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Enhancing Linkages in Oil and Gas in Qatar

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DECLARATION

I am Jenan AlShowaikh, I declare that the submitted thesis is my own unaided work. This research work has not been submitted anywhere else for any degree and all sources have been acknowledged.

ABSTRACT

Qatar's economy is mainly dependent on oil and gas, making it vulnerable to global economic shifts and in need of diversification. Qatar's state has always depended on Western consultancies, which largely advance a neoliberal agenda and so do not consider the long-term needs of Qatar's economy. While a small body of academic literature has criticized Qatar's economic strategy, this research provides an alternative strategy for diversification, recommending building linkages directed towards industrialisation. The study takes into account the needs of Qatar's economy, focusing on diversification carried out in a stable way that creates employment, as well as other factors. The study finds that Qatar's local content policies lack transparency, clarity, and monitoring institutions, as well as penalties and incentives to enforce the rules. Thus, there has been limited progress in forming the backward linkages knowledge linkages that would enable Qatar's economic diversification**.**

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ABBREVIATIONS AND ACRONYMS

AMV	African Mining Vision
FDI	Foreign Direct Investment
GCC	Gulf Corporation Council
HR	Human Resources
HRD	Human Resource Development
IOCs	International Oil Companies
IP	Intellectual Property
LNG	Liquefied Natural Gas
MOQ	Maersk Oil Qatar (MOQ)
MPDS	Ministry of Planning and Development Statistic
NCDMB	Nigerian Content Development and Monitoring Board.
NPRP	National Priority Research Programme
OPEC	Organisation of Petroleum Exporting Countries.
QNR	Qatar National Research
QP	Qatar Petroleum
QSTP	Qatar Science Technology Park
R&D	Research and Development
SET	Social Exchange Theory

Chapter 1. Introduction

1.1. Background Context

As a member of the Gulf countries, Qatar is a small state, with a population of 2.7 million, located on the northeastern coast of the Arabian Gulf (Baabood, 2017). The discovery of oil and gas in Qatar in the 1950s and 1960s already transformed its economic and social conditions (Abduljawad, 2013). However, it was the discovery of large gas reservoirs in the North field in the 1980s that led to the economic growth that Qatar enjoys today (Williams et al., 2011). Qatar has the third largest gas reserves in the world, after Iran and Russia. It is a member of important multilateral organisations such as the Gulf Cooperation Council (GCC)[1] and the Organisation of Petroleum Exporting Countries (OPEC). However, as the North field reserves hold non-associated gas reserves, it is not bounded by the OPEC quotas and so is free from the effects of the Saudi domination of OPEC (Dadwal, 2017). The exploitation of Qatar's gas reserves requires large foreign investment. This investment has empowered Qatar to become the world's largest producer of liquefied natural gas (LNG), and, as a result, Qatar currently has the highest GDP per capita in the world at $129,726 per resident (De Bel-Air, 2017; Ibrahim and Harrigane, 2012).

1.2. Historical Background

Understanding the contemporary economics of the Gulf requires bringing their historical development into the picture so as to understand how production evolved to its present level. Advancing such an argument, AlShehabi (forthcoming) asserts that the creation and development of the petroleum sector, as well as the labour market in the Arab Gulf region,[2] has specific historical characteristics that are different from the normal pattern of economic development in other parts of the world. The same applies to state

[1] The Gulf Cooperation Council is a regional union consisting of all the Arab states of the Persian Gulf. Its member states are Bahrain, Kuwait, Oman, Qatar, Saudi Arabia, and the United Arab Emirates

[2] The Gulf countries share the same economic challenges and this research will therefore to some extent address some of these aspects as most other research focuses generally on the Gulf countries.

formation and development (AlShehabi, forthcoming). This is significant, as Qatar came under the protection of the British after the discovery of oil. Before the discovery of oil, the British were not paying attention to Qatar and British did not conclude protection agreements with its ruler until 1916. With the discovery of oil and gas, the British started to intervene heavily in oil and gas, and they sent a political agent to Qatar. One of the most important difficulties faced by the British were the differences between members of the ruling family over their allocations of oil revenues and the continuing demands to increase them. In 1950/1951, for example, the first year in which a formal budget was drawn up for Qatar, at least 3 million riyals were allocated to the ruling family, from the total oil income of 7 million riyals (AlShehabi, forthcoming). By 1959, the royal family's allocation had exceeded 50% of oil revenues. This contributed to Qatar's development as a rentier state.

Before oil and gas, Qatar's economy was dependent on pearl harvesting, fishing, and trading (agriculture was limited due to the very low rainfall).

Al-Kubaisi (1984) divides the development of the Gulf economies into four stages:

1) In the first stage, their economies depended primarily on the price of Gulf pearls on the international market. After the creation of the artificial pearls by the Japanese, the value of pearls collapsed, which negatively affected the pearl industry and the economies of the Gulf countries (Al-Kubaisi, 1984). The discovery of oil in 1939 and its production beginning in 1949 had a dramatic influence on Qatar's economic and social life, which had suffered from poverty, malnutrition, and disease after the collapse of the pearl industry (Al-Kubaisi, 1984; Al-Siddiqi and Dawe, 1999). The discovery of oil and gas transformed Qatar from an "underdeveloped" to a "modern" country (Al-Kubaisi, 1984). During this first stage, the Gulf countries were dependent on foreign consultants to guide their economic development. Furthermore, the Gulf governments were not in control of decisions about the volume of production and the prices of oil and gas. International oil companies made these decisions without involving the states (Seznec and Kirk, 2010; AlShehabi, forthcoming). Thus, the management of the oil and gas industry was not directed towards the needs of the Gulf economies, since the Gulf governments at that time did not have sovereignty over their resources (AlShehabi, forthcoming).

2) The second stage, according to Al-Kubaisi (1984), is the "Selective and Infrastructural Phase." It appeared after the first decade of the exploitation of oil and gas, although, according to him, there is no clear line separating the first and the second stage. In this stage, the Gulf states started to demand more power and authority over the foreign companies, based on the idea that they were the sovereign owners of the oil and gas. Domestic institutions became stronger, and, for the first time, the state established educational systems, health services, roads, infrastructure, and welfare systems (Al-Kubaisi, 1984). As most of Qatar's institutions were formed during this period, Qatari citizens could not meet the economy's required level of human capital. Like the other Gulf countries, Qatar needed skilled and unskilled labour for its oil and gas industry, which Qatari nationals could not provide (Berrebi et al., 2009). As a result, there was increased dependency on foreign experts and specialists and a large increase in uncontrolled labour flow (Al-Kubaisi, 1984). In addition, Qatar depended on foreign markets for exporting crude oil and importing all its capital goods, including food.

3) Next, the Gulf states entered a third stage, the "Heavy Industry and Consumption Phase" (Al-Kubaisi 1984). It emerged after almost two decades of oil exploitation. The state started to take control of its oil through OPEC and OAPEC,[3] with the aim of controlling oil production and prices. However, direct power over oil production was still in the hands of foreign companies. By the 1970s, the Gulf governments, including Qatar, nationalised their oil and gas companies by taking over the ownership and management of the petroleum sector (Seznec and Kirk, 2010; AlShehabi, forthcoming).

[3] The Organization of Arab Petroleum Exporting Countries (OAPEC) comprises some members that are also part of OPEC. The main difference between these two organizations is that OPEC is open to any country that produces oil on a large scale, while OAPEC is open only to Arab countries that produce oil.

4) The fourth stage, according to Al-Kubaisi (1984), is the "Forward Linkages Phase." This stage emerges after three decades of oil exploitation. In this stage, the complex mutual interdependence between the Gulf countries and the industrialised world has increased. However, while it nationalized companies in the 1970s, Qatar only fully entered the fourth stage only by the beginning of 1980s.

In all of these stages, the economies of the Gulf countries remained dependent on international markets and suppliers. For example, in the first stage, these economies relied primarily on the price of Gulf pearls in the international market. However, as is mentioned above, after the introduction of cultured pearls by the Japanese, the value of pearls collapsed and so did the industry and the economies of the Gulf countries (Al-Kubaisi, 1984). In the later stages, the Gulf countries' development projects depended on foreign consultants, trade, labour, technology, and capital equipment. Although Al-Kubaisi's research was conducted in 1984, such dependency still exists today. It's important to note that Qatar achieved its independence from Britain only in 1971,[4] and Qatar's political system is an absolute monarchy, ruled by Al-Thani. The Emir, the head of the state, has full authority for state decisions, with a minimal role for other institutions (Baabood, 2017). Thus, the state can pursue its own agenda without accountability and with low political participation (Al-Saadi, 2010). As a result, Qatar has lagged in developing the institutions that would enable economic diversification. Most of its institutions were built in the 1970s. For example, the first university was only founded in 1973. This affected the availability of the qualified national human resources in Qatar. Since the educational system started late, Qatari citizens at that time could not meet the economy's requirements for human resources after oil and gas was discovered. Indeed, more than two-thirds of Qataris who were older than 15 were illiterate in the late of 1970s (Berrebi et al., 2009). This explains why Qatar was then dependent on foreign labour and consultancy. However, that does not explain the continued pattern of dependence on foreign labor. I will explain the politics

[4] However, after independence, Qatar maintained strong relations with the Western powers, as they were a central component of its national security.

