third class areas such as New Takoradi, Kwesimintsim and Essipon are new suburbs on the fringes of the city. They are poorly serviced in terms of basic infrastructure and sanitation facilities. These are the areas where most evictees from first and second class residential apartments have resettled. Hence, rent and land in these parts have been increasing.

Fourth class residential areas are mostly small rural and indigenous enclaves located within the metropolis. They are traditional fishing and farming communities which have been engulfed by the cities expansion and urbanization. However, because of their traditional building and planning style which does not accommodate large roads and other modern infrastructure, these areas such as Twabewu and Whindo have poor access to extensive road network and sanitation (STMA, 2010).

Recently, the rents and cost of land have skyrocketed in the metropolis due to the influx of oil related workers into the metropolis and general shortage of affordable housing (BBC Africa, 2011).

4.6 Transportation and Communication

Sekondi-Takoradi is the major transportation hub of south western Ghana. It is linked to Accra and Kumasi by road and to Kumasi by the western railway line (Briggs, 2004; GMSSPMU, 2005).

The commonest means of transport within the municipality is by road. Minerals are transported from the interior via the western rail line or road and exported items go by sea abroad through the Takoradi Port. With the present activities offshore in the Jubilee oil field, air and sea transport have become increasingly important.

4.6.1 Railways

The first railway lines in Ghana were constructed in 1901 to link Sekondi to Tarkwa and later Kumasi in 1904. When the ports were built in the 1920s the railways were extended to the ports and the Railway headquarters moved to Takoradi. At the time, the ports and railways were jointly administered as Ghana Railway and Ports Authority and were later separated in 1976 into Ghana Ports and Harbours Authority and Ghana Railway Corporation.

By the end of the 1990s, 90% of the rail traffic was from bulk minerals from Awaso and Nsuta to the ports for export (GMSSPMU, 2005). In addition, the railway used to be an important source of employment in the municipality. Presently, the railway has lost most of its significance in transport to trucks and has continued to decline since the 1970s. Government administrations since the 1980s have tried to revive it to no avail. As a result, the trucks carrying these bulk materials compete with local commercial busses that carry passengers for the roads. The situation among other things has caused fatal accidents and the deterioration of roads from the interior linking Takoradi (ibid).

4.6.2 Roads

Road transport is very important within the municipality transporting people and freight such as timber, cocoa, cement and petrochemicals. There are major roads linking the municipality to major cities such as Accra and Tarkwa. Major trunk roads also link the city to the harbour, airport and central business area.

As mentioned earlier, the first and second class residential areas which are also located closer to the city centre have good roads whereas third and fourth residential areas have mostly unpaved poor roads.

The main Takoradi lorry station opposite STC yard and the State Transport Corporation (STC) yard are very important car stations where large numbers of people converge to board vehicles to other parts of the country by road. At these car stations one can find air conditioned busses, mini

busses and taxis which cater to different needs of passengers. It is also important to note that most of the busses have no scheduled departure time and travelers would have to wait till each buss is full before it moves. The average bus fare is GHS 9 (USD 5.6). The average journey time between Accra and Takoradi is roughly 3.5 hours.

However, there is a high prevalence of road accidents on the road, making it unattractive for some travelers (Fieldwork, 2010).

4.6.3 Takoradi Port and Harbour

It is located approximately 228km west of Accra and about 300km east of Abidjan which is the capital of neighbouring La Cote d'Ivoire (Halcrow Engineers, 2010). Takoradi Harbour, completed in 1927 was the only harbour serving Ghana until the Tema Harbour was completed in 1962 making it the second largest and only other commercial port in Ghana besides the Tema port (GMSSPMU, 2005). It was built as the first commercial port in Ghana to facilitate the export of minerals, cocoa and timber from Tarkwa, Obuasi, Kumasi and other towns in the interior (ibid).

The port has 2 breakwaters enclosing 90 hectares of sea. It has 5 multipurpose berths and 3 dedicated berths for oil, manganese and bauxite. There is a clinker jetty that serves GHACEM. There are also 10 buoys 2 of which handle containers as well as a dry dock for fishing vessels, barges and tug shipping. The wharf has a maximum of 10m while that of the buoys is 11m.

The Port has a covered storage area of 140,000m² and an open storage area of 250,000m² (Halcrow Engineers, 2010; Zotorvie, 2010). The Takoradi Port also has 100 reefer points for storing frozen food as well as a fishing harbour at Sekondi equipped with an ice – plant and capable of taking vessels up to 3m draft (ibid).

According to port authorities, its strategic location on the western coast of Ghana means it handles about 70% of exports from Ghana and has been used to export Cocoa, Timber, Manganese and other raw materials from the interior of this resource rich region (Halcrow Engineers, 2010). It handles about 37% of total national seaborne traffic (ibid).

It also serves as an important receiving point for imported materials and machinery for the mines in the interior of the region (ibid). In addition, it is an important transit port to landlocked

countries as well as vessels approaching from the north and west because Takoradi offers a shorter route to the Northern parts of the country which link landlocked neighbours such as Niger and Burkina Faso as compared to the Tema port whilst vessels approaching from the north and west would reach the Takoradi Port to Ghana first (ibid).

The port is accessed by railroads which convey heavy raw materials such as timber and manganese ore by road. Presently, due to oil activities, some dry docks at the ports have been filled and are being used as a receiving and assembling point for heavy materials and oil pipes before being conveyed to the oil rigs (Fieldwork, 2010).

The port is equipped with mobile cranes, forklifts, tele-trucks, reach stackers, RoRo tractors, and rail Shunters for handling all types of cargo among others to facilitate operations. The port is also used to anchor service ships which come to collect equipment, cement, food, water and other materials to supply to the rigs. They also come to dispose of waste generated by activities at the Jubilee oil field.

Although the port was modernized in 1986, and has seen public and private investments in recent years, it has seen few major infrastructural developments or expansions and maintenance of its existing facilities (GMSSPMU, 2005; Halcrow Engineers, 2010).

4.6.4 Sekondi Naval Base,

The Ghana Navy, like the Air Force was established in 1959 by an act of parliament (Ghana Armed Forces (GAF), 2011). It was built by the Nkrumah administration to serve as a point for the training of naval officers and to dock naval fighting ships. The Sekondi Naval Base also serves as a sea defence point on the western coast for Ghana. Presently, due to oil activities and congestion at the Takoradi Port, some commercial activities have been moved to the Naval Base. For example oil technical companies such as Technip have located an office at the base. Furthermore, the ample land around the base has been prepared for assembling pipes for onward shipping to the rigs. Thus it can be said that the base is now playing a complementary role to the Takoradi Port.

4.6.5 Takoradi Military Airbase

The Ghana Air Force was established in 1959 by a Parliamentary act (GAF, 2011; Ghana Government Official Portal, 2011a). With its headquarters in Accra and a base each in Takoradi and Tamale, it was the third service to be established aside the Army and Navy (ibid).

The Takoradi Airbase is a vast security zone, equipped with a training unit, landing facility, a control tower and trained air traffic support staff, staff houses, runs way, staff clinic, offices and military aircrafts (Fieldwork Observation, 2010).

It serves as a training base for the provision of offensive air support to the nation as well as international peace keeping operations. In addition, it helps in ensuring internal security (particularly around the mining areas in the Western region), the transportation of government officials, marshaling aircrafts, air lifting disaster victims, medical evacuations, aerial firefighting, aerial photographic survey assistance and power line inspections (GAF, 2011).

It is the only airport in the city and hence doubles as a commercial airport. It is a take-off, landing and converging point for staff from oil companies respectively. The flights are usually between Takoradi to Accra and between Takoradi to the Oil rigs.

Presently, it serves as a storage area for materials belonging to oil companies operating at the Jubilee Oil field. The buildings on the premises have been converted into office spaces therein.

4.6.6 Telecommunication

Sekondi- Takoradi has access to about 5 free TV stations which include the national TV station Ghana Television (GTV). Residents have to mount high TV poles to receive signals from the TV stations. In addition, there are paid TV channels which include DS TV, and Skyy TV.

The number of radio stations has also increased steadily in the metropolis though not necessarily traceable to the influx of oil companies (Arhinful, 2010). There are over 10 radio stations operating in the metropolis alone. They include Aseda F.M, Goodnews F.M, Skyy Power and Twin city radio stations (BBC Africa, 2011). Radio is a very important tool for disseminating information, entertainment and networking, discussions on community development, advertisements and public education (Arhinful, 2010, BBC Africa, 2011).

Vodafone Ghana (formerly Ghana Telecom) together with other private mobile phone operators such as MTN and Tigo Ghana Limited provide telephone services to the people. Residents have access to fixed and mobile telephone services although most people use mobile phones (Zotorvie, 2010).

All the mobile phone operators also provide internet facilities for their customers via mobile phones or modems for personal computers. Although this service is convenient, the tariffs are high and connectivity can be poor in some areas (ibid). Others make use of internet cafes which provide internet and printing services.

4.7 An overview of the Petroleum Industry in Ghana

The core oil industry comprises upstream, midstream and downstream activities (GNPC, 2008; Oil and Gas Policy for Ghana, 2008, Ghana Ministry of Energy, 2010). Upstream activities involve explorations, drilling of crude oil and natural gas production which is mainly handled by oil technical service companies. Midstream activities involve mainly logistic transportation and the transportation of produced crude oil and gas. Downstream activities involve refining, marketing, transportation and retail of petrochemical byproducts such as diesel and petrol (ibid).

Often, midstream and downstream companies are lumped together, making it difficult to classify certain companies that fall within these two categories (Venables, 1996; Porter, 2000; Malmberg, 2003; Karlsen & Lindeløv, 2005). Thus, I have presented the upstream companies separately in the next section.

Ghana had an existing downstream oil industry prior to the recent discovery in 2007. The Tema Oil Refinery (TOR) purchases and processes crude oil into petro chemical by products which are distributed and sold in Ghana. However, the discovery and subsequent production of crude oil from the Jubilee oil field is an upstream activity and hence this research focused on the upstream sector's development offshore of Ghana where exploration and drilling activities take place.

There are other businesses not involved in the core oil industry but are supporting the upstream businesses. They include hotels, transportation companies and catering companies who provide services which facilitate their activities.

Oil exploration began in Ghana as early as 1896 around Half-Asini (Zotorvie, 2010 GNPC; 2011). The first discovery of oil was in 1970, at the Saltpond field which produced an estimated 3.47 million barrels between 1978 and 1985. Since then, there have been about seven discoveries between the Saltpond basin, Tano basin and Cape Three points with the biggest discovery at the Cape Three Points - Tano Basin in 2007 (ibid).

Named the Jubilee oil field, is one of the biggest oil discoveries in West Africa in over a decade (Irvine et al, 2009; Egon, 2010; GNPC, 2011; Tullow, 2011). It is located between Longitude 2°W and 3°W and Latitude 4°N and 5°N straddling the Deep water Tano and the West Cape Three Points blocks about 60km away from the nation's western shoreline (ibid). The field has high quality light crude oil of 37.6° API and significant associated gas resource of 800 bcf and will produce an estimated 1 billion barrels of oil with a capacity for future exploration (Tullow, 2011).

It is jointly operated by Ghana National Petroleum Corporation (GNPC), Tullow Ghana Limited (Tullow), Kosmos Energy Ghana (Kosmos), Anadarko Petroleum WTCP Company (Anadarko), the E.O. Group and Sabre Oil and Gas (Irvine et al, 2009; Tullow, 2011). Figure 4.2 below shows oil activities on Ghana's offshore and oil blocks.

Tullow is the largest operator of the Jubilee oil field. First oil was produced in November 2010 and further explorations are being undertaken offshore between Ghana's western and eastern shores (see Figure 4.2) (Tullow, 2011).

It is estimated that about US \$752 million will be generated from the Jubilee oil field in 2011, peaking at US \$1.55 billion by 2019 and tapering off to US \$247 million in 2029 (Asiamah, 2010).

Ghana's upstream petroleum industry is guided by the GNPC Law, 1983(PNDCL 64), Petroleum Exploration and Production Law, 1984, (PNDCL 84), and the Petroleum Income Tax Law, 1986 (PNDCL 188).

Provision has been made for the development of the midstream and downstream sectors in the Oil and Gas Policy and the Local Content and Local Participation framework.



Figure 4. 2: Ghana’s offshore oil activity map showing the Jubilee oil field and its relative location to Cote D’Ivoire, Effasua, Sekondi-Takoradi, Accra and other offshore oil fields under exploration by transnational oil companies. Source: GNPC

In addition, the Petroleum Revenue Management Act, 2011, was enacted to regulate the collection and expenditure of funds accruing from the upstream oil industry.

However, the government has been criticized for the lack of a comprehensive regulatory framework governing upstream, midstream and downstream oil activities (UN Integrated Regional Information Networks, 2010).

Experts argue that in order to reap maximum benefits from oil revenue, it is essential that Ghana puts down a framework for accountability, transparency, stable political climate, strict guidelines

for Corporate bodies involved in Oil industry, regulation of government spending and borrowing; and more importantly investment in human capital and the private sector (Breisinger et al, 2009).

Sekondi-Takoradi is the closest city to the Jubilee oil field and has most of the basic infrastructure needed to support the offshore activities. Presently, most of the Jubilee partners and oil related companies have their operational base in Sekondi-Takoradi while their head offices are in Accra to deal with administrative and government relations.

CHAPTER FIVE

SEKONDI-TAKORADI, A SPATIAL CLUSTER?

5.1 Introduction

This chapter traces business activities in the oil industry, particularly those related to the upstream sector. It focuses on the clustering of oil related businesses in Sekondi-Takoradi, how they have adapted their services to demand from oil companies and how they compete and collaborate amongst themselves to stay in business.

The chapter also discusses the roles of certain agencies and associations in the industry and how they seek to safeguard their interests. Similar to the findings of Steen & Underthun (2011), majority of the upstream oil companies used in this research and in the industry presently are transnational companies whereas local businesses have more access to the midstream, downstream and associated businesses.

Finally, I have used the concept of cities as a location for economic activity to discuss the extent to which Sekondi-Takoradi as a city will be relevant as a location for an oil industry cluster in Ghana albeit the challenges therein due to urban primacy. I have discussed how legislative instruments can be used to facilitate this clustering process for strategic economic growth as Norway has done with Stavanger.

5.2 Upstream Companies

Upstream companies directly and indirectly (sometimes through the midstream companies) patronise the services of midstream and other supporting businesses showing linkage intensity and complementarities for a cluster formation. Majority of the upstream companies used in this research (except for GNPC) are privately owned. Some are transnational companies (TNCs). Dicken describes a TNC as ‘a firm that has the power to coordinate and control operations in more than one country, even if it does not own them (2007 , p.106). TNCs operate to maximize profit by locating near the market, increasing assets such as natural resources or accessing cheap labour (ibid).

5.2.1 Tullow

The Jubilee oil field is Ghana's largest and major offshore oil field. All partners in the Jubilee joint venture with the exception of GNPC are not Ghanaian owned. Tullow is the largest and major operator of the Jubilee oil field through the Jubilee joint venture partnership. It is therefore one of the most important upstream oil companies operating in Ghana's Jubilee oil field. The company is privately owned and was recently listed on the Ghana Stock exchange.

Tullow's discoveries and licenses in the Ghana have significantly increased its assets and significance in the global oil and gas industry. As Tullow's Travel Assistant (a male informant) corroborated in an interview,

Tullow is an oil and gas exploration and production company. Ghana, I should say is Tullow's biggest hit in its 25 years of operations. Tullow Ghana is Tullow's first big oil hit in terms of placing Tullow Plc amongst the big oil companies in the world. Tullow has a major share in Ghana's oil field. We've got at least 6 companies forming the chief Jubilee oil field partners which Tullow has got 55 percent of the total share with the other partners being Anadarko, Kosmos, Sabre Oil, the EO group and GNPC.

This statement is in line with the objectives of TNCs to maximize profit through increasing assets. In this case, the asset is the license to drill oil and gas (a natural resource) (Fujita, Krugman, & Venables, 2001; Dicken, 2007).