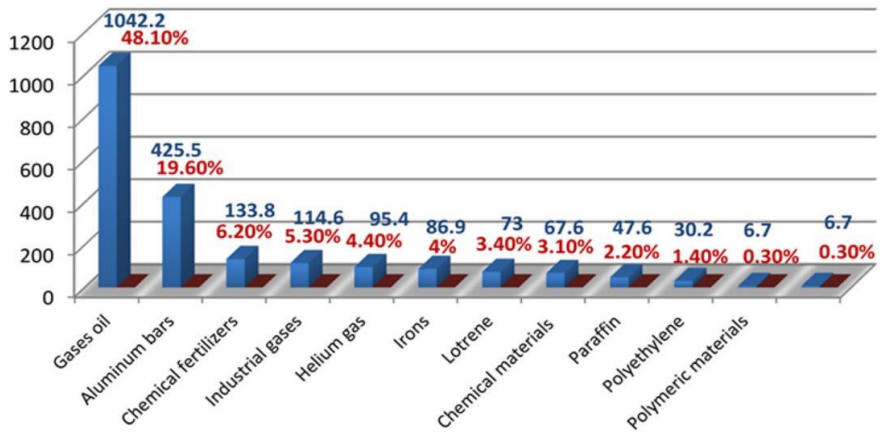
behind this in Chapter 4. I will also examine how and why this dependence on foreign labour and consultancy contributes to the vulnerability of Qatar's economy.

1.3. The Vulnerability of Qatar's Economy

Established in 2008, the Qatar National Vision of 2030 establishes the Qatari state's objectives of sustaining natural resources while diversifying the economy, with a focus on transforming it into a knowledge-based economy. The concept of 'Qatarisation' plays an essential role in this vision, with Qatarisation meaning localisation. Localisation is defined by Williams et al. (2011, p.2) as "a process in which local officers increase their competencies, and consequently improve their performance, the main objective being to train and develop locals to enable them to replace expatriates with competency and efficiency." Yet Qatar is struggling to achieve its National Vision. Its economy remains vulnerable for the following reasons:

1) Qatar's economy is highly dependent on oil and gas, which, in 2015, accounted for more than 50% of its GDP, 85% of its exports earnings, and 50% of its government revenue (Economy Watch, 2015). This dependence is illustrated in Figure 1. This dependency makes the economy vulnerable to world hydrocarbon prices (Baabood, 2017). In addition, oil-exporting countries experienced what is called the "great depression" as a result of a more than 50% decline in oil and gas prices between 2014 and 2015 (Cherif, 2016). Qatar's economy was negatively affected, resulting in a fiscal deficit in 2016, the first to be registered over a period of 15 years. This contraction also led to the first decline in the nominal GDP since 2009, which dropped by 20.6% (Ministry of Development Planning and Statistics, 2016). The decline in oil prices negatively affected government spending plans and led to the dismissal of employees in the public sector, which was overstaffed (Cherif, 2016).

Figure 1. Major exports of Qatar in 2018



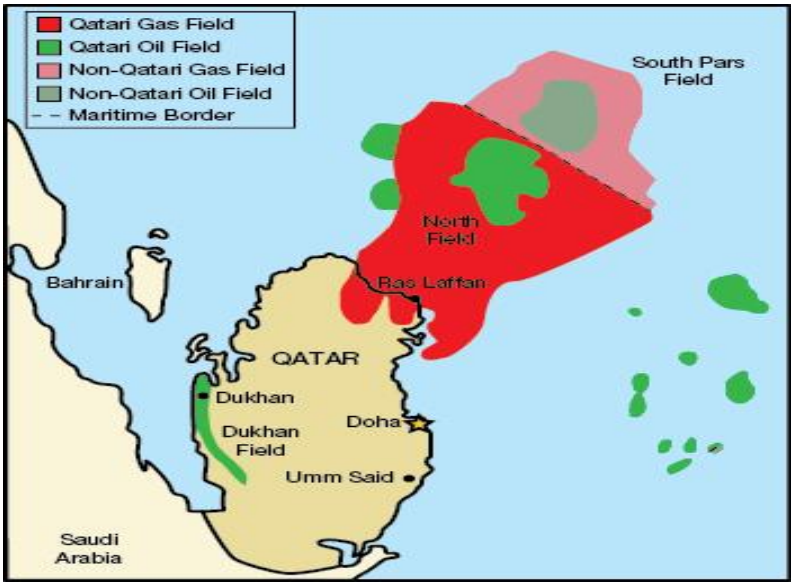
Source: The Peninsula 2018, https://www.thepeninsulaqatar.com/article/24/03/2018/Qatar-non-oil-exports-soar-to-QR2.2-billion-in-February

2) Qatar's economy largely depends on foreign labour, which outnumbers the Qataris by seven to one (Berrebi et. al., 2009). This reliance on foreign labour constitutes a major challenge for the state and is a threat to long-term economic growth (Berrebi et al., 2009). Foreign labour in the Gulf countries has no right to citizenship or permanent resident, which means that foreign employees have no motivation to contribute to the development of the country. Abduljawad (2013) argues that depending on foreign labour constitutes a major problem, as they have the economically necessary knowledge but can leave the country at any time.

3) The third reason for the vulnerability of Qatar's economy is the instability in Middle Eastern politics. Regional countries seek survival strategies to buttress their own resilience against the political, economic, and social challenges. The recent blockade against Qatar demonstrates its regional vulnerability as well as its resilience (Baabood, 2017). Qatar is located between two powerful neighbours, Saudi Arabia (the only land border to the south, as the rest of the land is enclosed by Gulf waters) and Iran (Qatar shares the world's largest gas field with Iran) as

shown in Figure 2. This makes Qatar more vulnerable to political threats and regional instability (Dadwal, 2017; Baabood, 2017). For many decades, Saudi Arabia has attempted to take Qatar into its sphere of influence. However, Qatar shares its main gas field with Iran, and so the state is careful to maintain its relationship with Iran. Qatar's vulnerability is demonstrated by the recent action of Saudi Arabia and its allies against Qatar on June 5, 2017 (Baabood, 2017). These states cut diplomatic relations with Qatar, imposed trade and travel bans, and closed their borders, ports, and airspace. Qatar is facing a problem in terms of food, as it was meeting its population's basic needs with imports and about 40% of its food is imported overland from Saudi Arabia (Babood, 2016).[5] As a result of the blockade, Qatar lost 10% of its stock market value (about $15bn) in the four weeks. In addition, the blockade negatively affects LNG exports and the projects for the 2022 football World Cup, as companies working on stadiums and infrastructure have to find new sources of material for their projects (Iyigun, 2017).

Figure 2. Reserves of oil and gas support Qatar's economy.



Source: Alfadala and Halwagi 2017, www.aiche.org

[5] After the blockade, Qatar had to find new sources of food to meet its shortfall and started to import from Turkey and Iran.

1.4. Problem Statement

All of the above-mentioned vulnerabilities are forcing Qatar to diversify its economy. Qatar is seeking to create other sources of income, build local human capital to take over the economy, and reduce its economic dependence on hydrocarbons and imports. In general, an economy that is so vulnerable to fluctuations in oil and gas prices is easily weakened by these constant changes (Al-Farahn, 2003). This challenge imposes on Qatar the need to diversify its economy and create other sources of export income to offset declines in oil and gas prices. Diversification points to the need to develop multiple economic sectors to counter the negative effects of fluctuating oil and gas prices. Diversification would also create additional sources of employment, as Qatar's public sector is overstaffed relative to its needs, according to some estimates, by 75% (Berrebi et al., 2009; Zaho and Gerain, 2017) and the decline in the oil price in 2014/5 led to the dismissal of many employees. However, there is no source that confirms the exact number of employees that were laid off. Generally, the size and quality of the active labour force in any state is important for the development of its economy and particularly for the development of industry (Al-Kubaisi, 1984). Depending heavily on foreign labour can be an obstacle to building the economy, as expatriates have no long-term commitment to the development of the country and externalise a large part of their earnings (Al-Farhan, 2003). Finally, the dependency on imports has resulted in a weak economy, as evidenced by the effects of the 2017 blockade. The blockade has lead to the state realising the inadequacy of its economic model and the importance of achieving economic independence, especially b reducing its dependency on food imports. Sheikh Tamim, the Amir of Qatar, said in his speech after the blockade on July 22, 2017:

> "This crisis has helped us identify the shortcomings and obstacles in determining Qatar's national, political, economic and independent identity and in deciding to overcome and surpass these obstacles. We are called upon to open our economy to investments and initiatives so that we produce our own food and medicine, diversify our sources of income, achieve our economic independence …" (The Peninsula, 2017).

Qatar has acknowledged the importance of a new vision that will help diversify its economy and strengthen its economic independence. The question is how these objectives can be achieved. Is it through openness to investment, as Sheikh Tamim stated, or by building local industries and local capabilities and knowledge? Drawing on a wide range of literature, this research will show that the answer is not necessarily openness to foreign direct investment, but rather enhancing linkages and industrialisation.

1.5. Definition of the Main Concepts

This research advances a linkages framework, and these linkages require a clear conceptualization. This research will focus on that five linkages that were developed by Jourdan (2013), based on the African Mining Vision (AMV), namely: fiscal, spatial, forward, backward, and knowledge linkages. As this research evolves around diversification, it will primarily consider the productive linkages that lead to diversification and knowledge linkages. The productive linkages can be broken down into forward and backward linkages. Forward linkages are defined as investment in downstream mineral beneficiation and manufacturing. Backward linkages are defined as investment in capital goods, consumables, and services industries.

Given the limited scope of this research, it will primarily focus on the latter, examining the possibilities for backward linkages in Qatar. In addition, in Chapter 3, it will discuss how these linkages have the ability to expand outside the oil and gas sector. However, to enhance backward linkages, it's important to first enhance knowledge linkages. Thus, this research will discuss both backward and knowledge linkages. Knowledge linkages are defined as investment in exploration, human resource development (HRD), and research and development (R&D). These linkages will be explained in detail later in the linkages framework section. It has been suggested by many scholars like Tordo et al. (2011) and Jourdan (2012) that local content policies could be a means to enhance the backward and knowledge linkages. Amoako-Tuffour et. Al. (2015, p. 6) define the concept of local content policies as "securing direct and indirect opportunities for employment and procurement of local goods and services, while at the same time fostering the development of local skills, technology transfer, and the use of

local manpower and local manufacturing." Applying local content policies is important to foster economic diversification and the development of strong backward linkages, as local content policies help overcome the tradeoff between "short term efficiency and long term economic development" (Tordo et al., 2011)

1.6. Research Question

This research aims to examine how Qatar can use its natural resources for sustainable and equitable inter-generational growth and development.

1.6.1 Sub-questions

- What are Qatar's local content policies that may enhance backward and knowledge linkages in the oil and gas industry?
- What are the trends and achievements to date in local content policies?
- What are the shortcomings to Qatar's local content policies? How can they be overcome? What are the untapped opportunities for creating linkages?
- What are the political and institutional factors that enable or hinder Qatar's local content policies?
- What is Qatar's HRD policy and R&D policy, and is it successful in fostering knowledge linkages?

1.7. Hypothesis

Qatar's local content policies are currently limited for encouraging both backward and knowledge linkages. There are many unrealized opportunities, opportunities that are not currently pursued due to weak knowledge linkages and weak institutions.

1.8. The Significance of the Study

The current literature on the Gulf in general and Qatar in particular advances two rival perspectives. The first focuses mainly on the economic challenges in the region, critiquing the Gulf vision and the need for a diversified economy. It focuses on the Gulf's

economic problems but does not propose ways of dealing with these problems or propose specific mechanisms through to diversify the economy. The second type of literature focuses on the self-defined vision of the Gulf countries and argues that they are broadly on the right track but face problems with implementation. Thus, there is a lack of country-specific research about Qatar that analyses specific policies that would address how the oil and gas sector can achieve diversification and industrialisation or that focuses on enhancing linkages via local content and other policies. Indeed, there is no research about Qatar that even mentions the linkages framework. This research tries to show how the oil and gas industry can be used and converted into forms of capital that move the country into diversification and knowledge transfer, while reducing its dependence on imports. As oil and gas is the main industry in Qatar, it is the best way to achieve this target and bring about transformative change. As I define it, transformative change in this research means shifting Qatar from an oil-dependent economy to a diversified, industrialised country. This can be achieved building linkages in the oil and gas industry in Qatar through local content and similar policies, linkages that could foster industrialization and economic development. Here, I focus on backward and knowledge linkages as areas with the highest medium-term potential for achieving transformative change.

1.9. Research Objectives

- To discuss the resource curse theory and the counter-arguments to the idea of a resource curse.
- To set up a theoretical framework for linkages and explore how to use the natural resources, oil and gas, for industrialisation and diversification.
- To discuss the local content policies and how to use them as instruments to support the linkages framework.
- To examine the local content policies in Qatar and evaluate their success in building backward and knowledge linkages.

1.10. Methodology

This research looks at the capability of the Qatari state to build linkages through its local content policies. The study is based on the linkages framework developed by Jourdan (2013) and aims to capture empirical variables capable of explaining linkages in oil and gas. However, as this study focuses on local content policies, I primarily examine backward and knowledge linkages. The first chapter sets out how building linkages can foster diversification and industrialisation and how these linkages can be built through local content policies.

Methodologically, this study deploys qualitative political and policy analysis, descriptive statistics, and surveys of the relevant corporations to examine the current practice and future potential of linkages and local content policies in Qatar. My goal is to evaluate the success of current policies, which requires analyzing, not just the stated goals of those economic policies, but also how they are implemented and tracked. However, there is limited data on the success of local content, Qatarisation, and research and development policies. Nonetheless, I draw on government records, corporate reports, and an anonymous survey of a company to evaluate the success of these policies. I also examine data on Qatar's educational system to see whether limited knowledge linkages hinder the development of backward linkages.

For the policy analysis, the study investigates the policies by looking at publicly available contract production agreements, legislation, and guidelines in the oil and gas sector published by Qatar authorities. It also examines the current structure of Qatar's educational and research environment and R&D policies. To record the trends and achievements and to evaluate these local content and Qatarisation policies, the study then examines the reports published by foreign and national oil and gas companies in Qatar. Annual reports of Qatar Petroleum (QP) are particularly significant, as they reveal primary strategies for Qatarisation, insofar as the company is responsible for all phases of the oil and gas industry in the state of Qatar and owns a share of at least 60% of all hydrocarbon companies operating there. This policy analysis will be supported by secondary data and statistics published by the Ministry of Development and Planning Statistics (MPDS) as well as different institutions such as Qatar Petroleum. But as these reports and statistics are

not sufficient to analyse the research questions, the study then draws on qualitative and quantitative questions that were sent to an anonymous company (A) and information that was shared under a confidential disclosure agreement. To hide the identity of the company, this research doesn't mention the exact figures,

1.11. Outline of the Research

Chapter 2 reviews the literature on economies with abundant natural resources. The chapter starts by discussing the neoclassical argument regarding the 'resource curse' in natural resource-rich countries. It will then provide counter-arguments to the resource curse theory. Chapter 3 discusses industrialisation through building linkages in the commodities sector. Chapter 4 discusses Qatar as a case study, examining the extent to which it reflects the resource curse and linkages framework and then analyzing Qatar's diversification vision. Chapter 5 discusses my empirical evidence regarding the potential for diversification in Qatar and answers my specific research questions. Finally, chapter 6 provides a conclusion and future recommendations.

Chapter 2. Literature Review and Theoretical Context

Introduction

There has been an extensive scholarly debate about whether natural-resource endowments are a "blessing" or a "curse." While this research argues that natural resources – and more specifically oil and gas[6] - can be a blessing by enabling linkages and helping build state policies, institutions, and capacity, here I outline the "resources curse theory" and discuss why it may not apply to the Qatari case. Resource curse theory is based on a neoclassical approach that emphasizes three concepts: the Dutch Disease, rent-seeking behaviour, and corruption. This discussion is followed by an analysis of the weaknesses of resource curse theory. These weaknesses will then inform my discussion of linkages theory in the next chapter.

2.1. Resource Curse Theory

Until the 1980s, it was widely considered advantageous for a country to have abundant natural resources (Saad-Filho & Weeks, 2013). Neoclassical scholars viewed natural resources as one of the most important elements of economic growth and investment (Saad-Filho & Weeks, 2013). However, in the mid-1980s, mainstream scholars criticised this idea, claiming that natural resources are, in fact, a curse, as natural resources caused economic and political problems ranging from social inequality to corruption, inflation, non-diversified exports, and rent-seeking behaviour (Cherif and Hasanov 2016; Saad-Filho & Weeks, 2013). Thus, they argued that there is a negative correlation between natural resource wealth and long-term economic development.

The negative economic impact of a large endowment of natural resources is often analysed with reference to the Dutch Disease. This concept was formulated as a result of the discovery of natural resources in the Netherlands, which contributed to deindustrialisation Di John, 2011). According to this argument, countries endowed with natural resources will experience currency appreciation, which discourages manufacturing

[6] The debate around "natural resources" as a blessing or curse usually involves a variety of such natural resource endowments. However, this study focuses only on oil and gas.

exports and industrialisation in non-resource sectors (Di John, 2011; Cherif and Hasanov 2016). The Dutch Disease is exacerbated when resource development occurs alongside state-formation. According to Goldsmith (1770, cited in Saad-Filho & Weeks, 2009), when a commodity boom parallels state formation, the rents from these commodities tends to discourage taxation, promote an overstaffed civil service, and encourage income redistribution in the public sector through welfare programmes. Thus, they claim that countries endowed with natural resources rely mainly on those resources for state revenue, thereby lacking incentives to development of new activities or strong state institutions. This, in general, encourages rent-seeking behaviour from social groups that benefit from state contracts and corruption (Cherif and Hasanov, 2016).

Based on these arguments, many inspired by the neoclassical approach propose that the problem in developing countries is the state. To eliminate rent-seeking and corruption, the state needs to be rolled back (Fine, 1997; Rapley, 2002). According to this approach, the state and state institutions were attacked as hindering the operation of the market (Rapley, 2002). However, the resource curse theory has its shortfalls for various reasons that will be discussed in the next section. The next section also will show that the way to go out of the resource curse is not through diminishing the role of the state, but by building state intervention, institutions, and state capacity.

2.3. Counter-Arguments To Resource Curse Theory

Although several researchers, such as Rosser (2006), Di John (2011) and Saad-Filho and Weeks (2013), acknowledge the problems that may arise because of natural resource endowments, they also point to several shortcomings in resource curse theory.. The theory neglects the development process of resource-rich new countries such as Canada and Australia (Vahabi, 2017). Based on this, Rosser (2006) and Vahabi (2017) emphasise that the resource curse theory often does not take into account other variables, such as social factors, political institutions, and the international economic environment. Furthermore, the theory has difficulty explaining why some countries - such as Norway, Finland, and Sweden, which have an abundance of natural resources - have been able to achieve high economic growth and development while others were not able to achieve the same results. Similarly, Di John (2011) argues that the effects of abundant natural resource

endowments depend more on institutional and political than technical or economic factors. Most simply, it is not possible to uniformly generalise about the positive or negative effects of resource endowments on the economy (Smith and Kraus, 2005).