Commenting on why Tullow has its operational offices in Takoradi, he further explained that,

Takoradi is the supply base for the rig and our nearest emergency point of contact for the rig. There are no sea ports or air ports in the smaller towns and villages near the rigs. The supply vessels that supply equipment and other necessities to the rigs need a place to dock. Also, the air port here handles crew changes and flights between the rigs and Takoradi and then from Takoradi to Accra. So I would say because of the infrastructure here and closeness to the rig, it was more convenient for us to have an operation ground here in Takoradi than in Accra. Even though Accra is the headquarters, Takoradi is the operational ground.

The above statement sums the idea that cities play an important economic function by facilitating resource extraction through their infrastructure (Henderson et al., 2001). It further shows how the location of the company's operational office can be the unintended consequence (latent function)

of inequalities in Ghana’s infrastructural development considering that Effasu, the nearest village to the Jubilee oil field lacks such infrastructure.

As a major operator in the Jubilee oil field, the company works with a large number of oil service and technical companies some of which I will elaborate on subsequently. The Travel assistant said, ‘*We are located here because most of Tullow’s service companies are located in Takoradi. We work with Schlumberger, Baker Hughes, Sea Weld, Oceaneering, etc. and their offices are all located in Takoradi*’. It can be inferred from the above statement that the incentive for oil service and technical companies to locate in the twin city is in order to access each other’s services. This corroborates the literature and shows complementarities between Tullow and auxiliary services providers such as Baker Hughes and Schlumberger which provide technical and drilling services (Porter, 2000; Fujita et al., 2001; Dicken, 2007). It also shows how cities, and for that matter Sekondi-Takoradi, serve as a platform for facilitating economic activities by enabling competing and complementing businesses to cluster and take advantage of specialized technology, inputs and services (Fujita et al., 2001; Henderson et al., 2001; Dicken, 2000).

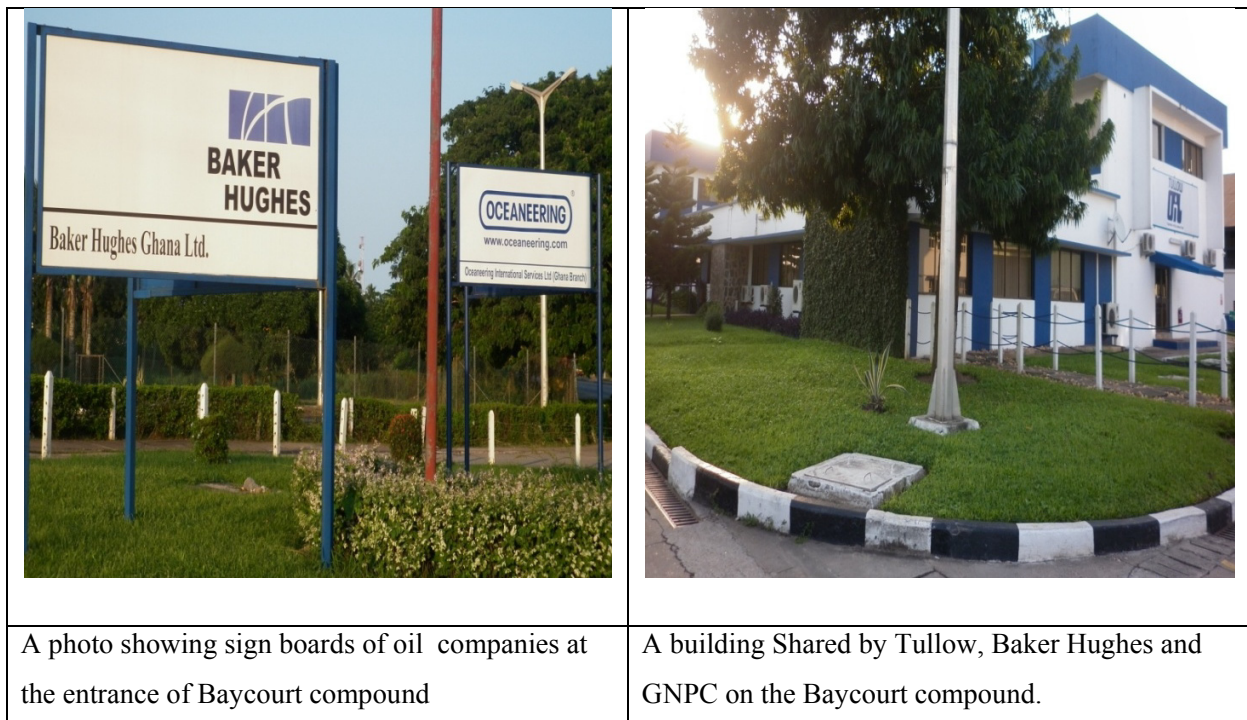


Figure 5. 1: Photos of the Baycourt Compound near Kwame Nkrumah Roundabout (Takoradi)

Tullow has three main operational areas in Takoradi. The main administrative office is located at Baycourt (the premises of the now defunct British-American Tobacco Company in Takoradi) near the Kwame Nkrumah roundabout.

The second base is that of the Takoradi Airbase area which mostly has staff in charge of coordinating flights between the oil rigs, and Accra. There is also staff in charge of the oil pipes storage area. The third base is that of the Shore base, located at the Takoradi Harbour where equipment and supplies are also stored and dispatched as per demand.

As seen from figure 5.1, I observed the offices of Tullow, Baker Hughes, Oceaneering, and GNPC all having offices on the same premises (Baycourt). This shows evidence of a geographical clustering.

5.2.2 Baker Hughes

Similar to Tullow, Baker Hughes is a private transnational oil technical company which provides services in explorations and drilling. Baker Hughes also has its Takoradi office located at Baycourt. In a brief interview with the Administrator of Baker Hughes, Takoradi Branch, a female executive who grew up in Accra but has lived in Takoradi for over 5 years, she said,

Baker Hughes is a global company that provides services to the Oil and Gas industry. In Ghana we operate three product lines; Baker Oil Tools, Intec (drilling) and Atlas (wire line). We have two branches in Ghana, at Accra and Takoradi. Takoradi is our operations ground whereas Accra is more of administrative and government relations. We have been in Takoradi since November 2008.

What I have said about Tullow in terms of the location of their operational base is true for Baker Hughes. For example, the company also has its headquarters in Accra whereas their operations base is in Takoradi for two main reasons. First, is to access infrastructure in Takoradi which has proximity to the oil rigs where their services are applied. Secondly, their major client (Tullow) has their operational base in Takoradi. Thus, their location could be to maximize profit by locating close to the market which in this case is Tullow and other upstream oil companies. As noted in chapter 2, access to the market is a factor in the location of firms, including TNCs (Fujita et al., 2001; Dicken, 2007).

5.2.3 Sigma-Base Technical Services Limited (Sigma)

Sigma is a private job-training center in Takoradi which trains welders for oil and gas service companies. Unlike the two TNCs discussed above, Sigma is a local Ghanaian business. The company is a member of GOGSPA and has trained over 900 students in welding with about 15 percent being women. It had been in Takoradi for about 1 and half years (as at June 2010) and has its head office and only branch in Takoradi. In an engaging interview with the Corporate Affairs and Community Relations Director of Sigma, a native of the Western region who has worked in the Niger Delta region for 22 years, he explained that Sigma offers engineering services for oil and gas platforms, procurement, installation, fabrication, training and personnel recruitment for companies. According to him although the company is based in Takoradi, they are able to train, recruit and send employees to companies operating on the rigs when needed.

Contrary to the other companies discussed above, Sigma has its headquarters in Takoradi as a model for other oil service providers to follow suit. As a spokes person for his company, an indigene and a pioneer member of GOGSPA, my informant had strong opinions on socio-economic challenges resulting from the oil activities some of which I have discussed in chapter 5.5.2. Structural functionalists have recognised the multiple roles assigned to an individual actor based on his status set and recognize how that individual also influences the social structures.

5.3 Midstream and Down Stream Companies

As mentioned earlier, in the oil industry as in other industries, the midstream sector is often merged with the downstream. I identified two companies; Zeal Environmental Technologies Limited (Zeal) and Macro Group Limited (Macro) which I have grouped here by virtue of the environmental, logistic and labour support they lend to the oil industry on the one hand and the services that they provide for businesses outside the oil industry and in the case of Zeal, businesses in the downstream. Tullow is a major client with the two companies mentioned above.

5.3.1 Zeal Environmental Technologies

Zeal is a local private waste management and disposal company which started as a small scale corrosion engineering service Company in 1977. Prior to the oil discovery in 2007, Zeal was managing waste from mining industries on the one hand and offering maritime waste reception services at the Takoradi Port.

Currently, it has diversified its services to manage drilling generated waste from Ghana's offshore oil wells. Zeal may therefore be classified as a midstream company because it serves clients from a diverse array of industries some of which are outside the oil industry such as ships, barges and vessels.

Since July, 2007 the company has been in Takoradi. We have an administrative branch at the Takoradi Port, whereas our head office is in Accra. We also have a newly acquired operation site at Nyankrom near Shama because the ports space allocated to us cannot house all our equipment and plans to setup an incinerator,

says the General Manager of Zeal, a graduate who returned from his studies in Europe to work in Ghana.

Zeal has its head office in Accra as the other two upstream companies Tullow and Baker Hughes although it is being administered from Takoradi. From the interview, it was not clear their reasons for locating the head office in Accra but what is clear is their inability to secure enough space at the Takoradi Port to accommodate their business expansion, making it necessary for the company to secure land in Nyankrom for this purpose.

He (the General Manager of Zeal) said, 'our major clients in the oil industry include Tullow, Kosmos, ENI, Vanco, Hess, Baker Hughes, Schlumberger and West Africa Gas Pipeline Company (WAGPCO)'. As observed from the preceding statements, the company was not primarily into collecting waste from the oil industry. Rather, it worked mostly with the mining and shipping industry prior to the recent oil discovery in 2007. However, with the increased demand for waste disposal services from offshore oil activities, it has diversified its services by acquiring new equipments, land and expertise in order efficiently serve the major oil companies listed in the quotation above. This shows elements of vertical linkages and complementarities between Zeal which operates in the midstream sector, and Tullow, Kosmos, ENI, Vanco, Baker Hughes and Schlumberger which are in the upstream. There are also horizontal linkages between Zeal and WAGPCO since both are in the midstream. Further, there are elements of product differentiation and specialization which is associated with the growth of firms in a cluster. That is to say, as a firm grows, it could either maintain its core services and expand all of them or specialize in delivering specific services. It seems Zeal is trying to expand its services and

specialize more in waste disposal for the upstream oil sector. It is however, not possible to assess the extent to which the company may be at risk of a lock-in due to overembeddedness and path dependence in the waste disposal business.

My informant had previously worked with a mining and a cement company. He can therefore be regarded as skilled labour that has moved across firms in the extractive industry. It may be noted from previous chapters that the Western region has the highest concentration of extractive industries in Ghana. It is possible that such specialized labour from related industries is attractive for the oil companies (see a discussion on other aspects of labour under chapter 5.5.3).

5.3.2 Macro Group

Macro is a private holding company comprising three independent subsidiaries namely: Macro Shipping Limited, Macro Logistics Limited and Macro Trucking Limited. It was formed in July 2005 and has its headquarters in Takoradi, as well as branch offices in Tema Port and Kotoka International Airport (KIA) Accra.

Before the oil discovery, Macro served multi-national gold mining companies in Ghana, GHACEM and the shipping industry. The company started adapting its services to demand from the oil industry in 2008. Some of the general services it provides include ship-broking, agency, international shipping, supply chain management, cargo handling, inland haulage and provision of off-shore logistics supply services.

With over 60 employees Macro currently provides Port and Harbour Agency Services including handling all offshore supply vessels servicing the Jubilee oil field. Macro Logistics offers overland haulage of materials to the Jubilee oil field project at West Cape Three Points, Ghana. The Managing Director of Macro Group confirmed that 80 percent of their clients are in the oil industry. Some of their major clients in the oil industry are Tullow, Kosmos, Baker Hughes, Oceaneering, Modec, and Schlumberger, to mention a few. In an interview with the Managing Director of Macro Group with over 25 years experience in the shipping industry (showing highly specialized skills), he pointed that,

all the subsidiaries in Macro are involved in the Oil industry. Strategically we changed our direction to building capacity for the oil industry. We have retrained our staff and employed new staff for Environment Health and Safety. We also increased our trucks from 1 to 4 trucks by 2008

in time for the oil industry and hence, the 'Takoradi branch is more closely related to the oil industry.

Again, the this statement shows elements of product differentiation and specialization due to growth as all 3 subsidiaries of this young company are becoming more tailored to providing services to the oil industry. The company's work with major oil and oil service companies in the upstream sector shows the vertical linkages it has built in the oil industry. In addition, it competes with rival logistics companies such as Stellar Logistics and Antrak Ghana Limited which are foreign owned. This shows the competition between firms in a cluster as all these logistics companies have offices in Takoradi.

Furthermore, the location of the company's core businesses in Takoradi (shipping and haulage), Tema Port (shipping) and KIA(where it has meet and greet services) shows a strategic location in order to access the market (Fujita et al., 2001; Dicken, 2007).

5.4 Supporting Businesses

The businesses I have grouped here are not part of the core oil industry. That is to say they are neither upstream, midstream nor downstream businesses. However, they do play important roles in supplying services to the businesses in the oil industry. The types of services they provide are discussed below.

5.4.1 Nyame Yie Coldstore

Nyame Yie is a Ghanaian family business which has been in existence for over 40 years. It is a trading company that supplies seafood, poultry and meat. The company engages in the import and export of fish to Spain, Europe and China. The company has its head office in Takoradi and sales points in about six regions in Ghana.

In an interview with the deputy managing director of Nyame Yie (a female informant) she explained that the company supplies sea food to mining companies, hotels, restaurants and catering services. She said,

We sell to Akroma Plaza, Raybow Hotel and Hillcrest Hotel. We serve some of the Hotels in Accra. Because we have an EU approved factory, we are able to process fish for any first class hotel. We also serve Airline Catering and some mining companies and other businesses in Tarkwa. We supply cold stores, ATS (Allterrain Services Group), ... I cannot mention all their names because

we have other people buying who have the direct contract so we never know whether it is for this company or that company.

According to her, the oil discovery has brought some changes in her company's clientele and products. In addition, the business is looking to diversify into catering to the rigs and she thinks the cold store and processing plant capacity is big enough for the present demand. She said,

We have had additions. We used to sell our fish whole but one of our major clients, ATS that caters to Tullow, likes their fish filleted so we have to clean it and send it ready for use. We also process it [fish] for export. Nyame Yie cold store hasn't really hit directly into the oil industry market. We have registered a company that is going to do catering and we have Green Summer that is also doing catering and other things; so it is like a group but the parent company is Nyame Yie.

Again we see elements of vertical and horizontal linkages between Nyame Yie and other businesses involved in the oil industry. In terms of horizontal linkages, the company supplies fish to ATS and Raybow hotel, showing linkages between the supporting businesses. Although she is not sure about all the companies that buy from the business, large oil companies like Tullow have a catering company like ATS, so they buy from them indirectly. In addition, there are elements of specialized product delivery (filleted fish) to clients and product differentiation (catering).

5.4.2 Allterrain Services Group (ATS)

ATS is a privately owned Ghanaian company with 5 shareholders in Accra. The company has been in existence for 10 years and has branches in Nigeria, Mali, Zambia and some other African countries. The group has its major operations in catering, facilities management, design, maintenance and communication. Before the oil discovery, their major clients in Ghana were mining companies in Tarkwa. Presently, ATS handles the catering, housekeeping and laundry services for Baker Hughes and Tullow.

In a joint interview with their operations manager (an Indian who has been working in the food industry across countries) and a female (Ghanaian employee who is also an indigene of the region) of ATS company, they explained that, *'ATS caters for about 200 people every day, breakfast lunch and dinner. But breakfast and dinner are only for the in-house residents [staff living in the companies' guest houses] whereas lunch is for both staff and residents stationed at the Airbase, Baycourt, and Shore base'.*

He added,

The clients provide us with all the equipment; kitchen equipment, cutlery etc. We only provide the raw materials and our labour force. We moved some of our services to Raybow Hotel where we cook the Ghanaian meals because initially, there were less number of staff (Tullow staff) before it started increasing so we needed more space. We have a kitchen and chef at the Airport ridge that feeds the 10 guest house residents for Tullow. We've taken over the Paloma Beach Annex house where the big boss of one major oil company lives. The lunch cooking for staff at the Air Force base and Baycourt is done there. Dinner is also cooked there. Since there's no kitchen at Paloma Guest House, the food is transported from Airport ridge to Paloma). So the food is the same menu because the chef prepares meals according to the Tullow staff menu.

The statement shows a high level of coordination and cooperation between ATS on one hand, their clients (Tullow and Baker Hughes), as well as Raybow Hotel and Paloma Guest house who are competitors in the hospitality industry. ATS provides the raw materials and expertise for the catering whilst the clients (Tullow and Baker Hughes) provide kitchen equipment and cutlery showing cooperation and collaboration. In addition, the kitchens in their clients' guest houses are being used by ATS chefs to provide dinner and breakfast for in-house residents who are mostly expatriates and staff who have newly moved to Takoradi. In that sense, it can be called a vertical linkage as inputs are exchanged between upstream oil companies and ATS which is a supporting business. Also, a horizontal linkage can be said of ATS', use of Raybow's kitchen for catering to Tullow's staff.

Secondly, it shows a high level of knowledge of the operations, needs and weaknesses of the competing and complementing firms. For instance, ATS has to depend on Raybow for a kitchen to prepare meals for Tullow staff. They have knowledge of their client's operational areas at the Airbase, Shore base, etc which enables ATS to effectively serve Tullow. It appears that their proximity and intense interaction within Sekondi-Takoradi enables all parties to effectively work with each other and this shows a high level of tacit knowledge exchanges among firms in the core oil industry and the supporting businesses.

5.4.3 Raybow International Hotel

Raybow Hotel is an up-market hotel with about 190 rooms (Briggs, 2004). The hotel has facilities such as wifi connectivity, swimming pool, air conditioning and car parking. The hotel has been operating for over 14 years but has no other branch besides the one in Takoradi.

According to the General Manager of Raybow, the hotel has experienced changes in clientele and the kind of services clients demand since the oil discovery in 2007. For instance, the occupancy rate has gone up by over 20%. The transport assistant of Tullow said in an interview, *'We work with a number of hotels and guest houses. For instance, Raybow Hotel and Hillcrest. In a month we do about 20 or 30 hotel bookings for the company which translates to about 3000 cedis (\$1,675)'*.

This shows that the hotels and guest houses are benefitting from increased demand due to oil activities. In addition, revenue accruing from conference and meeting bookings has increased. This hotel now serves major oil and logistics companies such as Tullow, Schlumberger, Kosmos, Baker Hughes, Expro, Stellar logistics and ICM logistics.

In order to make the hotel more attractive to high end clients and to increase market share, he added that the hotel has made major improvements and changes in terms of equipment and service delivery. For example, there has been refurbishment of their conference rooms and improvement in wifi internet access through the hotel's own resources.

It can be observed that Raybow has also made changes in their services in order to meet the demands of their high end customers, particularly those from the oil industry. As can be observed from the paragraphs above, the hotel serves clients from the core oil industry as can be seen from their clientele. This shows how the hotel is trying to increase profitability by offering specialized services that their high end customers demand. For instance, wifi connectivity and permission for ATS to use their kitchen for catering to Tullow staff.

5.5 Regulatory Bodies and Associations

In Porter's definition of clusters, he pointed to the presence of 'associated institutions' (2000, p.254). Structural functionalists also acknowledge the presence of actors and their roles (Merton, 1968). There were a number of associations and agencies encountered during this research. I have used three of them (one government agency, one business association and one labour

union) to discuss pertinent issues concerning the emerging oil industry. They include GNPC, GOGSPA and the General Transport, Petroleum and Chemical Workers' Union (GTPCWU) whose activities I have discussed below.

5.5.1 Government Agencies

One of the key governmental agencies regulating activities in the oil industry is Ghana National Petroleum Company, previously a Corporation (GNPC). It was established and given its roles by an act in 1983. GNPC is operated as a commercial venture, liaising between oil companies and the Ministry of Energy. In the upstream oil sector, it ensures that pre licensing requirements are met by oil companies and that they continue to abide by government regulations during operations. It also advises government on oil related laws, policies and regulations that will facilitate the sustainable recovery of petroleum resources in Ghana.

As stipulated in the GNPC Law 1983, the functions of the corporation are to:

- (1) ...[U]ndertake the exploration, development, production and disposal of petroleum.*
- (2) (a) promote the exploration and the orderly and planned development of the petroleum resources of the Republic;*
 - (b) ensure that the Republic obtains the greatest possible benefits from the development of its petroleum resources;*
 - (c) obtain the effective transfer to the Republic of appropriate technology relating to petroleum operations;*
 - (d) ensure the training of citizens and the development of national capabilities in all aspects of petroleum operations; and*
 - (e) ensure that petroleum operations are conducted in such manner as to pre-vent adverse effects on the environment, resources and people of Ghana.*
- (3)(a) advise the Minister and the National Energy Board on matters relating to petroleum operations;*
 - (b) engage in petroleum operations, alone or in association with others;*
 - (c) enter into petroleum exploration and production agreements and any other petroleum contracts providing for the assistance, participation or co-operation of contractors in connection with petroleum operations;*

(d) alone or in association with others, buy, sell, trade, store, exchange, import or export petroleum and for this purpose, acquire or operate any installations, facilities or means of transportation;

(e) engage in research and development programmes related to petroleum; and

(f) engage in any other activities, alone or in association with others, as may be necessary or desirable for the carrying out of petroleum operations.

(GNPC Law 1983, p.1).

In order to perform these functions GNPC has the legal power to:

(b) enter into contracts and agreements with individuals or firms in or outside the Republic and with the approval of the Minister purchase or own shares in other companies engaged in activities related to the objects of the Corporation or sell or transfer those shares;

(c) purchase, lease, establish, complete, expand, repair and manage factories, plants, installations and facilities that are necessary in connection with the exploration, development, production and disposal of petroleum and subject to the approval required by an enactment, provide and manage road, marine and aviation communications as well as means of transport and any other facilities;

(d) to execute service or work contracts or consultancy agreements with firms or individuals, either citizens or otherwise;

(e) to own patent rights and to acquire licences and leases and the right to obtain and use any kind of information concerning inventions, designs and processes relating to the petroleum industry;

(j) to execute agreements with purchasers for the export of crude oil and natural gas.

(g) where expedient, to employ agents or contractors to carry out petroleum operations on its behalf.

(GNPC Law 1983, p.2).

From the quotations above, it can be seen that GNPC has a broad range of responsibilities and power in the oil industry as a government agency. Following the oil discovery in 2007, GNPC has registered businesses (332 as at June, 2010) operating in the oil and gas industry. The Area Manager of GNPC in Takoradi defended this action saying that it is meant to regulate activities within the oil industry to prevent foul play and protect national interests in the oil fields for example. As I mentioned in Chapter 4 GNPC is a stakeholder in Ghana's Jubilee oil field and

also doubles as regulatory body acting on behalf of the government. However, my informants from General Transport, Petroleum and Chemical Workers' Union (GTPCWU), GOGSPA and Sigma Base do not agree that GNPC is using its powers to perform the responsibilities of ensuring knowledge transfer and safeguarding the economic interests of Ghanaians as stipulated in the GNPC Law 1983. This may be due to a conflict of interest in playing multiple roles to safeguard the interests of Ghanaians on the one hand and to operate profitably as a business entity on the other hand. It may also be due to understaffing at GNPC's Takoradi office which is meant to directly oversee activities in the field. As the Area manager confirmed in the interview, *'we are only three staff here. We shall expand when the oil production takes off'*.

The ensuing sections present associations in the oil industry and their assessment of GNPC's performance with respect to its powers and responsibilities.

5.5.2 Business Associations

The oil discovery has brought with it anticipated economic benefits which local businesses want to be part of. Indeed the participation of local companies in the industry is necessary for overall economic development through employment creation, knowledge transfer, local capacity building and economic stimulation (Venables, 1996; Lundvall & Maskell, 2000; Porter, 2000; Abuabey-Dortey, 2009; Ministry of Energy, 2010). Ghana's local content policy framework mandates oil companies to prioritize the use of local goods and services even if they are 10% more expensive (Ministry of Energy, 2010). However, it is not clear whether this policy is being applied fully.

Ghana Oil and Gas Service Providers Association (GOGSPA) is a non partisan business association seeking to protect the interests of Ghanaian businesses and their opportunities in the oil industry. It was formed in anticipation of business activities from the oil industry and the alleged inability of GNPC to fully provide support to Ghanaian businesses seeking contracts in the industry. It was formed in September 2009 and inaugurated in November 2009 at Takoradi in recognition of the city's unique role in the oil industry.

In a joint interview with the president and vice president of the association, each having extensive experience in the oil and construction industry respectively, they alleged that although local oil service companies paid (GHS 1000) to register with GNPC, they were offered no

contracts due to what in their opinion are transparency issues. The information I received from GNPC's Takoradi Area Manager is that the role of GNPC is to ensure that oil service companies followed the laws governing oil industry activities. It is clear from the aforementioned that GNPC does not necessarily facilitate the competitiveness of local firms as means to ensure technological transfer, economic benefits for all Ghanaians and man power development as enshrined in sections 2b, 2c and 2d of GNPC Law 1983.

This finding corroborates a similar finding by Steen & Underthun (2011). As it is in Ghana, the major oil companies prefer working with more established suppliers as opposed to smaller ones. It appears the local businesses who currently have contracts in the supply chain (refer to Chapter 5.3 to 5.4.3) are those who are established and have the capacity to meet their industry demands. Without an intervention from government, the companies would continue using suppliers that would safeguard their interests as TNCs. It is therefore not surprising that the local businesses in the industry have come together to fight for their interests.

5.5.3 Labour Issues

Clusters attract skilled labour (Malmberg, 2003). One of the anticipated benefits from Ghana's oil find is a creation of more job opportunities to help reduce youth unemployment in the country and knowledge transfer (Abuabey-Dortey, 2009; Lui, 2010; Ministry of Energy, 2010; Nkrumah, 2010; BBC Africa, 2011). It is said that the jobs may not be created directly from the oil companies but from auxiliary services such as consultancy, logistics, construction, restaurants, and hotels, among others (ibid).

Ghana's local content policy seeks to facilitate or support the development and inclusion of Ghanaians in the industry (Ministry of Energy, 2010). The policy seeks the inclusion of 50% Ghanaian management, 30% technical staff and 100% other staff in oil companies from the start of operations with an increment of up to 90% within 5 years after petroleum activities begin (Ministry of Energy, 2010 p.9). However, findings in the field point to hindrances in the implementation of this policy owing to various factors such as the background of companies that win contracts, the hiring process of companies, level of education and working attitudes of local labour.

I interviewed the Western and Central regional and industrial research officer of the General Transport, Petroleum and Chemical Workers' Union (GTPCWU), a trade union under the Ghana Trade Union Congress (TUC) seeking to safeguard members' conditions of service. He recounted various instances where the union had intervened in the working conditions of members and expressed his concerns over the employment of Ghanaian workers in the industry. He told me,

The indigenes here cannot get access to jobs. They want to be employed in the oil sector because they see money in it but GNPC is a problem. They award the contracts and are supposed to regulate the industry. The contractors here who have registered and meet the requirements still do not win the contracts. Those who win the contracts are mostly not based here and so they hire their staff and bring them here to work, unaware of the local people's capacity. Previously, there were many foreigners but now more Ghanaians are being employed though most are from outside the region.

My informant from Sigma, an indigene added,

When they [the local people] complain, their complaints are not properly addressed because they have no contact with those who make the [government] plans. Take for instance job opportunities; Yes, it's true that the oil belongs to Ghana and not a particular community but when there are vacancies and Ghanaians from Tema are employed and brought all the way here to operate under the very eyes of the local people closer to the rigs, with no training, they feel left out. You can imagine when even cleaners and air condition operators are brought from elsewhere to work here.

These statements corroborate previous news reports and documentaries about the expectations of local unemployed youth and how they eagerly seek employment in the oil industry albeit challenging and unsuccessful (Lui, 2010; Nkrumah, 2010; BBC Africa, 2011). Whereas Steen & Underthun (2011) point that the background of companies which win contracts could lead to the exclusion of local businesses in the industry, the statements above point that not only could businesses be excluded but it could also lead to the exclusion of local labour.

Another barrier to the hiring of local people is lack of skilled labour and limited access to training opportunities. As stated in chapter 2, firms in clusters seek to attract skilled labour. The discussions in previous sections (refer to 5.3.1) point that skilled local labour has moved into job positions within the core industry, there are still positions held by extra locals whilst the locals

complain of unemployment. My informant from Macro suggested that in order to bridge this local labour deficiency and unemployment gap, *'the universities have to change their curriculum and train Ghanaians to come gradually into the industry'*. But, my informant from GTPCWU is of the view that the educational institutions in the region such as Takoradi Polytechnic (T Poly) and University of Mines and Technology, Tarkwa (UMaT) which offer short courses are too expensive for local unemployed youth. Zotorvie (2010) observed that some local fishermen and youth were trained to help in oil spillage response. Yet, the opportunities for knowledge transfer from oil companies to local people are hindered where some oil companies have adopted the 28 days alternating expatriate crew change, enabling foreign expatriates to be used in place of local workers. This will make it difficult to train Ghanaian workers to replace them and undermine the local content policy goals of knowledge transfer from the transnational companies to Ghanaians.

Furthermore, the hiring process in oil companies creates a barrier to local job seekers. A visit to the websites of both Tullow and Kosmos who are major oil companies show clearly a link indicating where to send job applications but no specific names nor telephone contacts to communicate with concerning a job a person wants to apply for. Worse still, there is tight security at Baycourt where a number of oil companies have their offices. Prospective job applicants would have to leave their applications at the security desk which is then forwarded to the company receptionist and then to Human Resource Department. In the process, application letters could be misallocated or misplaced. It is further difficult to ascertain the chain of feedback process involved where an applicant is not considered. This situation has created opportunities for some unscrupulous people acting as job agents and brokers to take advantage of unsuspecting job seekers.

Employee attitudes to work could also create barriers to their employment. Commenting on his experience with local people's attitude to work in Takoradi, my informant from Macro said, *'Coming out of bigger populated areas like Accra and Tema, I would say the attitude to work in Takoradi is not satisfactory to me. People want too much time to rest and for leisure. That is my major problem with people we employed from here. In Accra and Tema it is different. People are willing to work more hours for pay'*.

Going by this statement and if indeed other employers in the city share the same opinion, this could be a challenge for local youth seeking employment in the oil and gas industry when they

compete for jobs with people from other parts of Ghana such as Accra. Perhaps this could be the reason that some employers as stated earlier hire their staff from Accra and Tema or it could be that they are based in Accra. But from my experiences and observations, life in Takoradi as a smaller city is more relaxed and not a fast paced as it is in Accra for example. As such employers who are not familiar with the life style in this part of Ghana would need to consider this difference in working attitude.

Finally, I observed that GNPC's office in Takoradi that directly oversees the oil activities offshore and within the twin city is understaffed (with only 3 staff as at June 2010). It seems the agency is not abreast or actively involved in resolving some of these labour issues.