Structuralists, dependency theorists, and some Marxists are against economic specialisation in natural resources exports (Di John, 2011). The structuralist view is put forward by, among others, Prebisch and Singer (1950, cited in Kaplinsky, 2011) and argues that primary products are subject to declining terms of trade relative to the prices of commodities and those of manufactures. Dependency theory, similar to the position of structuralists, argues against specialisation in commodities exports due to the price volatility of raw materials (Di John, 2011). For the dependency theory, natural resources did not contribute to economic growth because foreign companies controlled resources extraction and were permitted to repatriate their profits (Di John, 2011; Rosser, 2006). Within the same family of arguments, Amin (2014) contends that the role of developing countries in the global capitalist system was only to provide raw materials to the developed countries and to provide markets for their manufactures. Thus, Amin (2014) raised an important point, contending that that the central question is: in what ways are developing countries integrated into the world economy?

Regardless of the different positions regarding the natural resources curse, as Di John (2011) contends, the key issue should be what the country does with its natural resources. Jourdan (2013) elaborates more and emphasises that the country has the choice to avoid the curse of natural resources and turn it into a blessing by applying policies that maximise the benefits of natural resources.

Chapter 3. The Theoretical Framework for Leveraging Oil and Gas Resources

Introduction

This chapter explains how building linkages around the commodity sector can lead to industrialisation and diversification. The chapter will begin by explaining linkages theory. It will then outline the linkages framework this study deploys and discuss how building linkages can promote diversification and industrialization. Finally, it elaborates on the role of the state in industrialisation.

3.1. The Linkages Theory

The idea of linkages deriving from the commodity sector dates back to staples theory, which was developed in the 1920s and 1960s and has recently regained attention (Kaplinsky, 2011). Innis (1940) introduced the staples thesis with regards to the export-orientated fur, wheat, and cod fishery industries in the Canadian economy of the 1930s-1960s. The thesis seeks to explain how the Canadian economic pattern was affected by the exploitation and export of natural resources. Innis aimed to show that the development of manufacturing in Canada was due to linkages that arose from the commodity sector. In addition, the staples thesis sheds light on the development of industries in the United States (US), Australia, and Norway where the linkages between commodity production and industry were significant (Wright and Zelusta, 2004).

Albert Hirschman, in his book *The Strategy of Economic Development* (1958), shows that in the development process, sequencing matters and one thing can lead to another through productive linkages (forward and backward) . He emphasises that, in the catching-up process, industrialisation is important and a key in diversification. For him, successful economic growth is necessarily an incremental unfolding of linkages between related economic activities. He thereby formulated the economic linkages framework, which was influenced by the work of Wassily Leontief (1906-1999). The latter work is

based on a matrix that shows the interactions of input-output between several sectors. In concrete terms, the matrix demonstrates how a certain quantity of iron is needed to produce a specific quantity of steel, and how the quantity of steel is needed in the automobile sector to create cars.

Hirschman (1981) and Jourdan (2012) propose the linkages framework around the commodity sector as one way to avoid the natural resources curse. Building linkages in the commodity sector would result in diversifying the economy and achieving development, rather than just capturing the rents from the exploitation of non-renewable resources (Hirschman, 1981; Jourdan, 2012; 2013). As building linkages in oil and gas is the key to sustaining the use of natural resources and diversify the economy, this requires a fuller explanation of the linkages framework.

Based on Innis's staple theory, Hirschman (1981) proposed three types of linkages: fiscal, consumption, and production.

1) The first set of linkages are fiscal, related to the government revenues from tax earnings, royalties, PAYE[7], exports and import tariffs, etc. These rents could be used to promote industrial development and investment in non-resource sectors.

2) The second linkages are consumption linkages, where the income earned from the commodity sector raises the consumption demand for output from the non-resource sector.

3) The third form of linkages are production linkages, which is the key way to diversify and develop the economy. There are then two sub-types of such linkages: forward and backward linkages. Forward linkages are the activity of commodity processing, and backward linkages are the inputs production that is used in the commodity and non-commodity sector (Hirschman, 1981).

3.2. The Linkages Framework

In this study, I adopt Jourdan's (2012; 2013) linkages framework, which builds on Hirschman to propose five types of linkages: fiscal, spatial, forward, backward, and knowledge linkages. Each linkage will be explained more in detail below:

[7] PAYE Pay as you earn – personal income tax

Fiscal linkages: This refers to the revenues and rents from the commodity sector that the state can collect to invest in the economy. Fiscal linkages can be enhanced through government regulations to determine taxes, royalties, and production shares with regards to the licences for the exploitation of natural resources (Jourdan, 2012; Jourdan, 2013). In this way, governments can maximise their income from the natural resource sector and build the physical and knowledge infrastructure requirements. Resource rents can also be invested in funds such as a Sovereign Wealth Fund (SWF) (Jourdan, 2013).

***Spatial linkages*:** These linkages are built by using investments in side-stream activities (mainly physical infrastructure, including roads, pipelines, and electricity) to stimulate other sectors (Jourdan 2012; 2013).

Forward linkages: These include value-added production related to the commodity through downstream processing and fabrication. This linkage is built by using the output of the commodity as the input for other products (Dhal, 2015). For example, in the case of oil and gas, it would be used as input for the petrochemical and refinery industry (Dahl, 2015) and into plastics manufacturing. Jourdan (2012) argues that, by processing its natural resources, the country can internalize the intermediate stage of production, which then provides the feedstocks for manufacturing and other industries.

Backward linkages: According to Teka (2011), backward linkages involve all the production factors (equipment, technologies, material, and services) that can be used in both the upstream and downstream activities of commodity extraction and processing. These linkages are developed when the inputs for the upstream activities are produced locally and their usage stimulates the creation of other local industries (Dahl, 2015). Thus, if the industry uses local steel as inputs to produce its products, it would have stronger backward linkages than if it imported its steel from abroad (Dahl, 2015).

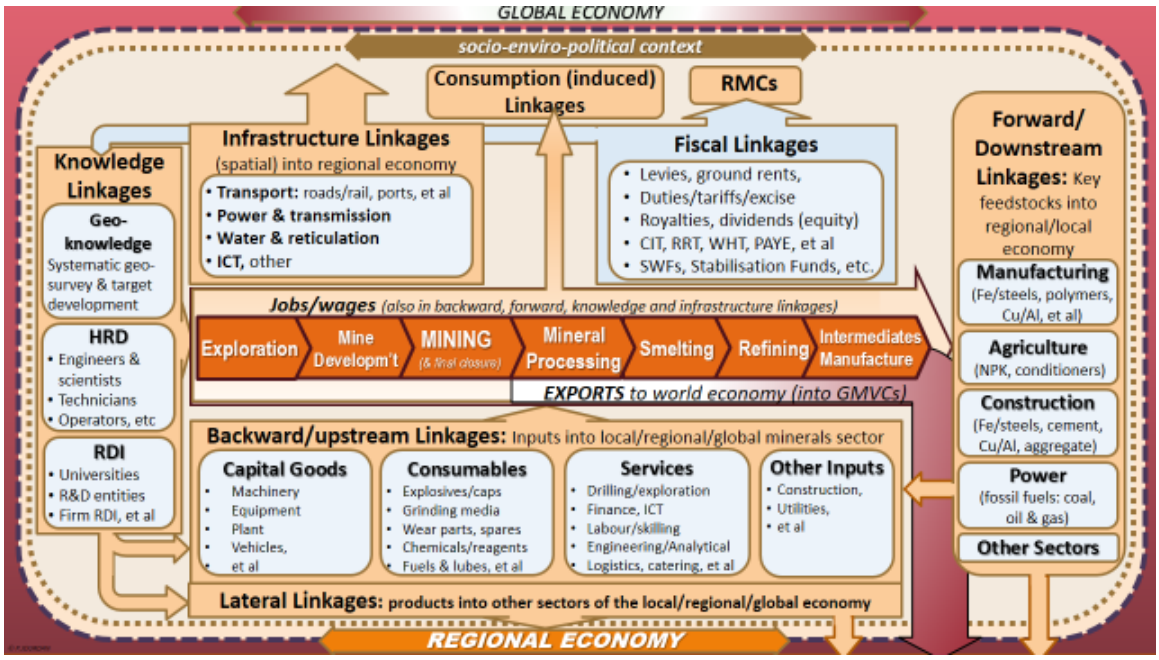
According to Jourdan (2013), backward linkages have the capacity to enhance and sustain economic growth, as they create the need for the development in other industries and areas such as power, skills, and technological development. However, he emphasises that developing the backward linkages depends on many factors, including HRD and R&D, which are described below. In other words, developing knowledge linkages is essential for backward linkages and so economic development more broadly.

Knowledge linkages: The commodity inputs sector tends to be knowledge-intensive, which means it requires investment in HRD and R&D (Jourdan, 2013). Resource exploration activities need to be adjusted to local conditions, such as climate and mineralogy, which means providing an opportunity to acquire the niche technological competencies required in the inputs of the resource sector (Jourdan, 2013). However, as mentioned above, these linkages can be enhanced and transformed only by developing HR and investment in R&D.

Lateral/horizontal linkages: According to Jourdan (2013), backward linkages are a knowledge-intensive sector, which means it needs investment in HRD and R&D. Much of the literature shows that these horizontal linkages outside the resources industry can exist through the lateral migration of technological competencies to create new products for new markets in other sectors.

A summary of these linkages and how they can lead to diversification of the economy is shown in Figure 3 below (reproduced from Jourdan, 2013).

Figure 3: Building resource's linkages



Source: Jourdan (2013)

3.3. Promoting Diversification Through Linkages and Industrialisation

Studies show that a more diversified economy is stronger and less vulnerable to external shocks. This particularly applies to the commodities sector, which faces market price fluctuations (Morris et al, 2011). Diversification through industrialisation can be achieved in two ways. The first is through industrial development outside the commodity sector. The second is by industrial development through building linkages from the commodity sector (Kaplinsky, 2011). In this study, the focus is on building linkages between the commodity sector and industrial sector because the country of research (Qatar) is endowed with natural resources.