5.6 Sekondi-Takoradi; A location for a cluster formation?

Literature shows the importance of cities as economic centres (Jacobs, 1984; Glaeser, 2000; Kotler et al., 2002; Caves, 2005). Historically, Sekondi-Takoradi has played the functions of an administrative centre, port city, and commercial centre (GMSSPPMU, 2005; Owusu, 2005; BBC Africa, 2011). With the oil activities offshore, which due to its economic nature may be seen as a productive pressure, it appears that Sekondi-Takoradi has begun to evolve into an oil city. Its major infrastructures such as port, Naval Base, Airbase and roads are all being used to facilitate the offshore activities as discussed in Chapter 6.

It is not clear the extent to which Sekondi-Takoradi as a city can be called a location for a cluster. Neither is it easy to establish what type of cluster this may be. What is clear from the data collected (see Figure 5.2 below) is that there is a high concentration of oil related companies within and around the Airbase, Takoradi Port, the Naval Base and Baycourt. In this sense, it can be called a geographical or spatial cluster.

The clustering may be attributed to the importance of the infrastructure (Ports, Naval Base and Airbase) in the daily operations of oil companies as explained by Tullow's transport officer in Chapter 5.2.1 for instance. A further discussion of the infrastructures used in operating the offshore oil fields has been discussed further in Chapter 6.

It may also be due to the presence of specialized companies within the city. According Dicken (2007), 'the strong tendency for knowledge and technological innovation processes to appear in geographical clusters creates a major incentive for firms to locate their relevant operations in

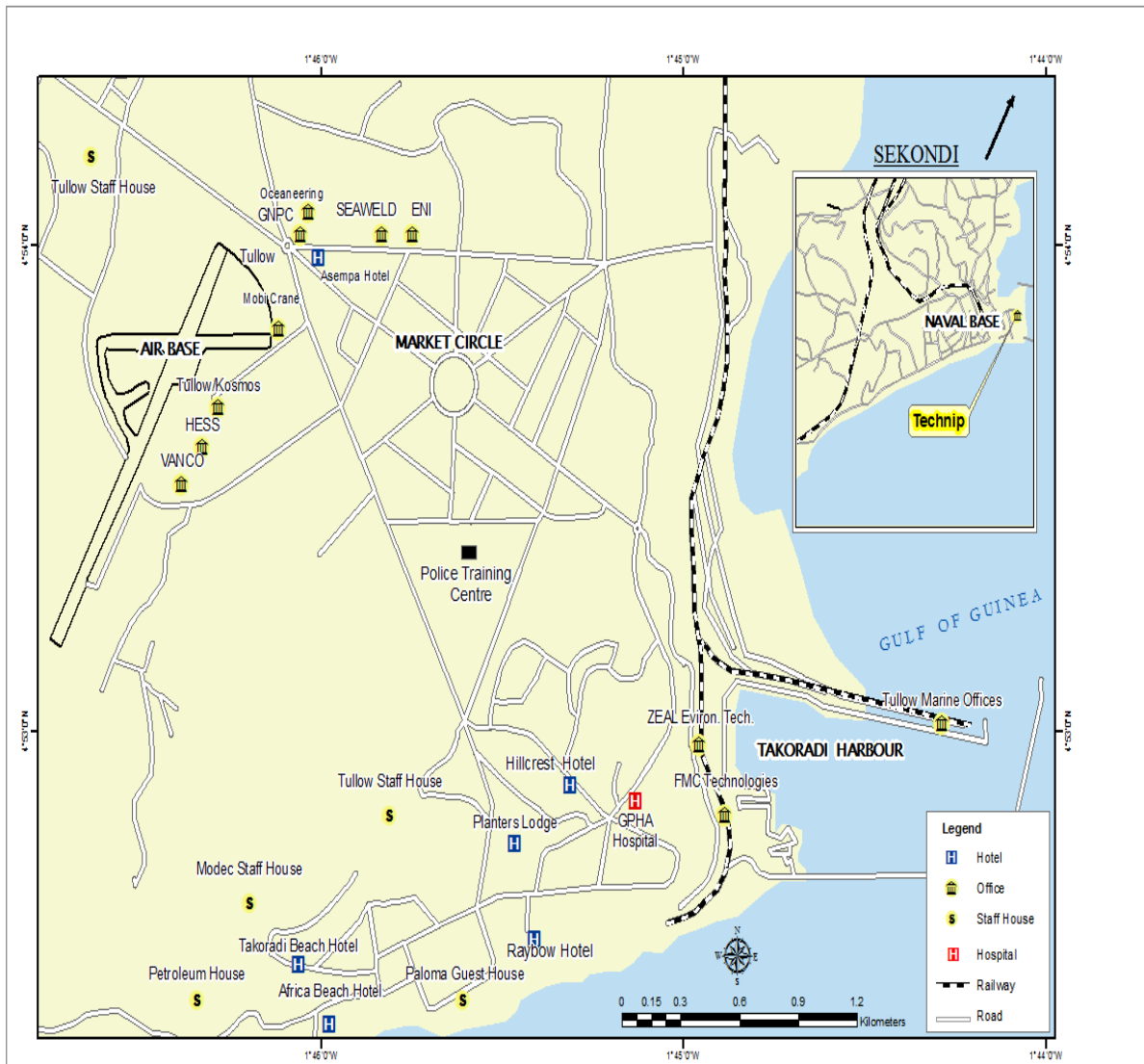


Figure 5. 2: A Map indicating a geographical cluster of oil companies and activities in Sekondi-Takoradi.

such locations...the incentive to locate where the knowledge and the action are becomes very powerful' (Dicken, 2007 p.111). Thus, oil related firms have located their operational base in Sekondi-Takoradi where "the knowledge and action are". That is where firms can access complementary firms with the knowledge and technology needed for oil exploration and drilling.

There also seems to be a good representation of specialized service providers, competing and complementing businesses, trade associations and governmental regulatory bodies which according to Porter (2000) are characteristics of a cluster.

This clustering seems to go beyond a spatial cluster, towards an industrial cluster (see Figure 2.1) because preceding discussions have demonstrated intense horizontal and vertical linkages between firms in the industry and with other supporting businesses (Venables, 1996; Porter, 2000; Malmberg, 2003; Karlsen & Lindeløv, 2005). I observed a high level of local interaction between the firms as they did business with each other. For instance, the interrelations and corporation between Tullow, ATS, Raybow and Nyame Yie in providing food for Tullow staff.

Explaining why firms collaborate within the city, my informant from Macro Group said, *'It works this way, when Tullow appoints an agent, all companies working with Tullow have to use that agent as far as the Jubilee oil field project is concerned'*.

That means, Tullow, the largest operator in the Jubilee oil field, encourages firms within the supply chain to collaborate with each other. Remarkably, ATS, Raybow and Nyame Yie can be said to be competing companies as they can all provide catering services showing that the linkages are not only between auxiliary firms but also competing firms even outside the oil industry itself.

Some informants placed a high value on the official recognition of the city as Ghana's oil city and the siting of more oil companies within the city. According to the president and vice president of GOGSPA, *'With every oil discovery, there is a city linked with it. In the United States it is Houston, in Canada it is Calgary, in Norway it is Stavanger, in Nigeria it is Port-Harcourt, and in Ghana the city is Sekondi-Takoradi'*. Thus, they feel Ghana should also have an oil city as the above mentioned oil producing countries, further underscoring the importance of the twin city in the oil activities offshore.

Elaborating the importance of oil companies siting their head offices in Takoradi, the Corporate Affairs and Community Relations Director of Sigma, a member of GOGSPA and an indigene of the Western region, emphasized that oil companies *'will eventually have to come to Takoradi before they can operate better in the community. They cannot stay in Accra and give instructions here [Takoradi]'*.

That is to say, from a social responsibility and conflict prevention perspective, the oil companies share spaces (the sea and landed property) with the local communities and as such must engage them in decisions that will affect their livelihoods and assets.

Therefore, locating close to their operations offshore will facilitate this interaction (see further discussions in Chapters 6 and 7 of Zotorvie, 2010). Having lived in Nigeria's Niger delta region for over 20 years, he recounted his bitter experiences on the causes of Nigeria's Niger Delta conflicts which he attributes to the oil companies failure to involve the local community in their operations and decisions from the onset of drilling. He thinks Ghana is also making the same mistakes and so if steps are not taken in this initial stage of the oil industry, there will be a similar occurrence as the local people are left out of job positions and are growing agitated when their concerns and expectations are not addressed. He said,

The oil companies come and set up their main offices in Accra because the government seat is there, GNPC is there, and all the policies are made there. All major government plans and company plans are made from the head quarters in Accra to be implemented here in Takoradi (their operational offices). Those making the plans are not here so implementation wise, it has nothing to do with the local people.

In my view, the above statements may be analyzed on the basis of poor decentralization, inadequate mediation of government policies and urban primacy issues that plaque many developing countries such as Ghana and Nigeria.

The ideal situation may be to have both administrative and operational offices close by but given the current structure on the ground, it will require major infrastructural development within Takoradi as well as a decision on the part of government to decentralize some relevant institutions such as GNPC and the Ministry of Energy to be able to achieve this. When there is an inadequate decentralized function of the major national institutions such as political, economic, educational and healthcare institutions in secondary cities as compared to the primate city, it creates a disincentive for businesses requiring such services to locate their head offices in smaller cities (Herbert & Thomas, 1990; Potter & Lloyd-Evans, 1998; Songsore, 2003; Songsore, 2009; Owusu, 2005). Perhaps, if Sekondi-Takoradi were as developed as Accra, equipped with necessary infrastructure such a commercial port for direct flights overseas, it would have reduced the need for the oil companies to site their head quarters in Accra. But in

this case, a lot of expatriate staff work 28 day shifts on the rigs and there is no means to fly them directly from overseas into Takoradi. In addition, GNPC has its head office in Tema and only 3 staff in Takoradi (at the time of the fieldwork) to oversee operations on the rigs. Given the level of bureaucracy inherent in Ghana's socio-political structures, it creates the need for the companies to have representatives in Accra to attend to these concerns.

However, if the government has a policy in place making Sekondi-Takoradi the acknowledged, official oil city (as Norway did with Stavanger), coupled with infrastructural investments and perhaps incentives it would create better conditions for the oil companies to operate their businesses directly from Takoradi without need to locate their head offices in Accra.

Furthermore from a structural functionalist perspective, it is important for social actors (government, oil companies) to factor in the unintended consequences of their plans, policies and actions. Perhaps the intention of not providing adequate infrastructure and a better decentralized system was not to make companies shy away from locating their head offices in Takoradi but that has been the inadvertent result.

Asked why he does not argue for the headquarters to be sited in Bonyere or Effasu which are small fishing communities closer to the rigs, my informant from Sigma commented rhetorically,

Let me also ask why they are located in Accra. Accra is even farther from the rigs. It is because headquarters are not normally sited in villages, but rather, in a metropolis. Look for example at the siting of Baker Hughes, Oceaneering and all the major oil companies. They are all cited in the heart of the city [Takoradi] along major roads or close to the Naval Base, and Airbase where they coordinate their activities.

This statement is in line with the argument that cities are important economic centres, helping in resource extraction. Indeed Sekondi-Takoradi serves an economic function which goes beyond the city itself; first as a location for oil company's operational offices and secondly providing the infrastructure for mobilizing production, labour, technology and clients as corroborated by the literature (Jacobs, 1984; Herbert & Thomas, 1990; Potter & Lloyd-Evans, 1998; Glaeser, 2000; Caves, 2005; Songsoore, 2009). It also confirms the location of oil company offices in cities; particularly near the city-centre which doubles as the city's business district. This supports the

argument that companies like siting their offices near the city-centre where they have access to other supporting companies and inner city infrastructure (Herbert & Thomas, 1990).

Finally, a trend related to this cluster discussion is distribution of staff residences within the city. As can be observed from Figure 5.2 above, the majority of staff houses belonging to the oil companies are located within first class residential areas such as Windy ridge and Airport Ridge. Perhaps this can be seen as a residential clustering of some sort due to income inequalities among urban dwellers and their effects on residential patterns (see Songsore, 2003; and a further discussion in Chapter 7).

5.7 Potential for Economic Growth

Literature has established that clusters can stimulate economic growth and infrastructural development (Venables, 1996; Lundvall & Maskell, 2000; Porter, 2000; Henderson, Shalizi, & Venables, 2001). Infrastructural development can result from private sector and public sector investments (Caves, 2005). Economic growth could result from a boom in business activities, creation of more jobs, and general circulation of money in the local economy (BBC News, 2007; Breisinger et al, 2009; Nkrumah, 2010; BBC Africa, 2011). However, there are concerns about the extent to which the nation and Sekondi-Takoradi stand to benefit economically from the oil activities (ibid).

In terms of private sector investments, there is evidence from the renovations that have been done at the Takoradi Port, Naval Base and Airbase (see further discussion in Chapter 6). As an informant from the Airbase summed, *'All the renovations that the oil companies have done will become the property of Ghana when the companies move out or when the oil industry is no more'*. Some existing structures at the port, Naval Base, Airbase, and the city have been renovated by private companies. For instance, the roads in the Naval and Airbase has been tarred by oil companies to accommodate heavy trucks. The improved tarmac at the Airbase would enhance air traffic operations that will facilitate the crew changes of oil companies but on the other hand it would also benefit the armed forces and the general public. In addition, the increased economic activities in the city has attracted private sector investment into areas such as real estate, retail outlets, service provision and entertainment (see further discussion in Chapter 7).

With regards to investments in infrastructure from the government and city authorities, there are plans to develop the city's infrastructure to accommodate the population increase, growth and the needs of the oil industry. The ports authorities have plans to provide specialized infrastructure required by oil companies (Halcrow Engineers, 2010). This further supports the argument that clusters help in the development of infrastructure, particularly specialized infrastructure (Venables, 1996; Lundvall & Maskell, 2000; Porter, 2000; Henderson et al., 2001).

Regarding economic benefits, two main issues are discussed: local business participation and the circulation of money through expenditure from oil workers. The issue of employment creation has already been discussed under Chapter 5.5.3.

Although the oil activities could provide an economic stimulus to the twin city and Ghana as a whole, through the establishment and expansion of local businesses, job creation and circulation of disposable income from oil company workers, findings from this study show that this economic benefit may be reduced due to several factors. There is a high number of non indigene staff in the oil industry. Some are Ghanaians who have moved from other parts of the country to Takoradi while others are expatriates. This category of staff, particularly the males often do not move with their families citing two main reasons. First, there are economic factors where the family's income may reduce if other spouse is unable to find a job in Takoradi. Second, public infrastructural constraints such as inadequate tertiary educational institutions in Sekondi-Takoradi which encourages them spend elsewhere to obtain these services (see further discussions in Chapter 7).

Findings show that expatriate workers in particular are more reluctant to spend locally (within Sekondi-Takoradi) whereas those living with their families in Sekondi-Takoradi spend more in the city. In an interview with a male expatriate, he said,

I have been working here on a rotational basis since April ending 2009. I come in on a consultancy basis. My family was with me in Accra between October 1997 and June 2007 and then the family went back to [Europe] because the kids were grown up and they wanted to go and pursue higher education in [Europe] which is simply unavailable here [Takoradi]. I have never been to any hospital in Takoradi. Fortunately, I'm a person who doesn't really get sick. I don't use the banks. I only use them occasionally. In Takoradi I don't have much experience with the market because the catering is provided by the company's canteen. I don't buy clothes because I generally bring them

from [Europe]. I don't have a normal existence per se, because I'm not really resident here. I live in a company provided staff house and transport is arranged for me. When I come for consultation I stay 28 days in (Takoradi), 28 days out (in [Europe] generally).

In another interview with a female informant working in an oil company, she said, *'I live here with my family and I buy everything I need here in Takoradi. I only buy things in Accra when I visit Accra and find something nice that I want to have or if I am unable to access a particular service in Takoradi'*.

These two quotations above reveal that local workers who have settled in Sekondi-Takoradi spend more readily in the city compared to those who have not. It can be observed that the lack of competent local infrastructure, coupled with their tastes and preferences of some oil workers does not encourage them to spend locally which in turn does not benefit the local economy on the one hand and Ghana in general.

Discussions in previous chapters point the importance of local business participation in the oil industry as a means to facilitate industrialization and economic growth. Indeed Ghana's Local Content Policy framework deems important and pledges government support for local entrepreneurs for *'accelerated development and industrialization'* (Ministry of Energy, 2010, p.2). Yet, my informants from local businesses in the industry complained about access to credit facilities and loans for expanding their business which puts them at a disadvantage when competing for contracts with foreign owned companies who are usually bigger and more established. The Managing director of Macro said, *'The challenges we face have to do with access to capital for development. It is not because of our location in Takoradi. It is a National problem for the Ghanaian entrepreneur. Challenges we face as local entrepreneurs include access to loans, cost of equipment and inflation'*.

This statement is in line with the findings of Steen & Underthun (2011). They found that the inability of local firms to expand is a major barrier to accessing contracts in the oil industry which gives larger established and foreign owned companies a competitive advantage. If Ghana wants to reap economic benefits from the oil and gas activities, assisting local businesses to expand should be given serious attention since it will help to create more job opportunities and benefit the nation through taxes.

CHAPTER SIX

TRANSPORT INFRASTRUCTURE

6.1 Introduction

Literature has established the importance of cities in terms of transportation (Herbert & Thomas, 1990; Potter & Lloyd-Evans, 1998; Pacione, 2001). The upstream oil industry is a capital intensive venture and requires infrastructural support for the exploration and drilling activities offshore (Abuabey-Dortey, 2009; Halcrow Engineers, 2010). This chapter explores the functions of the city's transport infrastructure, particularly how it enables the coordination of activities in the Jubilee oil field through the movement of staff and equipment.

The research findings have identified Takoradi as an important transport node between Accra and the oil rigs in the Jubilee oil field. The chapter discusses the four key transport infrastructures being used in the core oil industry: the Takoradi Air Force base, the Takoradi Port, the Sekondi Naval Base and roads.

Finally, there is brief discussion of some positive (functional) and negative (dysfunctional) spillover effects on the city's transport infrastructure due to increased demand for the infrastructure.

6.2 Manifest Functions of the Takoradi Air Force Base

Sekondi-Takoradi has no commercial airport or landing facility for aircrafts. The Takoradi Air Force base is the only airport in the city. As explained in Chapter 4, it is a military and training facility for the Ghana Air Force.

With the development of oil fields on Ghana's western shores, there is the need for faster and safer means for crew changes on the rigs offshore. The Air Force base now doubles as a commercial airport. It plays four major roles to support the oil industry and offshore activities. They are air transport support, accommodation (offices), storage of oil pipes and provision of security for staff and property.

6.2.1 Air Transport

The Takoradi Airbase serves as a take-off and landing facility for the helicopters that fly staff to and from the oil fields offshore. As Tullow's travel assistant summed in an interview, he said,

We supply the rigs and the FPSO in terms of equipment and personnel. Personnel from Accra and abroad come to Takoradi and we transport them to the rigs. They come here by fixed wings [small air planes] and then from Takoradi we take them to the rigs via choppers [helicopters]. We don't do road transport. The roads here are okay but there is a lot of careless driving on the roads. We lost a colleague through careless driving on the roads. Also, it takes longer (about 4 hours) to travel from Accra to Takoradi but it takes 30 about minutes to do so by Air and 30 minutes from Takoradi to the rigs. The staff will be worn out if we do these crew changes by road looking at the time involved. We do operate at least 16 flights a day so it would have slowed down production if we chose road transport. The air transport is for both official and personal reasons.

The Administrator for Baker Hughes, Takoradi corroborated the road safety reasons given by Tullow's travel assistant. The oil companies preferred air transport for their staff in lieu of intercity road transport because air transport is safer and faster for crew changes.

The air field, air traffic control systems, terminal building, and technicians at the Airbase are essential in operating the safe take off, marshaling and landing of aircrafts. In an interview with the Administrator of the Airbase, he explained that *'There has been a remarkable increase in flight activities. We now have a lot of private and commercial airlines coming in. We now have about 6 commercial and private airlines; each operating about 4 flights daily. There has been an increase in passenger population'*.

The arrival and departure facilities serve as a converging point for staff from oil companies who are going to the rigs offshore, have arrived in Takoradi from the rigs, are going to Accra or coming to Takoradi for business assignments.

As mentioned in Chapter 5, Sekondi-Takoradi has the operational offices of most oil companies such as Tullow and Baker Hughes. There is a coordination of activities between their head offices in Accra, the operational offices in Takoradi and the oil rigs offshore on the Jubilee oil field. The air transport enables the companies to have a fast and efficient means of coordinating activities among these three locations. The figure below shows these flight activities.

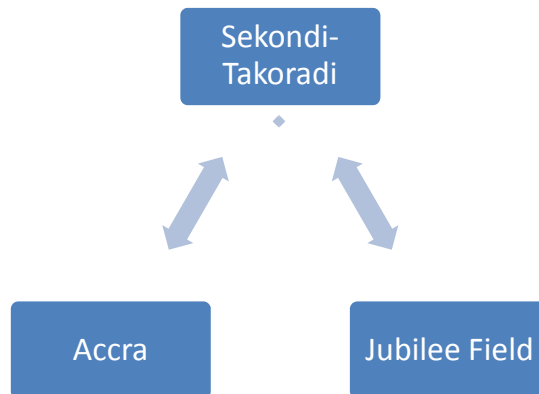


Figure 6. 1: The air transportation relationship between Sekondi-Takoradi, Accra and the Jubilee oil field offshore.

In Figure 6.1 above, the flights are between Accra, Takoradi and the Jubilee oil field. There are no direct flights between Accra and the oil rigs at the Jubilee oil field because Takoradi is the converging point for crew changes for the rigs. Also, the rigs have helipads which can only accommodate helicopter landing and takeoff but no run ways big enough to accommodate air planes.

Presently, most of the air travelers using the Airbase are staff of oil companies because the local people cannot afford the airfares being charged by the commercial airline companies and so prefer to travel by intercity busses which are cheaper. My informant from GNPC does not foresee the local people patronizing the commercial airlines. He said, *'They prefer taking busses and paying about 7 cedis [\$4] instead of the 100 cedis [\$58] that they will pay for using the airlines'*. Thus, the accessibility of air transport, which is faster, to local people could be hindered by their purchasing power.

One of the challenges of local air transport is the weather in Takoradi (see chapter 4.1). Slight thunderstorms and poor visibility hinder the smooth operations of flights. The photo in Figure 6.2 was taken in the rainy season during a brief tour of the Air Force base. I was observing the area when one air plane enroute to Takoradi Airbase from Accra was ordered to return due to poor visibility upon arrival.



Figure 6. 2: Photo Taken from the Takoradi Air Force base showing its Air Transport activities¹

6.2.2 Office accommodation and storage facilities

The Takoradi Air Force base's buildings which were previously being used solely by the military have provided readily available buildings, some of which have been renovated for use as offices and meeting rooms by some oil companies such as Tullow, Kosmos, Hess and Vanco. As seen in Figure 6.3 below the cream and yellow painted buildings serve as offices. In Tullow, the Airbase offices complement administrative duties at the Baycourt office in addition to overseeing crew changes and activities within the Airbase (Figure 6.4 shows other companies with offices at the Airbase).

Some open spaces and sheds in the base serve as a storage area for materials belonging to some oil companies. As shown in figure 6.3, the fenced areas towards gate 2 of the Airbase are where storage and minor assembly of pipes are done prior to being transported to the oil field or to third party companies. This fenced area is called the pipe yard. According to the pipe yard and lifting training coordinator of Tullow (a male informant with a technical background), *'The pipe yard is where the oil drilling pipes are kept in good shape arranged, accounted for and also supplied to the rigs in the right quantities and qualities as and when requested for'*.

¹¹ Figures 6.2, 6.3 and 6.4 of the Takoradi Airbase in this thesis should not be reproduced in other works without permission from the Ghana Air Force.



Protected storage area for oil pipes

Cream and blue painted offices

Figure 6. 3: Storage and Office facilities of the Takoradi Airbase used by oil companies

6.2.3 Security for staff and property of Oil companies

The Takoradi Airbase provides security for both staff and assets as corroborated by the group managing director of Macro, the Airbase administrator and pipe yard coordinator for Tullow.

The base is a security zones run by the Ghana Air Force. The outer perimeters are guarded 24 hours a day throughout the week as shown in Figure 6.4 below. All staff of the companies and all vehicles serving them are given special tags for identification and verification before entering the premises. Only staffs are allowed to use the back gate (gate 2) which is closer to Baycourt.



Figure 6. 4: The Guarded Entrances (Main gate to the left) of the Takoradi Air Force Base with a visitor's registration point on the left

Visitors are required to go through the main gate (see Figure 6.4) and fill in a visitor's book at two check points before entry. This security measure fends off trespassers and protects staff and

assets owned by the companies that operate from the base. Also, in the wake of violence, militant activities and kidnapping in neighbouring Nigeria and Angola, the Airbase as a military security zone provides the security that the staff of oil companies many of whom are expatriates need.

Lastly, there are internal security measures for further protecting staff and property. There is an onsite fire fighting vehicle to fight any fire outbreak on the premises. In addition assets such as oil pipes are fenced and guarded to prevent theft and unlawful tampering, as shown in Figure 6.3.

6.3 Manifest Functions of the Takoradi Port

Takoradi Port is the second largest and only other commercial port in Ghana besides the Tema port. The port's major operations are in exporting dry bulk namely manganese, bauxite, cocoa beans and the importation of clinker, grains, flour and containerized cargo (Halcrow Engineers, 2010).

It is the closest commercial port in Ghana to the Jubilee oil field since the Tema port is farther east. This makes it very important in providing specialized services to support the oil fields offshore, most of which are concentrated around Ghana's western coast, the largest being the Jubilee oil field (Abuabey-Dortey, 2009; Halcrow Engineers, 2010). Below are some of the services provided by the Takoradi Port for the oil industry.

6.3.1 Docking, loading and offloading

The oil fields offshore use rigs and FPSOs which are manned by about 100 persons each (Halcrow Engineers, 2010). According to information gathered from my informants in Tullow, crew changes are made every 28 days and that is done by Helicopters as elaborated in chapter 6.2 above. However, supplies and equipment go by supply vessels to the rigs.

The port provides space for supply vessels from the oil fields to dock, offload waste and load supplies such as heavy equipment, drilling cements, and fresh water for the rigs offshore. In an extensive joint interview with the Marine Superintendent and the quayside operator of Tullow, they explained how they liaise with their onshore and offshore counterparts in sourcing logistical supplies for their company's offshore activities. As the quayside operator summed, *'What we do is the bulky part of the logistics. We supply heavy equipment, water, drilling mud, etc. We can't use the helicopter so the best media is to use the vessels [which carry logistics via sea]. We transport bulky materials via the vessels and human beings via the helicopter'*.

This statement shows the logistical and transportation functions that the port plays by providing such services to the offshore rigs which otherwise may have been difficult without the presence of a nearby commercial port facility. As at 2010, the number of vessels docking at the Takoradi Port were reported to be about 600 (Halcrow Engineers, 2010). According to the Chief Pilot of the Takoradi Port, in April 2010, there were 70 support and supply vessels docking at the port, 40 in May and 66 in June. He estimated that about 2 supply vessels dock from the offshore oil fields a day and expects a steady rise through 2012 as more fields are being developed offshore and drilling activities intensify.

6.3.2 Office space, storage and assembly point

Some oil companies have rented offices at the port. For instance, Tullow has a shore base (an office at the port receiving, storing and sending supplies to the rigs) at the Takoradi Port.

In addition, the dry dock areas and land north of the port have been compacted for the storage and assembly of pipes and other heavy equipment used for drilling oil.



Figure 6. 5: Photos of the Takoradi Port showing storage of materials for oil companies.

As can be seen in Figure 6.5 above, the dry docks of the port and the areas near the oil berth are used for storing logistics for drilling and explorations at the Jubilee oil field and other oil fields.

The port has seen little expansion since it was built and is currently unable to cope with the increased traffic and demand for more storage space (Fieldwork, 2010).

6.3.3 A point for importation

The Takoradi Port handles 20% of all national imports (Halcrow Engineers, 2010). Some of the major imports handled by the port are clinker, wheat, containerized goods, rice, mining equipment and vehicles (ibid). It has no dedicated container facility for handling containers.

In an interview with the Administrator of Baker Hughes she confirmed that presently, her company uses the Takoradi Port for importing equipment and other supplies but hitherto, they used the Tema port which my informant from Raybow Hotel said, *'By experience is easier to use for importing goods than the Takoradi Port'*.

This may be due to the lack of dedicated container storage areas available at the port. Smaller businesses in Takoradi without the capacity to develop private storage areas such as those belonging to the large oil companies (see Figure 6.5) are unable to access the Takoradi Port.

6.4 Manifest Functions of the Sekondi Naval Base

As outlined in Chapter 4, the Sekondi Naval Base was built to primarily provide military sea defence for Ghana's western shores. The Naval Base lies roughly 12km to the east coast of the Takoradi Port. Below are some of the services provided by the Naval Base for the oil industry.

6.4.1 Office Space, Storage and Assembly Point

The Naval Base, like the Takoradi Air Force base plays host to several oil companies. Some oil companies such as Technip (I was unable to obtain a full list of oil companies operating from the Naval Base) have offices at the Naval Base. Some of its buildings have been renovated and converted into office spaces used by the companies located on its premises.

The Managing Director of Macro Logistics gave his reasons for why the Naval Base has become an attractive location for oil companies. He said, *'The port is small, it was built in 1928. There are few offices built in Takoradi. Until now, there are no big offices here. Apart from this place [referring to the Takoradi Shippers Centre building] and the bank of Ghana, there are no major story buildings or office spaces available'*. The Naval Base therefore bridges the deficiency in office accommodation within the city.

Takoradi Port's real estate manager also confirmed that some supply vessels dock at the Naval Base to load their supplies instead of the Takoradi Port to ease traffic when there is an overflow of activities at the Takoradi Port. Thus, the Naval Base offers complementary services to what the Takoradi Port offers for oil and oil service companies.

Due to limited space at the Takoradi Port, the Naval Base which has ample land, provides the necessary space for the fabrication and assembly of equipment before they are transported to the rigs offshore (Fieldwork, 2010).

6.4.2 Security for Staff and Property of Oil companies

As a security zone, it offers protection for staff and property of the companies that use their premises. Like the Airbase, it has 24 hour guarded gates and a requirement for visitor identification and registration prior to entry. This secures the area from theft, making it a much safer place for the storage of expensive and bulky equipment used in the exploration and drilling oil as compared to the Takoradi Port which has more private people trespassing.

The Naval Base is also equipped with machinery and personnel for emergency evacuations near the oil rigs. This helps to protect staff offshore during emergencies.

Navy officials frequently collaborate with oil companies, Takoradi Port and local people for joint training on oil spill detection and response as well as other emergencies and interventions at sea (Zotorvie, 2010). This could save oil companies money when oil spillages are detected and addressed in time.

6.5 Manifest Functions of the Road Network

The road network discussed under this section consists of intra city and intercity roads. The roads within Sekondi-Takoradi are intra city roads whereas those linking the twin city to other towns and cities are intercity roads.

An efficient road network within a city or linking a city to other towns is important for commerce, access to social amenities, and assessing the city's level of development (Caves, 2005; GSS, 2005; Williams, 2005; Agyeman, 2009; Owusu & Afutu-Kotey, 2010).

6.5.1 Intercity roads

The important intercity roads connecting Sekondi-Takoradi to other cities and towns include the Accra -Takoradi road which connects Takoradi to Cape Coast and Accra, Takoradi-Tarkwa road which connects Takoradi to Tarkwa and other smaller towns in the interior of the region, the Takoradi-Kumasi road which connects Takoradi via Kumasi to northern Ghana and the Takoradi-Agona-Elubo road which links Takoradi to smaller towns along the western coast and finally to the Ivorian border.