Theories related to structural change usually emphasise diversification through increased exports. In developing countries, exports typically depend on a few input products—mainly commodities. Export diversification must consider "demand and supply changes, industrial capability, risk aversion, environmental considerations, and changes in commercial policies" (Khan and Fournier-Bonilla, 2016). In the case of developing countries, this means converting comparative advantages into new sectors that lead to more efficient resource allocation. The production linkages (backward and forward) then act as a stimulus for building new industries and expanding existing ones (Khan and Fornier-Bonilla, 2016, p 5). In the case of developing countries, scholars like Hvidt (2013) and Khan and Fronier-Bonilla (2016) show that there are two types of diversification: horizontal and vertical. The former refers to increases in the number of export sectors. Horizontal diversification can be achieved by looking for new opportunities in the same sector (e.g., mining or the energy sector) (Hvidt, 2013). This entails the movement of resources from low-value to high-value activities (Khan and Fronier-Bonilaa, 2016). Vertical diversification to the composition of exports from primary to manufactured products. This can be achieved by increasing the number of export sectors through processing and value-added activities for the commodities that were previously exported as raw materials (Hvidt, 2013; Khan and Fronier-Bonilaa, 2016).

Structural change is required to achieve the latter form of diversification, as it entails transitioning from raw materials and natural resources extraction towards value-added manufacturing and industrialisation (Amsden, 1997). According to the structural

approach, as Millin (2003) posits, this requires a "reallocation of resources to the higher productivity sectors, the attainment of economies of scale, learning by doing, and the reduction of internal and external bottlenecks in the production process" (Millin, 2003, p 20).

Based on success stories of moving from a natural resource base to industrialisation, Walker and Jourdan (2003) suggest that the only way to sustain economic growth from mining is through processing minerals, beneficiation, and adopting downstream activities. They add that exploiting those resources without a long-term industrial policy will not allow those countries to use them sufficiently. Similarly, Chang (2011), referring to South Africa, asserts that even though the country is endowed with mineral resources, utilising these resources without a sustained industrial policy will not bring economic growth or achieve economic efficiency. Countries like Canada, Australia, and the US are not rich simply because they have abundant natural resources but also because they have developed manufacturing industries (Chang, 2011; Walker and Jourdan, 2002). In other words, states become successful in high-productivity industries not simply because they have natural resources but because they have adopted the right strategies to build those industries.

A country adopts a "pro-manufacturing" vision when development and economic growth is directed towards industrialisation (increasing the share of manufacturing in the GDP). Such an approach was adopted by the structuralist economists, such as Hirschman and Kaldor. Both authors demonstrate a positive correlation between manufacturing development and economic growth. The evidence sustaining their argument relies on the internal "special properties" of manufacturing and its potential to spread to the rest of the economy, resulting in increasing economic returns and growth. Hirschman's unbalanced growth model shows that each sector is linked with other economic sectors through the direct and indirect purchase of productive inputs and sales of productive outputs (forward, backward linkages). According to Andreoni (2013), in Hirschman's approach, sectors are not just related to each other through physical relations of supply and demand. Rather, there are spill-over effects whereby the "embodied" and "disembodied" knowledge produced within the manufacturing sectors connects "within and across" industries. Furthermore, this approach emphasizes how the resource-based sector should be used to provide the output-

and export-earnings to finance new industries importing necessary technologies. These technological upgrades can help the country transform into an industrialised country that adopts a higher productivity sector and obtains the capacity for endogenous innovation (Chang, 2011).

The linkages framework is closely connected to the idea of the state as a "developmental state." In this regard, Hirschman (1977, p. 72) argues that "backward, forward, and inter-sectorial" linkages are tied to technical and economic conditions of production and so are not invariant with regards to social and political change. In the same line, Edigheji (cited in Jourdan (2013, p 12) notes that "what sets developmental states apart from mineral-rich countries is primarily the nature of institutions and consequently state capacity" (p. 12). This argument brings us to highlight the role of the state, as it is critical to understanding how to enhance these linkages.

3.4. Industrialisation and the Role of the State

The role of the state in industrialisation is controversial. While the discussion of the previous section is based on the structuralist scholars, other approaches are more sceptical of these policies. Mainstream economists tend not to favour industrial policy because it requires state intervention in the economy and can go against comparative advantage and specialization. In this view, the role of the state should be limited to the establishment of regulations for markets to operate effectively (Chang, 1994). In a departure from mainstream economists, Lin (2011) in his "New Structuralism" approach highlights the importance of industrialisation. Yet, for him, state intervention should limit itself to facilitating the private sector, which is based on comparative advantage specialisation. The role of the state in this approach is limited to providing hard infrastructure, such as roads and transport, as well as soft infrastructure in terms of finance, education, and R&D.

Structuralist theories call for a country's transformation from dependence on natural resources to an economy based on industrialisation. Unlike mainstream theories and Lin's approach, Structuralist theories provide a more comprehensive approach. They contend that industrial policy should be understood and analysed relative to a specific

context. They reject “one size fits all” and try to find significant and critical factors that influence the performance of a country or an industry (Fine, 2013) -- in this sense, development means “learning by doing” and capacity building. However, there are different definitions for industrialisation within Structuralism. For example, Chang (1994) has narrow definition of industrial policy. For him, industrial policy should be selective, focused on developing particular industries. Fine and Rustromjee (1996) have a more comprehensive approach to industrialization and argue that there is no specific definition for industrialisation. Instead, for them, industrial policies should be designed according to the country’s context, particularly the economic, political and social circumstances. This definition is more useful for this study, as it takes into consideration Qatar’s special conditions.

Moreover, unlike, the mainstream, the New Structuralist, and the Structuralist approach, this study seeks to understand the role of the state in the process of industrialisation. Thus, the role of the state, according to the structuralist approach in development should be extensive, and large-scale state intervention is a need. Taking into consideration the role of the state in a country endowed with natural resources may be best reflected by an an article by Watkins that appeared in 1963, which shows that state intervention through “proactive” policies is needed to break the staple trap and move the economy in the form of “diversification” and “self-directed” development (Stanford, 2014). According to this view, these policies should be designed in a way that reduces any future vulnerability of the economy. These policies should focus primarily on “enhancing the forward and backward linkages of resource production through which the commodities could translate into a more fulsome and well-rounded form of development (both quantitative and qualitative”, “regulating foreign investment, foreign ownership, and foreign trade in the staple industry”, “acting to foster investment and capacity building in other value-added sectors of the economy (including manufacturing and services)” (Stanford, 2014; p 67). Jourdan (2012) adds the fact that mineral resources can belong to the state and exploitation is often done under a concession agreement (licence), which conditions the development of up-, down- and side-stream linkages., Based on the previous argument, the state should intervene widely through its policies and institutions to foster and build linkages.

3.5. Local Content Policies

Local content policies are used as a tool by countries with rich natural resources that lack the relevant skills to develop linkages. Instead, they invite international oil and gas companies with expertise to develop these resources, and the developing country then forms strategies and regulation to promote local procurement by those companies (Noreng, 2004). Local content refers to the use of local inputs in in raw materials production before export and can include: targets on local employment (managerial, professional, skilled, semi-skilled, etc. and annual local HRD and R&D spend targets), ownership (indigenisation), and local procurement (local-national and local communities around the extraction) (Jourdan, 2012).

The maximisation of economic gain from the domestic oil and gas industry can be best exemplified through several countries including Norway, which applied local content policies in licence conditions of oil and gas extraction. Government and industry operators are the main sources of policy design and implementation. When launching local content policies, the state's requirement is explicitly stated and a regulatory agency is set up to enforce the policies. It's important to present a good model of a country that is rich with natural resources and applied local content policies and was able to industrialise. As a benchmark, then, this study refers to the Norwegian experience.

Norway, through its consistent policy over the past 30 years, has been able to diversify its economy and reduce its dependence on petroleum revenues (Noreng, 2004). Offshore exploration of oil and gas began in Norway during the mid-1960s. At that time, the state did not have the industrial abilities and competence to operate the field on its own and so it was run by foreign companies (Noreng, 2004). While it's true that, when their oil and gas reserves were discovered, Norway's economy differed from developing economics because of it relative high level of education and democratic institutions. Yet, at that time when oil and gas discovered, the country was not rich relative to OCED countries. Its GDP over the last 30 years rise up from 90% of the OCED average to 150% (Havro and Santiso, 2008).

The successful story of Norway provides one of the best examples of the importance of state intervention. Norway placed licence conditions on these international

oil companies, thus developing its own economy by means of diversification. Norway awarded licences by bargaining with oil and gas companies over several objectives. The Norwegian vision was to develop a local supply of some competitive goods and services required by the oil industry (Noreng, 2004). In this successful case, the state's policies lead to a high level of local content in oil-and-gas resource development. The state encouraged partnerships between international and national companies and set compulsory research programmes, all with the aim to ensure the development of technology in Norway (Noregn, 2004).

Havro and Santiso (2008, p 15) point out that both Norway and Chile experienced

> "…more direct efforts to diversify their economy and to support industries associated with the natural-resource sector – such as engineering and supply – as well as non-resource sectors. Norwegian policies in the 1970s were markedly interventionist in this regard . . . The legal framework emphasised local content until 1990, to develop the infant petroleum supply industry."

According to Segura et. al. (2007), the history of prospecting local content in the oil industry suggests that the policy considerations should establish institutions and agency that ensure the following: accountability, adequate definitions, efficiency consideration, information dissemination, and acknowledgment of spin-off benefits.