These intercity roads are important routes for trade and leisure. The Accra-Takoradi road is particularly important for these two reasons whereas the other routes are more significant in terms of trade and haulage, particularly due to the absence of an effective railway system on Ghana's western corridor. The Takoradi-Tarkwa road, Takoradi-Elubo road and the Takoradi-Kumasi roads for instance haul timber, manganese, bauxite, cocoa, farm produce, and other bulk items to the Takoradi Port. Hitherto, the roads connecting Takoradi to the western border (with la Cote D'Ivoire) were mostly for trade and to a small extent, leisure when tourists visit tourist sites along the western coast such as the Nzulezu Stilt Village.

The two most important intercity roads that are used in the oil industry are the Accra-Takoradi road and the Takoradi-Agona-Elubo road. Although the large upstream companies do not support the transportation of their staff by road to and from Sekondi-Takoradi due to a previous road casualty, it is clear that some equipment is transported by road. In an interview with my informant from Macro (whose company is in charge of logistics for the Jubilee oil field) he confirmed that the company hauls equipment, materials and supplies by the Takoradi-Elubo road for the Jubilee oil field project at West Cape Three Points.

The Administrator of Baker Hughes also explained how her company uses intercity roads for transporting equipment. She said, 'Presently we use the Takoradi Port more but when equipment arrive at the Tema port, we haul them to Takoradi by road and Antrak Ghana are our freight forwarders'.

The Deputy Managing Director of Nyame Yie cold store in Takoradi also added that her company used the Accra-Takoradi road for transporting frozen foods to Accra. She said,

We go by road. We usually go with about one tonne of fish in our refrigerated small cars. We use the road because I am not informed whether the aircrafts (referring to commercial planes flying between Accra and Takoradi) they have such facilities. It will be nice if it was by air but it is too expensive beyond the pocket of most companies so it is the expats and the corporate bodies who patronise them.

Her statement agrees with the argument in Chapter 2 that although air transport is faster, the road transport is the most accessible and cheapest alternative for bulk transportation.

6.5.2 Intracity roads

A city's transport infrastructure facilitates trade, movement and accessibility to other social infrastructure (Pacione, 2001; Caves, 2005; William, 2005; Agyeman, 2009). The intracity roads in Sekondi-Takoradi support the movement of people and goods within the city. Some major intracity roads include the Axim road, Cape Coast road, John Sarbah Road, Air Port road and Harbour road that link the Southwestern part of the city from the city centre, Market Circle. Chapel Hill road and Sekondi road link the city to its eastern communities key among them, Sekondi. Figure 6.6 below shows a major roundabout linking major roads in Takoradi.



Figure 6. 6: A photo showing the Kwame Nkrumah Roundabout in Takoradi off rush hours.

Source, Internet

To the left is the Baycourt (blue roof) to the right is the road leading to the Air Force base. The road leading to the top right corner shows an oil rig at the Takoradi Port. The road leading to the top left corner, leads to Sekondi. The roads enable oil companies to coordinate their activities through the transportation of staff within the city. In Tullow for instance, the Intracity road network is important in coordinating their activities between the Airbase, Baycourt and the Shorebase. As the Transport Assistant of Tullow confirmed, the company has contracted Pergah Transport Services, a private transport company to *'supply [them] with cars and drivers for transporting staff within Takoradi to coordinate our operations within the city'*. This transport solution is a common arrangement between oil companies, and their staff, particularly, senior staff.

As mentioned earlier, the quality of the urban transport network affects the accessibility of services such as schools, hospitals, sanitation facilities and the overall status of neighbourhoods. Intracity roads play this role. Subsequently discussed in Chapter 7, most guest houses belonging to oil companies are located within first class residential areas which are served by good roads. I did not observe staff houses being located in low class residential areas with poor roads.

6.6 Unintended Consequences (Latent Functions)

The existing transportation infrastructure in Takoradi as well as the decisions taken after the oil discovery has led to some unanticipated problems and benefits that I shall discuss below. On the positive side, some infrastructures have been upgraded to support the industry. On the negative side, the lack of needed transportation infrastructure has caused problems such as increased road traffic in the city.

The physical and social infrastructures available have developed in response to historical and developmental goals of past governments which did not factor in these future demands. The Takoradi Port was developed to mainly support the export of bulk goods from Ghana's interior and minor imports and today it stills plays the same role since the infrastructure at the port has not seen major changes to accommodate other services. The Airbase and Naval Bases are old military structures which have seen few renovations and equipment replacements although from the literature in chapter 4, their functions even before the oil discovery went beyond military use. There is no international commercial airport in Sekondi-Takoradi. The Western rail network has seen little investment and improvement to support bulk transportation of goods arriving at the

Takoradi or bound for communities along the western coast. Finally, the Intracity and intercity roads have not been designed to support heavy trucks that haul cargo to and from Takoradi.

6.6.1 Positive (functional) consequences

Speaking about the Naval Base's infrastructure in a brief interview with a senior officer at the Naval Base, he expressed some infrastructural developments facilitated by oil companies in order to successfully support the industry as it is doing presently. He said,

We need to upgrade the infrastructure and equipment we have. Already we have had some assistance from the oil companies that are stationed here. One of them donated waste bins to us. They have asphalted the roads within the Naval Base and increased their load bearing capacity to enable them to bear the heavy loads from trucks that carry oil pipes and other heavy equipment to and from the Port. Without that it would have been impossible to use the road as it was before. One of our classrooms has also been renovated and supplied with equipments to enable conferencing and meetings.

The Airbase has also benefitted in terms of renovations to the infrastructure. In an interview with the Airbase's Administrator he said, *'They have improved some of our facilities. The cracks on the Tarmacs were filled and smoothed to facilitate take off and landing. The areas where their pipes are kept were soggy. They have now been filled and compacted. Tullow donated a pickup for runway inspection and a fuel bowser for refueling aircrafts when they land'.*

The Takoradi Port has also experienced increased private sector investments as the land north of the port have been compacted for storage of equipment.

6.6.2 Negative (dysfunctional) consequences

It is clear that the city is not well prepared to support the oil industry and requires major investments to reach this goal.

However, the size of the port and increasing traffic from international vessels carrying imported items and vessels exporting raw materials means that the port is unable to handle all the traffic received from the supply vessels from oil rigs. Also, the space around the port is inadequate to support the storage facilities needed by all the oil companies operating offshore. According to the Ports Real Estate Manager, when there is an overflow, some of these activities are done at the Naval Base which I will discuss subsequently.

It could also be due to the initial planning of the port as an export point rather than an import point, making it less competitive for such use as compared to the Tema port which was planned primarily for import. As mentioned in chapter 5, concerns toward general attitude to work may delay the clearance of good at the Takoradi Port compared to the Tema port. Loss of revenue

The Managing Director of Macro, which is the sole agent handling all of Tullow's logistics, is not only unhappy about the inadequate space at the port but also the inadequate infrastructure. He fears that nothing will be done about the situation in the near future. He recounts how several studies through the port's corporation with Japanese, Dutch and American consultants have been carried out without any major implementations. As it were, the document I reviewed submitted by Halcrow Engineers, PC is a US Trade and Development Funded Feasibility of the Takoradi Port in 2010 and some of its key recommendations are for the expansion of the port's berthing and storage facilities as well as the provision of specialized services for the oil activities offshore. However, it is uncertain whether some of these recommendations have been implemented at present.

Ideally, if the Takoradi Port was developed to increase capacity for importation and export, there would have been no need to use the Naval Base to supplement its services. The use of the Airbase and Naval Base to support the oil industry is an adhoc measure and should not be considered a permanent measure for supporting the oil industry as their structures are for military uses and could pose security concerns in the future.

As an informant rightfully summed it,

The Air Force base and the Naval Base, are all security zones. They are not supposed to be compromised for commercial activities. In this case, the oil find struck this country palms down, we were not expecting it. We have many challenges with infrastructure in Takoradi. Takoradi was not ready for the oil industry.

Secondly because of the size and length of the runway, it cannot support cargo aircrafts and larger planes because they need longer runways and hence, the international flights cannot land in Takoradi. Staffs returning from overseas to work offshore need to land first in Accra and board another plane to Takoradi and in Takoradi, go via helicopters to the rig. This increases journey times and the cost at which oil companies operate.

With respect to the deteriorating Intracity city roads and traffic congestion, these could have been reduced if the rail network was improved to facilitate bulk haulage. However, with the current nature of the roads and increasing traffic, traffic congestion is inevitable.

Most of the intercity roads linking Takoradi to other cities and towns cannot support heavy trucks. This coupled with overtaking from passenger cars has led to frequent deterioration of the roads, longer journey times and road accidents. Therefore with the increasing traffic from trucks plying roads due to oil activities, it calls for serious attention to be given to developing rail transportation between these cities to absorb the bulk cargo transported via roads and to reduce rampant accidents on these roads. Also, rail transport is very important for haulage and could significantly reduce the pressure on roads. I side with the recommendations by the (Ghana Mining Sector Support Programme Management Unit, 2005) to revamp the western corridors railway lines.

The quality of intra-city roads are deteriorating, partly due to the increasing vehicles on the roads, heavy trucks and partly due to poor maintenance and poor road construction. Some informants complained about the deplorable state of the roads and how it affects their businesses. As expressed by two informants: *The road leading to the hotel is bad. An improvement will make the hotel more accessible and help improve service delivery. It will also make our operations easier*' said the Manager of Raybow Hotel.

'The roads are narrow. The small roundabout clustered is not good for the kind of equipment that we have over here. We should have learnt this a long time ago. But we're slow in doing that. Takoradi needs a major development' the Managing Director of Macro said.

Some also pointed that the numbers of cars on the roads have affected the traffic condition in Takoradi. My informant from GNPC said, *'When I came 3 years ago it could take you about 15 minutes to go round the whole town. But now due to the influx of people (due to the oil boom) there is traffic during rush hours'*

Others pointed that although the roads are bad, causing more traffic, they may be better compared to those in Accra. In an interview with the administrator of the Takoradi Air Force he said, *'There are some few bad ones just like in Accra so that is a national issue and not peculiar to Takoradi. But I think the roads here are generally better than in Accra.'*

The receptionist of Tullow, a female informant and Ghanaian returned from abroad said *'I have been to Accra, and I didn't like the place because the place is too busy and I don't like busy places. Takoradi is a quiet place, and it is easy to move from one place to the other, but not so in Accra'*.

Reacting to the complaints about the deplorable nature of some intracity roads and traffic congestion, the Chief Planning officer of STMA said,

We have made proposals to seek funding for maintenance. When it comes to roads, it is a central government function. We source most of our funds from the department of urban roads and we only do maintenance. I think we could maintain and construct roads faster if we could source funds directly. The Ntankoful-Apramdo bypass will demand major reconstruction. We have redesigned it as a dual carriage road to take most of the traffic from the oil area to Accra without coming through Takoradi. We have another design to put another road behind Mampong to link Beahun to Shama Junction.

From the statement above, it is clear that some of these deficiencies in transport infrastructure may be attributed to poor decentralization of the country's institutions which limits the powers that Metropolitan councils have over their cities of jurisdiction.

CHAPTER SEVEN

OTHER SUPPORTING INFRASTRUCTURES

7.1 Introduction

Cities and indeed clusters attract labour who in turn demands certain goods and services within the city. This chapter relates to my third objective which seeks to elaborate on how the social amenities in the twin city support workers and businesses in the oil industry. Like the previous chapter, it is rich in descriptive data in line with the thick description employed in qualitative researchers (Geertz, 1973).

The key social infrastructure that workers and businesses in the oil industry demand include accommodation, trading centres, health facilities, recreational facilities and educational facilities. Findings indicate that workers and businesses in the oil industry demand the best of these infrastructures and services. However, the issue of urban primacy and inadequate infrastructural development affect the quality and accessibility of these facilities.

As Herbert & Thomas (1990) noted, urban centres, particularly in developing nations have infrastructural deficits. The increased demand for social infrastructure has influenced the cost of living, urban displacement, inequality, among others. However, it has also created business opportunities for private investors.

7.2 Housing

Housing in Sekondi Takoradi is mostly privately owned (STMA, 2010; Zotorvie, 2010). Demand for accommodation derived through the oil industry is met by private real estate providers.

The types of housing preferred by staff from oil companies are self contain apartments or houses in first and second class residential areas. As explained earlier, location, the building itself and the services available within the building add to its value and appeal (Brand, 1995). Essentially, first and second class residential areas have a good location and good access to social infrastructure such as electricity, water, sanitation, roads, healthcare and recreational facilities. They are closer to the city centre and therefore have high demand for residential and office accommodation purposes by oil companies and their staff (Herbert & Thomas, 1990).

Presently, first class residential areas such as Windy Ridge, Beach road, Airport Ridge and Chapel Hill are the preferred location of staff houses of oil companies. The Marine Superintendent of Tullow (an expatriate) said,

Our staff house is at Beach Road, it's about 10 minutes away [from the harbour]. There are about 9 people living there. All the residents there serve management roles, basically senior staff from our logistics departments'. These areas also attract workers in the high income groups as a male informant from Tullow confirmed. He said, 'I live in a 4 bedroom house at Airport Ridge.

The staffs of oil companies also make use of hotels and guest houses for temporary accommodation. Firstly, they often serve as temporary and decent accommodation for staff who have newly moved to Takoradi from overseas or other parts of Ghana. They often stay in hotels or guest houses for up to three months while searching for a permanent accommodation in the city. As one informant put it, *'I lived in a hotel for 2 months. It was a temporary provision my company made for me when I first moved to Takoradi to enable me find time to look for my own place'*. Another informant said *'My first 100 days of work in Takoradi I stayed in Planters Lodge. It costs \$140 a day and it has a swimming pool'*. It appears that it is the high end hotels and guest houses that are preferred by oil companies as they possess the best of the 6 components (location, structure, façade, services, partitioning, furniture) that make up a building (Brand, 1995). However, my findings support Briggs' observation that the hotels are generally expensive and offer modest services compared to others in the international market (Briggs,2004). Perhaps that is why oil companies are acquiring houses in first class residential areas and converting them into staff houses that offer temporary accommodation for staff.

Finally, the hotels and guesthouses provide temporary accommodation for staff transiting in Takoradi enroute to the rigs offshore, or enroute to Accra, and for those who for business reasons stay in Takoradi for a short period. They are also used for conferences, meetings and catering for some oil companies such as Tullow.

7.2.1 Electricity, water, sanitation, telecommunication

Access to basic services in a house affects the quality of life of its residents and their status in society (Herbert &Thomas, 1990; Songsore, 2003; Skotte, 2004; Wheeler, 2004; Baabeyir, 2009). It appears that in terms of access to water, sanitation and electricity, Takoradi has an advantage over bigger cities such as Accra. This may be due to the smaller population and the

slower rate of city expansion enabling city authorities to extend these amenities to cover the population. In an interview with an Administrator from Baker Hughes she said,

I have constant water in my house and that's one thing I am very happy about because I cannot compare what I get in Accra to what I get here. Electricity has been fairly good. As for gas we all struggle to get gas because it has become a phenomenon that you won't get gas when you need it... basically the gas situation in Accra and Takoradi is not so different. Takoradi is generally clean. But now it's getting dirty.

Although it is argued in Chapter 2 that cities have problems of inadequate infrastructure, Sekondi-Takoradi did not seem to have of the infrastructural challenges that most cities have, for instance with water supply which has hitherto almost 100% coverage. Sekondi-Takoradi has an in this regard advantage over bigger cities such as Accra which made it an attractive location for long term urban residence.

Within the twin city, both formal and informal waste collectors collect waste from homes. However it is the more affluent in society who are able to afford such door to door waste collection services and essentially affluent neighbourhoods such as Airport Ridge are cleaner, making them more attractive to affluent and the upwardly mobile in the city (Baabereyir, 2009; Owusu & Afutu-Kotey, 2010) . In terms of waste disposal for the waste generated from offshore oil activities, companies such as Tullow patronize the services of specialized environmental companies such as Zeal Environmental technologies to help with their waste management.