1- Accountability: Suggests the creation of devoted and independent state authority responsible for monitoring local content in the oil industry and ensuring that local sellers are assured the opportunity to apply and compete for contracts.

2- Adequate metric/ definitions: Refers to the development of a clear definition of content. Evaluating local content at different stages of the project should be done by monitoring employment and value-added gains and the project expenditure impacts on the local economy (including tax payments).

3- Efficiency considerations: Local content evaluation and targets have to take technological factors into consideration. Technical constraints limit the level of economic gain that can be captured within a particular country at a specific time.

Policymakers have to take into consideration that, at any point in time, some areas of operation may be beyond the technical reach of local vendors.

4- Information dissemination: Suggests that the establishment of a public outreach and analysis office with the following tasks: (i) develop competent and qualified local vendors, (ii) provide consultancy service to locals on potentials for joint ventures and other mechanisms of cooperation with multi-international companies, and (iii) support strategies for local capacity building, training, and R&D.

Acknowledgment of spin-off benefits: Includes monitoring and public distribution of the linkages between the oil industry and the rest of the economy. For example, there are potential spillover effects from oil into agriculture.

Overall, oil- and gas-rich nations are not necessarily trapped by the resource curse. Through well-designed industrial policies, such as local content policies, they can use their natural resource endowments to foster industrialisation and economic diversification.

Chapter 4. Qatar As a Case Study

Introduction

Having discussed the general theories of the resource curse, the linkages framewok, and economic diversification and industrialization, we now need to understand Qatar's specific position in relation to these broader ideas and, in particular, how Qatar has been using its oil and gas profits. The discussion will begin by evaluating the extent to which Qatar is a rentier state, followed by a discussion of industrialisation in the Gulf countries, then finally turning to diversification in Qatar and providing a general analysis and critique of Qatar's vision.

4.1. Qatar's Rentier State

The rentier state approach is one of the common conceptualisations of the Arab Gulf countries' development of the oil and gas industries.[8] The concept of the rentier state is a political economy concept that describes the relationship between society, the state, and governance. A rentier state derives its revenues from rent in the form of royalties, in this case, revenues of oil and gas exports. In the rentier state model, the state does not tax its citizens, mindful of the principle that there is no taxation without representation. The rentier state model largely applies to Qatar. A reward mechanism enables citizens to be compensated for quiescence. A no-taxation-without-representation strategy is implemented by granting generous welfare subsidies, which diminishes work incentives and points to the need to increase local human capital. Consequently, all of this paves the way for a society-wide rentier mentality (Beblawi, 1987). This definition applies to Qatar insofar as the state provides of generous subsidies, well-paid state jobs, free healthcare, land grants, and free education. AlShehabi (forthcoming) investigates how the oil and gas revenues are spent in Gulf countries and reports that the numbers are opaque. Generally speaking, salaries constitute a large share of state expenditure, as well as remittances to individuals and certain agencies (other than those of the ruling family), which include

[8] This approach was influenced by Hussein Mahdavy's conceptualisation of Iran's rentier pattern regarding its relation to the oil-based economy. Many, such as Beblawi, tried to apply this idea to the Arab countries. The rentier concept is not precise but it gives a general perspective.

subsidising goods, households, and other expenses. It's important to note that the expenditures on social welfare decreased when the price of oil and gas fell in 2015 (AlShehabi, forthcoming).[9]

This system has important implications for the labour market in Qatar. The Qatari government provides generous employment opportunities in the public sector and pays high wages. This welfare system acts as a disincentive for Qataris to obtain the skills that are needed to work in the private sector (Berrebi et al., 2009; Williams et al., 2011). As a result, 75% of Qataris work in the public sector (Zaho and Gerain, 2017). This leads to an overstaffed and "inefficient civil service bureaucracy" that provides low-skilled employment (Berrebi et al, 2009, p 442). As a result, Qatar, as mentioned previously, depends extensively on expatriate workers. While this might explain the current lack of human capital and skills and dependence on foreign labour, Ali Al-Kuwari (2013) argues that public employment was also an intentional government strategy to marginalise citizens. The rents enable rulers to make their citizens highly depend on the state in providing salaries and services, and these services are linked to loyalty to the rulers of the state. Al-Saadi (2010) also asserts that Qatar went through special historical and sociopolitical situations that enabled the government to control the life of the populace. As there are no taxes and the government distributes oil and gas rents to the people, the government is less responsive to popular demands. Thus, the government can pursue its own agenda without accountability and with a very low political participation.

While it's true that Qatar provides a generous welfare system, including employment, there is high unemployment among those who are looking for their first job. At the same time, there is a shortage of Qataris with the relevant education and training to be employed outside the public sector (Berrebi, et al, 2009). With the decrease in oil and gas prices, excess government staff was laid off. This may interrupt the rentier pattern, supporting AlShehabi's (forthcoming) conclusion that the welfare provided by the state shrinks with the decrease in oil and gas prices.

[9] This fact will be referred to in the next chapters, with emphasis on the outcome.

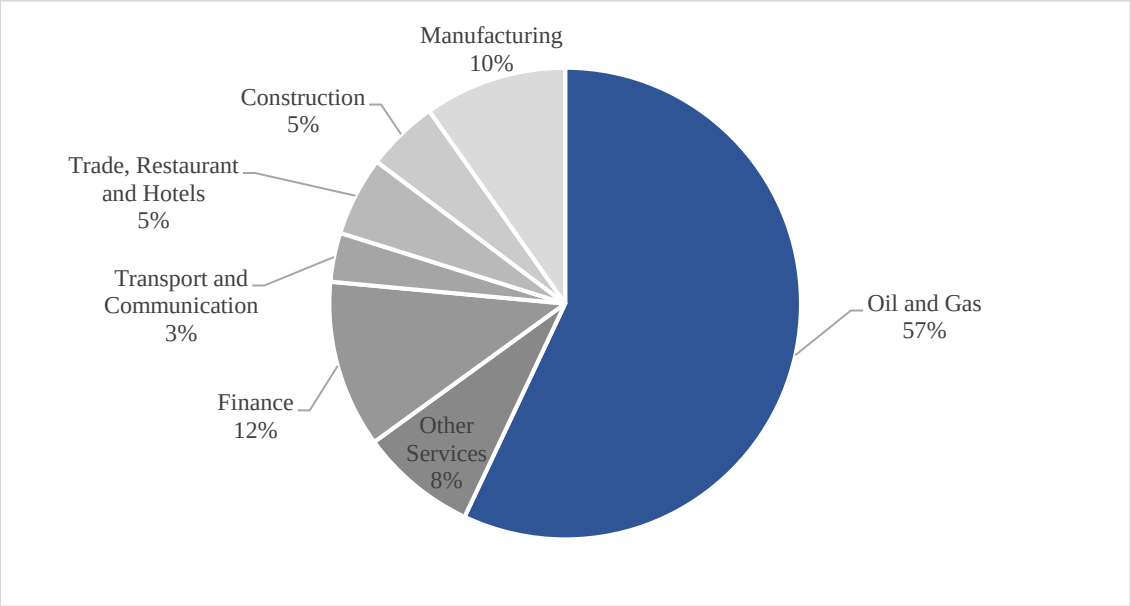
This section focused on the rentier state as part of the resource curse. Another aspect of the resource course--the Dutch Disease--is less applicable to the Gulf countries. While the phenomena of Dutch Disease can be observed in Sub-Saharan countries, it is hardly observed in the Gulf countries, as their currencies are pegged to a dollar or a basket-value and because the manufacturing sector is almost non-exist or underdeveloped (Fattouh and El-Katiri, 2012).

4.2. Industrialisation in the Gulf Countries

Qatar's hydrocarbon sector constitutes the bulk of its economy as shown by figure 4. The sector has developed through joint ventures with major international oil companies (GSDP, 2011).[10] Ibrahim and Harrigane (2012) note that, besides Qatar's success in building a competitive value chain for liquefied natural gas, the state succeeded in building value-added industries tied to oil and gas extraction as well as in developing downstream products (forward linkages). In the early 1970s, Qatar became an early pioneer in the GCC[11] in the establishment of the petrochemical, fertiliser, and steel industries, attracting foreign partners to provide financial, technical expertise, and marketing expertise (Ibrahim and Harrigane, 2012). Seznec (2011) argues that, despite the challenges the Gulf countries are experiencing in diversifying their economies, we should consider that they had zero industrial base thirty years ago and have now become a major world production centre for petrochemicals, fertilisers, aluminium, cement, prefab metal buildings, fibre-optic cables, air conditioners, and many other products related to construction. In addition, they have developed many service industries, including banking and airports.

[10] The presence of foreign companies outside the hydrocarbon and energy complex has been more limited.
[11] Gulf Cooperation Council

Figure 4 : Economic Diversity in Qatar, Sectors as percentage of GDP in 2016



Sources: Qatar StoneTech

However, Qatar has still not succeeded in building new industries centred on downstream activities for finished products that have higher value-added. This raises questions about the extent of industrialisation and diversification in the Gulf countries. Auty (1990) records that, with the exception of resource-based manufacturing (petrochemicals, plastics, aluminium), the Gulf countries are not even attempting to be competitive in other industries, such that it is not possible to describe them as having industrial economies. While Auty's study appeared in 1990, it appears to be borne out by the current economic structure of the Gulf countries. Hvidt (2015) asserted that these countries are considered "late-late-late" industrialisers: because they are endowed with natural resources, they have not been forced to innovate and, as a result, still depend primarily on revenues from oil and gas to import technologies. This point is underlined by AlShehabi's (forthcoming) analysis of the expenses of oil and gas. He concludes that there are few investments in production activities. He shows that hydrocarbon sector revenues were not used as a public resource to be invested in other productive activities. The vast majority of oil revenues were used for other purposes with no relation to production. So, if

industrialisation is currently weak in Qatar, what is the government's vision to diversify its economy?