7.3 Educational Facilities

Sekondi-Takoradi has the highest concentration of pre-tertiary schools in the Western region. However, the quality of public schools, especially pre secondary schools is low. High income earners some of whom now work in the oil industry send their children to private schools which have better academic resources and services.

Some informants were hesitant in moving with their families to the city due to lack of tertiary institutions, particularly as there is no University in the city. Explaining one of his reasons for his decision to not move with his family to Takoradi a male informant said, *'I moved alone because I also didn't want my children to change schools. There are no universities here for my older children and the youngest is in a better Secondary School compared to those in Takoradi'*.

Others did not plan to live in the city permanently due to of lack of opportunities for pursuing higher education, specialized courses and continuous education for staff seeking upward mobility in their career. As a female Manager of Baker Hughes put it,

If you are an employee and you want to take short courses to build your career Takoradi is a place not to be because we don't have those facilities here. All the courses in GIMPA, Legon, IPS and British Council are all in Accra. If you look at your child's education then it's a problem. We don't have all the first class schools here. But you could make do with the basic schools until tertiary level. So if your job happens to bring you here you just have to manage or let your family stay back.

A male informant from Tullow also said, *'I did a diploma programme via long distance learning in a foreign institution. Takoradi lacks tertiary institutions. Apart from Takoradi-Polytechnic there's no other tertiary institution here. That's one reason I have considered moving back to Accra to enable me further my education'*.

The two statements above show the effects of unequal infrastructural distribution between urban areas in developing countries leading to urban primacy (Potter & Lloyd-Evans; Owusu, 2005). In this case, Accra, the national capital, has a higher number of higher learning educational facilities, putting Sekondi-Takoradi at an advantage in attracting skilled workers who wish to build on their career. The lack of training opportunities in the city will also slow down the training of local people seeking employment and oil and gas companies. Although UMaT offers specialized short term courses for the industry due to distance and accommodation it's not ideal for those living and working in Takoradi. Besides, due to slow internet connectivity in Ghana generally, it is difficult to follow distance learning and certification programmes. Thus, residents are unable to access continuous education and higher education which are important in training skilled and unskilled labour (Potter & Lloyd-Evans).

It seems, with the establishment of Sigma Base and other vocational schools to train people in welding as well as the joint courses in offshore rescue run by the Airbase and Naval Base, more specialized courses will be introduced for technical training.

7.4 Health Facilities

Sekondi-Takoradi compared to other parts of the Western region has a high concentration of healthcare facilities, both public and private (GHS, 2010). Findings show that workers in the oil

companies prefer using private health centres such as the Ghana Ports and Harbour Hospital in Takoradi (GPHA Hospital) and WARA to avoid long queues at the public hospitals (Fieldwork, 2010). Some oil companies such as Tullow have contracted private healthcare providers such as WARA to provide emergency healthcare needs for all sick staff. WARA also provides doctors to accompany staff who need specialized healthcare abroad, particularly for expatriate staff. The oil companies also provide malaria prevention products for staff, especially expatriate staff who have not developed tolerance for the disease.

However, as mentioned in Chapter 4, the quality of service is compromised due to the high doctor-patient ratio, lack of specialized machines and health personnel among others which has always been a national problem. A female informant from Baker Hughes summed these challenges with healthcare. She said,

Most of the specialized hospitals are not in this region. There are a whole lot of services you don't get in terms of medical services. It is very limited. I can hardly take my child to the dentist because there is only one dentist and if you happen to go there, you may not get all the desired treatment. If you have a problem with your ear, you have to seek help in Accra. If you don't go to GPHA, I don't know where you have to go. With the regional hospital they could have all the facilities but it's the numbers! If you plan to and get treated and come back to work, you can't make it.

One male informant from GNPC also added, *'I was using a private hospital in Accra. But here I need to use the government hospital where I have to queue. It takes me all day'*.

It appears that the presence of more affluent people in the society could inadvertently create inequalities in the healthcare availability. The more affluent seek better services in private hospitals where the doctor patient ratio is lower. They also seek and can generally better afford specialized services. If they have to use the government hospitals, there is a possibility that they could use social contacts and financial tips to receive better and faster services. Going by Pacione's criteria of assessing the differential availability of infrastructure, quality and accessibility, it is clear that the more affluent oil workers have an advantage in accessing better healthcare (Pacione, 2001).

In an interview with the STMA Chief Planning officer and another with the Economic Planning Officer of Western Region, they spoke of plans to upgrade the regional hospital. They also

mentioned a plan for a new hospital with a roof helipad and modern medical facilities to step up the quality of medical services that the metropolis offers for its increasingly affluent residents from the oil industry. In the meantime, the Administrator of the Takoradi Airbase thinks their clinic could be upgraded to provide emergency services for casualties offshore and within Takoradi prior to flying affected persons to Accra or overseas for medical attention (Fieldwork, 2010).

7.5 Recreational Avenues

Sekondi-Takoradi is the boarding place of tourists visiting eco-tourist sites in the Western region (Briggs, 2004). The city itself has very few eco tourist sites such as Monkey hill Sanctuary albeit underdeveloped for tourism (ibid).

As a small city, life is more relaxed. The general pace of life is also slower compared to Accra. This favours a more family oriented and casual lifestyle (Briggs, 2004; Fieldwork, 2010). Generally, it lacks some of the disadvantages of living in bigger cities such as high crime rates, poor access to water supply and road traffic. These characteristics separate it from other cities such as Accra and Kumasi by giving the city what has been termed a ‘unique spirit of place’ (Holloway & Hubbard, 2001). Perhaps it is due to this sense of belonging that are some people are satisfied to live in the twin city. As an expatriate informant confirmed by saying, *‘I love this place. It's a nice place, a little town. It is very friendly, very homely, very nice and hospitable people’*.

For the active youth however, the city does not offer much in terms of recreational and entertainment avenues. Some of the attractions of living in a city include individuality and sheer numbers of business, health and recreational centres (Herbert & Thomas, 1990; Potter & Lloyd-Evans, 1998; Caves, 2005; Williams, 2005). Yet, as a city, recreational centres such as parks, casinos, cinemas, among other are missing from the city. The few public parks such as Gyendu Park and the Takoradi Stadium are for football activities and to a lesser extent other sports. A male informant in his late twenties lamented, *‘There are only about 3 basketball courts here. Accra has better recreational facilities’*. These deficiencies take away the city’s attractiveness for youth.

Opportunities for enjoying nightlife are limited. By 11pm, most businesses are closed perhaps due to low patronage at night times as family oriented people would have gone home by then (Fieldwork, 2010). This perhaps explains why generally, my informants who had families seemed to be content with the general night life and lower crime rate in the city. I did not observe any big modern cinema's such as Silverbird Cinema in Accra but few pubs, casinos, bars and clubs which hitherto were non-existent are springing up to boost night life in the city. They include Vienna city club which has a casino, Paragon Club among others. Interestingly, they seem to offer services tailored for expatriate and affluent clients (Vienna City News, 2011).

7.6 Trading and Shopping Centres

The largest trading and shopping centre is the Takoradi Market Circle which is located down town. There are other local markets at Kwesimintsim and Sekondi where a broad range of items from vegetables to electronics are displayed in stalls. Although the markets are provided with electricity, toilets and other basic amenities and storage facilities, sanitation is still poor. STMA plans to pull down some structures, particularly those encircling the Takoradi Market Circle and develop them into high rise buildings to accommodate more shops (Egon, 2010; BBC Africa, 2011).

Beside the market, small supermarkets such as All needs and Garden city mart provide a more relaxed atmosphere for grocery shopping and also issue receipts upon purchase. This practice is not common in the local markets, making it difficult for staff to claim refunds on purchased items where necessary. The transport coordinator of Tullow confirmed their use of these supermarkets, many of whom offer imported groceries which may not be available in the local market.

The operations manager of ATS however mentioned, difficulties in getting certain food supplies such as exotic spices and dairy products, necessitating the need to bring supplies from Accra and overseas for feeding expat workers.

For a visitor, or someone who is not used to open markets, shopping for groceries in this open market can be tiresome and cumbersome. Some informants are satisfied with the prices while others believe it is easier to find more variety and a better bargain in Accra. One male informant who lived previously in Accra thinks, *'A shopping mall in Takoradi will be a plus'*. This

suggestion is not surprising since such structures are characteristic of a city and help to give it a 'unique' 'spirit of place' (Herbert & Thomas; Potter & Lloyd –Evans, 1998; Holloway & Hubbard, 2001, p.68; Caves, 2005; Williams, 2005).

7.7 Effects of Increased Demand on Social Infrastructure

The huge demand for housing and office spaces in the metropolis has several consequences.

First, there has been an increase in rent. All my informants who have lived in Takoradi for at least one year prior to interviewing them repeated that rent has increased by at least 100%.

My informant from GTPCWU said, *'It is difficult to get accommodation these days because of the emerging oil business. Accommodation has become very expensive. Those days when one could get a chamber and hall for 10 or 15 cedis, it has shot up to 100 and 150 cedis in town'*.

One female informant from Baker Hughes said, *'When I moved here (before the oil companies came), it was quite easy to find accommodation. You could select from the lot but now accommodation is difficult to come by. I would say there has been an unbelievable increase in rent. I have had to pay more than 3 or 4 times the amount I would have paid for where I live now'*.

There is increasing displacement of the poor (Fieldwork, 2010). There is also gentrification of third class and fourth class areas as tenants living in first and second class areas have relocated to find cheaper accommodation (ibid). Landlords with houses and shops near the city centre have evicted occupants and leased them for offices or residential use (Lui, 2010, BBC Africa, 2011).

As a male informant from Sigma confirmed, *'The oil companies and banks buy houses over here [Takoradi city centre] . People are being ejected from their homes and housing has gotten very expensive. In areas such as Beach Road, houses are now going for about \$6000 a month and it's the big companies which can afford it'*.

A male informant from the Takoradi Air Force Base added, *'In Takoradi now the cost of living is higher as compared to the past. Landlords are evicting their tenants. They will tell you they want to renovate their house because they want to hand it over to oil companies and collect big money'*.

Another informant from GTPCWU said, *'I was living near town but I had to move out because the landlady thought she could make more money. She virtually cleared me out. So I have moved farther from town'*.

These statements further corroborate the argument that as housing falls short of demand, the poor often bear the grunt and their quality of life worsens leading to increased urban inequality (Potter & Lloyd-Evans, 1998; Songsore, 2003; Wheeler, 2004; Caves, 2005; Songsore, 2009; Egon, 2010; Owusu & Afutu-Kotey, 2010, BBC Africa, 2011).

Thirdly, there is high demand for unused land around the city's outskirts which has driven up the value of land in the metropolis (Fieldwork, 2010). As a result, arable lands near the city's fringes are sold to prospectors and private developers for housing a situation which could seriously hinder agriculture and food production for the city's increasing inhabitants (Regimmanuel Gray Group, 2009; Egon, 2010; Lui, 2010; BBC Africa, 2011). This situation could also cause urban sprawl and its attendant consequences of infrastructural deficits and transportation problems (Herbert & Thomas, 1990; Williams, 2005; Kenworthy, 2006).

Fourthly, although the huge demand for hotel accommodation from the oil companies has boosted revenue to hotels, they have not increased the number of rooms available for customers. The downside is that most high end hotels are fully booked by midweek. As one informant rightly confirmed, *'Now in Takoradi if you are looking for a hotel for the weekend you need to book early because by Wednesday or Thursday most of them are fully booked'*. Tourists and other hotel users would therefore have to book rooms well in advance.

With the increasing population, the existing infrastructures are under pressure, affecting the quality of life. Access to portable water supply has now reduced as a result of increased population, drying rivers and a non-expansion of the treated water supply system. An informant confirmed by saying, *'Sometimes the taps don't flow. I hear it's during the dry season that the problem occurs'*.

Some businesses, such as the hotels, have already been affected by these infrastructural deficits. For instance, the Manager of Raybow Hotel said, *'We have frequent power fluctuations and water shortages. Beside destroying our equipment, our operational cost increases when we buy fuel for the generator and depend on water suppliers selling water at 80 cedis (\$46) per trip'*.

As mentioned in chapter 4, sanitation is increasingly becoming a major problem as city authorities lack the resources to handle the city's waste leading to privatization of waste collection within the city (Baabereyir, 2009; Owusu & Afutu-Kotey, 2010).

These issues underscore the importance of urban planning and constant infrastructural developments to sustain increasing urban populations and their quality of life (Pacione, 2001; Zetter & White, 2002; Campbell & Fainstein, 2003; Wheeler, 2004; Caves, 2005; UN-Habitat, 2009).

On the brighter side, there has been an increase in private sector investment. There have been investments in housing, recreational centres, healthcare, shopping centres, vocational and training centres among others (Fieldwork, 2010; Garden Mart Shopping Centre, 2011; WARA, 2011; Vienna City News, 2011). However, investments from government and city authorities are still needed for electricity, water and other basic amenities.

CHAPTER EIGHT

SUMMARY, CONCLUSION AND RECOMMENDATIONS

8.1 Introduction

The aim of this study was to examine the socio-economic and infrastructural role that Sekondi-Takoradi plays in the operations of oil activities in Ghana with a focus on its role in the Jubilee oil field. This chapter gives a summary and conclusion of the research findings as guided by the research objectives. It also traces some limitations of the study and makes recommendations for policy makers and for further research.

The research used the cluster theory and structural functionalism theory. In addition, key concepts of the city and infrastructure were employed to help with the discussion of research findings.

A qualitative approach was used for collecting and analyzing the research data. Fieldwork involved in depth interviews with selected key informants from the Takoradi Harbour, Takoradi Air Force Base, Sekondi Naval Base, STMA, Western Regional Head office, GOGSPA, GTPCWU, GNPC, Tullow and selected auxiliary businesses in Sekondi-Takoradi. Observation and Figures were used to elaborate on findings.

8.2 Summary and Conclusion of Research Findings

Based on the three main objectives of the research, the research findings are summed below.

- *To what extent does the city provide a basis for related companies in the oil industry to cluster?*

The core oil industry comprises upstream, midstream and downstream activities. The upstream sector in Ghana is dominated by transnational companies whereas local businesses have more access to the midstream, downstream and other supporting sectors outside the core oil industry. The inability of local businesses to expand, affects their competitiveness for contracts. However, the more established local firms with the capacity to meet industry demands are able to win contracts.

Sekondi-Takoradi which hitherto played administrative, economic and transportation roles, is evolving into the unofficial oil city of Ghana due to the city's closeness to the Jubilee oil field and the infrastructure within the city. Oil related businesses, business associations, STMA and residents regard the city as Ghana's oil city (Fieldwork, 2010). Firms have located their operational offices in the city as a strategy to maximize profit. They are able to access clients in the oil industry (market), increase their assets and tap into technological knowhow and business networks. They are also able to take advantage of the city's infrastructure in facilitating their operations.

Based on the characteristics Porter (2000) gave of a cluster, findings show a clustering of oil companies in the city, particularly around the Takoradi Airbase, Baycourt, Sekondi Naval Base and the Takoradi Port. There is evidence of complementarities, competition, specialized service providers, associations, regulatory bodies and skilled labour among others. The city serves as a favourable location for bringing all these together. It appears that the clustering goes beyond a spatial cluster and resembles an industrial cluster owing to intense interaction, vertical and horizontal linkages among oil related companies and supporting businesses. However, due to the problem of infrastructural deficits as a result of urban primacy, barriers to local labour entry, barriers to local business entry, and expenditure pattern of expatriate workers, the city and Ghana as a nation may be unable to reap the anticipated economic benefits from the industry.

- *What role does the city play in the transportation of equipment and staff among the Jubilee oil field, Accra and Sekondi-Takoradi (including internal transport in the twin city)?*

The transport infrastructure within Sekondi-Takoradi and linking Sekondi-Takoradi to other cities plays a major role in facilitating oil activities offshore. Takoradi is an important transport node between Accra and the Jubilee oil field. The main transport infrastructure serving the oil industry are The Takoradi Air Force Base, Sekondi-Naval Base, Takoradi Port, and the city's road (intercity and intracity) road network. They all function to support offshore activities.