4.3. Diversification in Qatar

Generally, Qatar's diversification strategy takes two forms: external and domestic. The first income diversification strategy focuses on investing hydrocarbon revenues in foreign currency, constituting new fiscal linkages. To deal with the surplus capital from sovereign wealth funds, Qatar formed the Qatar Investment Authority (QIA), a state-owned company that is a national wealth fund (Bobood, 2017). The QIA was established in 2005 and is responsible for managing Qatar's wealth and, as a source of diversification, investing it in "foreign currency assets" (GSDP, 2011, p 49). Qatar's sovereign fund was valued at approximately $300 billion in 2017. Over recent years, Qatar has diversified its investment in both the US and Asia (Baabood, 2017). AlShehabi (forthcoming) asserts that, in addition to the role of these sovereign funds in investing abroad, many of local public companies have moved into global markets, especially in the Arab world and the developing world (AlShehabi, forthcoming). Qatar Airways may be the best example of a public company substantially expanding its focus on the global market, based on its low fuel price (avgas) comparative advantage.

Baabood (2017) raises the critical question of whether this diversification strategy, focused on the SWF, makes Qatar less vulnerable, taking into consideration its economic challenges. He argues such investments might reduce the decline in economic growth but contends it is still essential for the country to diversify its domestic economy. It has to be noted the fact that these huge investments outside the Gulf have no direct influence on the national development of Qatar or on the provision of employment or services (Hvidt, 2013; AlShehabi, forthcoming). However, as Jourdan (2013) clarifies, the objective of an SWF- as part of fiscal linkages- is usually to keep surplus resource revenues offshore (avoid currency appreciation) and to provide a stabilisation fund when oil and gas prices fall or when there are other fiscal crises. Such fiscal crises extend to what Qatar experienced with the recent blockade. Its impact would have been much more severe if Qatar had not been able to shore up its economy by using stabilisation fund (Pinto, 2018).

The challenge for the Gulf counties has always been to create a large number of high-quality jobs for their nationals, and this requires diversification of the economy at the national level. This view is recognised in the Qatar National Development Strategy 2011-2016, which asserts that dependence on foreign currency assets was not a viable long-term strategy. The document states, "It [dependence on foreign currency assets] would create new types of risk, leaving Qatar prey to the vicissitudes of international capital markets" (CSPD 2011, p 93). The plan describes its goal of a diversified economy as follows**:** "A more diversified economy is inherently more stable, more capable of creating jobs and opportunities for the next generation and less vulnerable to the boom and bust cycles of oil and natural gas prices" (GSDP 2011, p 10). Based on this definition, the focus will be on a "more stable" economy and "creating jobs" that are less vulnerable to fluctuations in oil and gas production and prices. The question then becomes what strategic vision the state should pursue in order to achieve such diversification. The Qatar National Vision 2030 (cited in GSDP, 2011) develops the following vision for diversification: "Converting hydrocarbon assets into financial wealth provides a means to invest in world-class infrastructure; build efficient delivery mechanisms for public services; create a highly skilled and productive labour force; and support the development of entrepreneurship and innovation capabilities" (GSDP, 2011, p 69). The vision emphasises the need to support the emergence of the private sector and the liberalisation of the economy and openness to foreign direct investment. It also calls for giving the right of 100% foreign ownership in the following sectors: mining, energy, agriculture, health, and services sectors (GSDP, 2011).

Focused on building Qatari human capital and transforming it into a regional hub, the knowledge-based economy forms the bulk of the vision, whose aim is to increase the number of Qataris in the labour force and decrease the country's dependence on foreign labour (GSDP, 2011). As of 2015, foreign labour constitutes 99% of the private sector workforce and 64% of the public sector (De Bel-Air, 2017). In 2001, Qatar introduced its 'World Class' programme, comprising private higher education, all with the hope of providing Qataris with the skills that meet the needs of the labour market and to build a knowledge-based economy (Vora, 2015). Using revenues from oil and gas, Qatar, through

the Qatar Foundation, created the Education City, a world-class university campus, mainly populated with branches of American universities. The state paid the full cost of the campuses as well as the infrastructure costs ($80 billion in 2014) (Vora, 2015). This was coupled with the Emir of Qatar announcing in 2006 that the state would increase its investment in R&D to 2.8% of its GDP by 2030 (Abduljawad, 2013). But questions remain as to the extent to which this vision will contribute to a genuinely diversified economy, one that is, as the report says, stable, creates jobs, and reduces the dependence on foreign labour.

4.4. Analysis and Criticism

General Criticisms of the Qatar National Vision:

First, it has to be noted that the Gulf states' strategic visions are usually designed by Western consultancy companies, hired by local rulers (AlShehabi, 2015). Seif (2016) argues that Western consultancy companies design the visions for the Gulf countries with the promise of reducing their dependence on oil and gas, diversifying their economies, and moving to a knowledge-based economy. He shows that it's common for all countries to have a long-term vision. However, those visions are usually the vision is devised and designed by that country's own experts, in conjunction with elected representatives who ostensibly represent the public. On the other hand, in "unlucky" countries -- what the author calls "the global south" – the vision may be force-fed to the client state as part of a "package" by international institutions like the World Bank and the International Monetary Fund (IMF). In the Gulf countries, the rulers are not bound by elected bodies or to the views of local technocrats. These rulers pay billions of dollars to consultants who almost never include local participants and cultures in their assessments (Seif, 2016). In this regard, AlShehabi (2015, p 104) notes, "The extent of the phenomenon of hiring non-local firms to write, shape and outline the whole economic vision and strategy for a county represents to my knowledge a unique and unprecedented situation of entrusting a nation's economic future to outsiders." Al-Kuwari (2012), analysing the National Vision of Qatar and the Development Plan Strategy (2011-2016), argues that these documents fail to consider and enhance the role played by Qatari society or reflect the local culture. Such

considerations would have prompted the inclusion of elements such as the imbalance in the local versus non-local population and the small size of the country.

Written mostly by Western consultancies, the visions of the Gulf countries are neoliberal in their orientation- focused on privatization and free trade- and are therefore characterised by the same economic strategies. Hvidt (2013), analysing all the visions of the Gulf countries, noted that they not only reflect the same economic challenges but constitute almost identical national visions. Within the same line of argument, AlShehabi (2015, p. 104) argues the Gulf visions have the same characteristics and are similar in the "language" and "terms used," as if it's "written by the same hand." However, "one size fits all", as indicated by Cook and Nielson (2011, p 199), is not the optimal strategy for diversification, as each country has its own special characteristics that must be considered.

The Arab Gulf's visions have "compulsive obsession" regarding global competitiveness and openness towards foreign direct investment (FDI), with repetitive emphasis on words like "property rights," "competitiveness," and "international hub" (AlShehabi, 2015, p 104). Such values are at the heart of the neoclassical approach, but does this serve the developing country or the developed countries? According to Chang (2009), neoclassical policies are based on the "free market" strategy, whereby developing countries had to follow the path of free trade, deregulation of FDI, privatisation of state-owned companies, and strong protection of intellectual property rights to grow and develop their economies. It should be noted, however, that this was not the strategy followed by many industrialized economies. The US, Finland, Norway, and Taiwan are examples of rich countries that have regulated FDI. For example, in the 19th century, the US strictly regulated FDI in natural resource exploitation such as mining. Several of today's rich countries used state-owned enterprises heavily for their development purposes. Germany in the early 19th century and Japan in the late 19th century started their industrialisation process with state-owned textile, steel, and shipbuilding industries.

Analysis of the infrastructure vision

While it is outside the scope of this research to fully analyse all the diversification strategies mentioned in the Qatar Vision, it is important to at least analyse one of the main strategies used by Qatar to diversify its economy—namely, infrastructure and real estate—

to understand if these strategies further the GDSP (2011) definition of a diversified economy that is stable, creates jobs, and is less vulnerable to fluctuations in oil and gas prices. I focus on the infrastructure vision primarily because of its size and because it is the largest sector in terms of state expenditure. Qatar invested its hydrocarbon surpluses into a major infrastructure programme (Qatar Economic Insight, 2017). This includes real-estate projects, world-class buildings, and infrastructure projects needed for the FIFA World Cup of 2022. The Qatar National Bank (QNP), in "Qatar Economic Insight" (2017), reports that these projects have resulted in diversification of Qatar's economy away from oil and gas, especially as they attracted an influx of workers, mainly for construction. As a result, construction is the largest contributor to the non-hydrocarbon sector in Qatar, growing by 15.4% in 2016. With the increase in population and income levels came a demand for finance and government services, driving the growth of the services sector grew by 5.9%. In the first three quarters of 2016, Qatar registered a fiscal deficit of 5.6% of GDP, compared to a surplus of 8.4% in 2015. The deficit is due to lower exports from the lower prices for oil and gas, compared to an increase in imports driven by higher demand for materials, machinery, and equipment for the infrastructure projects. Finally, the increase in population led to a boost in demand for consumer goods and an increase in imports.