The Takoradi Airbase supports the air transport of oil company staffs who fly between Accra, Takoradi and the oil rigs offshore. The Airbase provides office accommodation and storage

facilities for oil companies. It also provides security for staff and property of oil companies since it is a military zone with 24 hour security and fire trucks for fire fighting.

The Takoradi Port provides docking, loading and offloading facilities for supply vessels that supply logistics to the rigs offshore. The dry areas north of the Port provide storage space for storing and assembling oil drilling equipment while some offices have been rented to oil companies to help them oversee their transport activities at the port. It also serves as a point for importing supplies for oil companies and other supporting businesses in the city.

The Sekondi Naval Base is a military infrastructure like the Airbase. It provides office accommodation to some oil companies. Due to limited space at the Takoradi Port, the ample land at the Naval Base is used for the storage and assembly of oil equipment prior to transporting them to the oil rigs offshore. When the Takoradi Port is congested, supply vessels dock at the Naval Base to offload and load supplies. By virtue of being a security zone, it provides security for staff and equipment located within the premises. It also provides offshore emergency services and training for supporting the oil industry.

The intercity roads linking the twin city to other towns are important for the transportation of people, logistics and goods. The oil companies do not prefer road transport for staff since it is riskier and slower. However, logistics that arrive in Accra are trucked to Takoradi via road. Other supporting businesses also rely heavily on intercity road transport to supply their products.

Intracity roads on the other hand facilitate the movement of people, goods and logistics within Takoradi. Some oil companies use private transport services to transport staff within the city. Logistics companies also rely heavily on the intra city road network to move logistics to or from key storage and assembly points within the city. Further, Intracity roads affect the overall status of neighbourhoods within the city as it affects access to social amenities.

From a Structural functionalist perspective, there have been some unanticipated (positive and negative) consequences resulting from the development of the transport infrastructure.

- *What social infrastructure does the city offer workers in the oil industry on the one hand and auxiliary industries on the other hand?*

The key social infrastructure discussed here include housing, shopping centres, recreational facilities, educational facilities, healthcare facilities, electricity, water and sanitation.

Housing is provided by private real estate providers. Oil companies and their staff prefer living in first class residential areas and high end hotels. The hotels provide temporary accommodation for staff temporarily residing in Sekondi-Takoradi or those who have newly moved to the city.

Generally, Sekondi-Takoradi has good access to electricity, water, sanitation and telecommunication services, perhaps due to its size compared to bigger cities (Accra and Kumasi) in Ghana. This makes it attractive as a place for long term residence. But, due to increased population without a corresponding increase in infrastructure, quality and access to these social infrastructures has been reduced though most first class residential areas have better access to these amenities.

Urban primacy and unequal urban development has affected the quality and accessibility of health, educational, recreational and trading centres. This is a major disincentive for oil company workers to stay in the city long term. Some private investors are trying to bridge these deficiencies by investing in healthcare, education, housing, shopping and recreational centres. High end customers often from oil companies are a major target of these investments.

The increased demand for social infrastructure has had other negative consequences on the city and its residents such as increased cost of living and decreasing quality of life.

8.3 Limitations

Initially, I wanted to assess the sustainability of the oil industry in the long terms as an additional objective and so I had questions in the interview guide for businesses to that effect. However, I needed to limit my scope and took that aspect out. I feel the topic would be better discussed in a stand-alone research, perhaps in the next 10 years.

Theoretically, I looked at the possibility of using structuration theory *vis a vis* using the Structural functionalist theory. It was difficult choosing between the two. The reason I chose the latter instead of the former is because, I felt the former was too concerned with actors which were not the primary focus of this research. The latter however, did mention actors briefly but focused on other issues such as functions and unintended consequences which were interesting

for analyzing the findings. Perhaps I have been biased in my choice considering that I have a background in sociology which pulled me towards using structural functionalist theory.

I had challenges in collecting primary and secondary data due to the time limitation and nature of the research topic. I feel I should have interviewed the Minister of Energy albeit knowing that it will be difficult to have access to him for an interview. Unfortunately, at the time his deputy was ready to be interviewed in Accra, I was in Sekondi-Takoradi conducting interviews.

Nevertheless, I was able to obtain the necessary government documents I needed for this study. I have used a lot of grey material in this study as a result of the limited academic studies on the industry. There was an ongoing research by SINTEF staff at the time I was collecting data. Their findings could have given more depth to the analysis on supporting businesses but I was unable to lay hands on the document by Damman, Akon-Yamga & Mohammed (2011).

8.3 Recommendations

Urban planning is an important factor for development. Based on the research findings, I suggest that government considers recognizing Sekondi-Takoradi as Ghana's official oil city. This official recognition would guide the implementation of strategic city plans to upgrade and develop the city's infrastructure to efficiently support the offshore oil activities.

Like Abuabey-Dortey (2009) recommended, there is the need for government to invest in physical and social infrastructure in the city. This can be achieved through the reinvestment of accrued oil revenues and serve as a means of bridging infrastructural deficits in smaller cities, a solution for urban primacy problem Potter & Lloyd-Evans (1998) observed in developing nations. It would also ensure the ability of Sekondi-Takoradi to adequately support the oil activities offshore

As, observed from the research findings, housing, transportation and education are some infrastructures that need attention. There is a shortage of government housing schemes or housing loans for the poor. As Skotte (2004) observed, housing alone could be a major tool for development through forward and backward linkages. Hence, it would be prudent for government to spend some of the oil revenues on housing for the poor and those displaced in the city. Intracity and intercity transport networks also need major investments.

Government has taken loans to develop the western railway line (Personal Communication, 2012). This effort as it will help to ease accidents and reduce journey times on the Accra-Takoradi road when railway lines carry bulk goods. An Intra city public transport will be a good avenue to ease traffic congestion in the city. There is also the need to provide a commercial airport for the city and expansion of Takoradi Port facilities to reduce the need for using military infrastructure as this may not auger well for national security in the long term.

In terms of education, perhaps it is time to establish a university in the city and introduce more short term and long terms oil related programmes to encourage employees seeking upward mobility in their career, and their families to settle in the city. Such educational facilities may also help to develop local labour in fulfillment of the local content bill's vision for developing human capital to enable Ghanaians to fully participate in the industry.

There has been significant private sector investment in services and infrastructure in the city. Local participation (labour and businesses) in the oil industry should be encouraged through safeguarding their interests, financial support, tax breaks, and prioritization during contracts, among others as a way to realize the vision of Ghana's local content policy. Investors should also be encouraged to invest in other non oil industries and take advantage of the Sekondi export processing zone to produce goods for import substitution and export.

8.6 Areas for further research

The study reveals a gender imbalance in the core oil industry is dominated by men. I have discussed this with a researcher in Norway, who had interests in this regard. It will be interesting to see what further research will come up with.

Presently, there have been a few studies on the Takoradi Port and other general infrastructure within the city (Abuabey-Dortey, 2009; Halcrow Engineers 2010). Some informants mentioned the possibility of building an oil estate similar to the Trans Amadi Industrial Layout in Port Harcourt, Nigeria. Further studies would be relevant in guiding government and private investments into infrastructure.

Perhaps in 5-10 years, it would be prudent for researchers to assess the sustainability of an oil led growth in Sekondi-Takoradi as a city and in Ghana as a whole to assess the socio-economic impacts of the oil industry.

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APPENDICES

APPENDIX 1: INTERVIEW GUIDE FOR LOCAL BUSINESS OPERATORS

Informants shall be from businesses not involved in the core oil industry such as the hospitality industry, financial institutions, shipping, etc.

1. What is the name of your company and what is your position in this business?
2. Do you live in or around Sekondi-Takoradi? Were you living elsewhere previously?
3. Did you move, with your family?
4. How long have you been living here and do you see yourself living here in the next 5 years?
5. How long has this business been in Sekondi-Takoradi?
6. Do you have other branches?
7. Do you make use of: The Takoradi Port and Harbour, The Takoradi Airbase (Airport) and The Sekondi-Naval Base, and how?
8. Do you, your immediate family, or business use hospitals, schools, local market, super markets, hotels, or other social amenities not mentioned? Elaborate.
9. Do you transport goods or labour via roads (within the city and linked to the city)?
10. Why is your business located here (any location or infrastructural benefits)?
11. Are there any improvements or changes in these infrastructures that you think will help your business?
13. Have you observed any changes in your clientele since 2007?
14. Could you elaborate on the number of clients or revenue your business receives from oil companies and the kind of services they use from your company?
15. Have you been able to meet these demands?
16. Have you made any expansions, renovations, or changes in your mode of operations here?

17. Is it through your own resources, private loans or help from the municipality/government?

18. What are your reasons for those changes?

19. Please elaborate on any collaboration or association with other companies or institutions in the oil industry.

20. Have you considered how your business will fare when the oil industry is no more?

NB: Request for available data on operations, revenue, clients, associations and other pertinent issues. Collect other personal details (marital status, educational level, age group (where possible), ethnicity).

APPENDIX 2: INTERVIEW GUIDE FOR OIL COMPANY WORKERS

Informants shall be staff from oil companies. Diversity in terms of age group, ethnicity, gender, educational background, marital status shall be considered as much as possible.

Informant's background and use of infrastructure in the city

1. What is the name of your company and your position in this company?
2. Do you live in or around Sekondi-Takoradi? Were you living elsewhere previously?
3. Did you move, with your family?
4. How long have you been living here and do you see yourself living here in the next 5 years?
5. Could you tell me about your housing condition (location, services accessible to you, rent, and ownership)?
6. Please elaborate on which type of the facilities below you use regularly in Sekondi – Takoradi and their names: Educational facilities, health facilities, financial Institution, car servicing, local market, supermarket, boutiques, hotels, bars, restaurants, and night clubs.
7. Do you have any comments about their pricing, quality and accessibility?
8. How do you find the general living conditions here (are there challenges or advantages as compared to where you lived previously)?

Locational advantages of Sekondi-Takoradi to Oil companies.

1. Tell me a little about your company, and its operations in Ghana.
2. Where is your company's head office (in Ghana)? Why?
3. Does your company have other offices in Ghana? Where?
4. Why do you have an office (s) in Sekondi-Takoradi and what does the office (s) do?
5. How does your company transport workers and equipment to facilitate your operations?
6. Tell me about your duties and how you perform them?

7. Do you see any potential benefits or challenges that Sekondi-Takoradi can have for your company and the industry oil in general?

NB:

Collect other personal details (marital status, educational level, age group (where possible), etc.

Look out for leakages (moving away and spending outside Takoradi).

Request for relevant documents and statistics

APPENDIX 3: INTERVIEW GUIDE FOR REGULATORY BODIES AND BUSINESS ASSOCIATIONS

1. Could you tell me your position and duties in this organization?
2. Please give a brief history of the association and what it does.
3. Do you see any potential benefits or challenges that Sekondi-Takoradi can have for your company and the industry oil in general?
4. Do you see any potential benefits that Sekondi-Takoradi can have for the companies and the oil industry in general (infrastructure)?
5. Do you think Takoradi offers any locational advantages for these companies?
6. Have you identified any challenges that your members face in business (location, infrastructure, clientele, working conditions, etc)?
7. Is there any collaboration between members (in terms of knowledge sharing, or mutual trade, having a common voice, etc)?

NB: Request for relevant documents and statistics

Ask questions 1-8 in appendix 2 to informants from GNPC and GTPCWU

**APPENDIX 4: INTERVIEW GUIDE FOR INFORMANTS FROM TAKORADI PORT,
SEKONDI NAVAL BASE AND TAKORADI AIR FORCE BASE**

1. Please tell me your position and duties in this institution.
2. Tell me about your institution and some of the services you provide generally.
3. Have you observed any changes in your operations, premises or users since oil was discovered in 2007?
4. Could you elaborate on some of the services that you provide for the oil industry?
5. Do you have adequate infrastructure to support the oil industry?
6. Has this institution benefitted from the oil companies in any way?
7. Is there any service your institution provides for the oil industry that is under pressure?
8. Do you have any comments about other infrastructure or services in the city, their pricing, quality and accessibility?

NB: Request for relevant documents and statistics

APPENDIX 5: INTERVIEW GUIDE FOR INFORMANT FROM THE SEKONDI-TAKORADI METROPOLITAN ASSEMBLY (STMA)

1. Please tell me your position and duties in this institution?
2. Could you give me general information about Sekondi-Takoradi (history, economic activities, demographics, physical and social infrastructure)?
3. Sekondi-Takoradi as well as their relatedness/effect or benefit for the oil industry.
4. Have you observed any changes in the demand or usage of the following since oil was discovered?
 - a) Prices of goods and services, rent, land
 - b) Demand for education (primary, secondary, vocational, tertiary) and skills training in the oil sector and related services
 - c) Demand for healthcare facilities
 - d) Demand for housing (location, water, sanitation, and electricity), shops, trading centres and offices
 - e) Demand for roads and other transport infrastructure
 - f) Demand for recreational services
5. What steps have been taken by the municipality to address these issues?
6. Do you have any plans to develop or build new infrastructure in this city for supporting the oil industry?
7. Do you have any short/ long term plans to maintain the growth and development of this city during and after the oil boom?
8. Have you observed any changes in the patterns or rates of illegal activities since the oil discovery?

NB :Request for relevant documents and statistics

**APPENDIX 6: INTERVIEW GUIDE FOR INFORMANT FROM WESTERN
REGIONAL OFFICE OR MINISTRY OF MINES AND ENERGY**

1. Could you please tell me about your position and duties?
2. Have you observed/ do you anticipate the location of some economic activities in Sekondi-Takoradi due to the oil discovery?
3. Does the government have plans to relocate, develop or expand any public structures in Sekondi - Takoradi?
4. Where would they be located and for whom would they be for?
5. How is the government dealing with safety issues associated with the offshore activities?
6. Do you know of any regional socio-economic plan for Sekondi - Takoradi as a strategy for the growth of the region and possibly Ghana as a whole? (Being the biggest city near the Jubilee oil field)

NB: Request for documents and relevant plans or statistics

APPENDIX 7: LIST OF INFORMANTS

No	Sex	Marital Status	Education	Organization/Institution	Position
1	M	M	Tertiary	GOGSPA	Entrepreneur/ President
2	M	M	A level, Vocational	Tullow	Marine Superintendent
3	M	S	Tertiary	ATS	Operations Manager
4	F	M	Tertiary	Nyameyie Coldstore	Administrator
5	M	M	Tertiary	Macro Shipping	Managing Director
6	F	M	Tertiary	Baker Hughes	Administrator
7	M	M	Tertiary	GNPC (Takoradi)	Petroleum Engineer
8	M	M	Tertiary	Sigma Base	Corporate Affairs & Community Relations
9	M	M	Tertiary	Takoradi Air force Base	Senior Officer (Administration)
10	M	M	Tertiary	Sekondi Naval Base	Senior Officer
11	M	M	Tertiary	Takoradi Port	Real Estate Manager
12	M	M	Tertiary	Takoradi Port	Chief Pilot
13	M	M	Vocational	Tullow	Quayside Worker
14	M	M	Vocational	Tullow	Airbase Technician
15	M	S	Tertiary	Tullow	Transport Officer
16	F	S	Tertiary	Tullow	Receptionist
17	M	M	Tertiary	STMA	Chief Planning Officer
18	M	M	Tertiary	Raybow Hotel	Manager
19	M	M	Tertiary	Zeal Environmental Technologies	General Manager
20	M	S	Tertiary	Western Regional Office	Regional Economic Planning Officer
21	F	M	Vocational	ATS	Clerk
22	M	M	Tertiary	GTPCWU	Regional and Industrial Research Officer
23	M	M	Tertiary	GOGSPA	Vice President

*Sex M: Male, F: Female

Marital Status: M: Married, S: Single

Age Range of Informants

Age	Number
Below 40	11
Above 40	12