The question that arises here, as highlighted earlier, is whether this vision of diversification can lead to a long and stable rise in income and create jobs for Qatari nationals. AlShehabi (2015) is critical of these kinds of projects, and more specifically of "international mega real-estate projects" (IMREP). According to AlShehabi (2015), IMREP constitute the bulk of the economic activity in the Gulf, after the oil and gas sector. This vision for infrastructure, he argues, is "inherently unstable" for two reasons: first, it is "transitory" in nature, and second, "it creates tension among citizens within society." Such instability, as explained by AlShehabi (2015), is driven by the disparity between the citizens' and the expatriates' rights of access to the city and its resources. The first group is the expatriates who have no right for permanent resident. The second group is the citizens, who already has a legal right to settle permanently and integrate into the city. An absence of a common form of nationalism is combined with the lack of any form of shared material interests. This brings with it the question of "distribution, and access to resources, and privileges" (AlShehabi, 2015, p 123), which has led to many citizens believing they

are on the periphery of the city rather than at its centre when it comes to access and resources.

To begin with the latter point: historically, labour migrants to the region were a source of rent either for businesses or citizens. Expatriates who buy in IMREPs, on the other hand, are only a source of rent for the businesses who sell the real estate, as well as a source of consumption for local retail outlets. They, however, have very few shared interests in common with the rest of the citizenry (AlShehabi, 2015). The lack of a common form of nationalism is compounded by the lack of any form of common material interests. In fact, they are increasingly a source of competition, both for resources (land, utilities, and infrastructure) and in being a key constituency whose needs and desires have to be taken into account by both the state and local businesses. Thus, disputes over distribution and access to resources and privileges, and consequently questions regarding the centre versus the periphery of the city, will increasingly become important political issues. In this situation, the citizens feel they are being marginalised, as they are not significantly productive and are less important as consumers, forming a minority in these cities (AlShehabi, 2015). As noted earlier, foreigners outnumber Qataris seven to one, which has created a feeling amongst Qataris of being at the periphery of urban dynamics.

In AlShehabi's analysis (2015) of this phenomenon (IMREP) in four countries in the Gulf, Qatar among them, he recorded that the worth of the ten biggest projects in the GCC is US$393 billion. These projects have an energy cost of US$134 billion and water and sewage infrastructural spending worth US$40 billion. Such large-scale projects constituted a third of the global projects that flowed to the region since 2006. The downstream industries of oil and gas, such as cement, were used mainly for construction and infrastructure. Yet, as AlShehabi (forthcoming) argues, such a vision is not a diversification of sources of income but a continuation of the previous approach, focused on increased spending. There are plans for the development of huge construction projects, whose main result is increased spending and costs. Citizens are rarely employed in real-estate companies and therefore do not benefit from these projects.

Furthermore, as a consequence of these construction projects, there is an increase in consumption and imports nd a destruction of the environment. AlShehabi (forthcoming)

calls this the "alienation of the citizens and land in this process." Thus, considering AlShehabi (2015) and AlShehabi (forthcoming), it follows that these projects are not stable and consume a large proportion of downstream industries. The downstream industries on oil and gas were not used as a source of long-term diversification. Another fact that should be highlighted is that, based on the QNB (2017) description of the outcome of these projects mentioned above, these increased the number of foreign labourers as well as imports. The projects contradict the National Vision's aim to reduce the dependence on foreign labour and to address labour market imbalances. This fact was also highlighted by Al-Kuwari (2012), who argues that the Qatar vision contradicts its aim to reduce dependence on foreign labour.

Simply put, this vision fails to realize the goal provided by the GSDP to diversify the economy, as it is neither enhances economic stability nor creates jobs for its citizens. In addition, it does not make the economy less vulnerable to fluctuations in oil and gas, as AlShehabi (forthcoming) shows that spending on the construction projects declines with the decline of oil and gas prices. In summary, these projects (e.g. real estate) are not sustainable activities. In fact, in has increased government expenditure and imports rather than increasing exports. At the same time, this increases the future upkeep, maintenance, and services costs on such projects by the government (roads, infrastructure, etc.) (AlShehabi, forthcoming). As shown by figure (5), Qatar still depends on exporting raw material with high levels of imports of capital goods and consumer goods. Therefore, it's doubtful that Qatar would be able to diversify its economy through this strategy. In contrary to this strategy, the other studies show that industrialisation is more sustainable, create jobs, and generate higher income, as well as insulating the economy from commodity price fluctuations and shocks.

Figure 5: Qatar Exports and Imports of Product Groups from 2012 to 2016.

Product Categories	Exports		Imports		
	Export(US$ Mil)	Product share(%)	Import(US$ Mil)	Prod share(%)	Weighted Average (%)
Raw materials	9,104	15.88	2,554	7.97	1.69
Intermediate goods	187	0.33	6,080	18.96	3.53
Consumer goods	37,904	66.14	11,248	35.08	3.59
Capital goods	34	0.06	11,061	34.50	3.49

Source: World Integrated Trade Solution, https://wits.worldbank.org/CountrySnapshot/en/QAT

Conclusions:

Hvidt raised a critical question that suggests future research. He states, "the dominant discourse seems to be that 'world class' infrastructure, education, health service, culture and leisure activities, etc. necessarily attract and foster the emergence of a 'creative class' of citizens and private sector entrepreneurs. Is it in fact so?" (Hvidt, 2014, p 4). This research proposes a different strategy for diversification than the dominant discourse., In an attempt to build a response to this problem, my research shows, in Chapter 3, that building linkages is essential to industrialise and diversify the economy and to circumvent some of the economic problems faced by Qatar. Therefore, it is imperative to provide an alternative policy strategy for diversification in the Gulf that takes into consideration "stability," "increasing income," and "creating jobs". However, Qatar's plan emphasises how Qatar shares the challenges faced by other small countries, as well as those that arise from its geographical location, as the only land transport is through Saudi Arabia. There is a large literature discussing the challenges Qatar faces in terms of its small domestic market and the constraints of geography, which is an obstacle for diversification. Such arguments, though, should be reconsidered in light of Chang's (2009) claim that small, rich European countries faced many obstacles that developing countries today face, such as the size of the domestic market, ethnic, religious and ideological divisions; geographical

constraints; internal conflicts; concentration of economic power, even a colonial history (Finland for example), and they were still able to overcome these structural problems and industrialise. However, Chang (2009) agrees that developing countries today face more obstacles than the developed countries faced, especially due to the bigger technological gap between so-called “the developing countries” and the “developed countries.”

While Chapter 3 shows how linkages can be enhanced through state intervention, capacity, and institutions that lead to diversification and industrialization, the specific Qatari context for this approach will be highlighted in the next chapter, which directly addresses the research questions.

Chapter 5. Research Findings and Discussion

5.1. Introduction: Qatar's Local Content Policies

Qatar has two local content policies. The first is local hiring practices, known as Qatarisation (defined in section 1.3) and the second is local procurement and supplier development (Olawuyi 2017). The third policy, which is not based on contractlocal content contracts but is part of Qatar's broader development policy, is to transform Qatar's economy into a knowledge-based economy by building R&D capacity and capability. The Qatar Science and Technology Park (QSTP), for example, has attracted international companies to establish world-class centre.

5.2. Buying Goods and Services Domestically

Description:

This policy is part of the strategy of building backward linkages. As discussed in Chapter 3, backward linkages provide an opportunity for industrialisation. These can be advanced in two forms: localisation (in the form of ownership of the commodity producers) and local content policies (Kaplinsky, 2011). In general, local content policies aim at localisation through procurement from domestic suppliers in the minerals value chain or employing nationals.

As Olawuyi shows, Qatar PSA for procurement policies states:

> "The contractor shall, when possible, select contractors who are nationals of the State of Qatar or companies that are majority owned by Qatar nationals. Adding to that, the PSC states that in 'in purchasing goods for petroleum operations, Contractor shall, when possible, give preference to locally manufactured or locally available goods as long as their technical specifications, quality and time of delivery and services are comparable to internationally available ones'." (Olawuyi, 2017, p 25).

Analysis: What are the achievements and trends?

Qatar's PSA (cited in Olawuyi, 2017) has this local content policy; however. H, to evaluate this local content policy in terms of trends and achievements, we have to examine the form in which the policy is stated, whether there are metrics to measure progress, and the capacity of the institutions that are enacting the policy.

The above-quoted statement shows that the rules in Qatar's PSC are not strict and there is flexibility with regard to companies' compliance. Studies on Qatar's local content policy are scarce. To the best of my knowledge, Olawuyi (2017) is the researchonly scholar in this area who has analysed local content (buying goods and services locally) in Qatar, albeit briefly. In his analysis, Qatar's policies are not well defined, as, unlike other countries, there is no percentage or a time-frame specified to meet the requirements. Olawuyi (2017) asserteds that in many 'MENA' countries, the minimum requirement of local content to be met for each category of goods and services is not addressed as a proportion or set as a time frame. Rather, the requirement is only to give preference to local services, materials, equipment, and consumables when their price, quality, time of delivery, or other terms are comparable (Olawuyi, 2017, p 13). Even other countries in the region which have limited local content policies -- like Saudi Arabia and Oman – are clearer than Qatar in how these policies are to be implemented and the time frame is expressly set out. In most countries, local content policies require monitoring and institutional coordination. This is not the case in Qatar: there is no clarity on how the local content should be implemented or measured (Olawuyi, 2017). In the absence of mechanisms for effective monitoring and enforcement in Qatar, quantifying and measuring the value added is difficult. As a result, it is challenging to evaluate the outcome of the policy, especially in the absence of any plan from Qatar to achieve this target and any institutions that could enforce or monitor the policy (Olawuyi, 2017).

A more critical interpretation of the weaknesses of backward linkages in Qatar is illustrated by a study of the oil and gas sector in selected MENA countries. It describes the situation in Kuwait, which shares the same economic challenges as Qatar, and states:

> "There is no data regarding how much of the supply chain comes from Kuwaiti companies. This suggests that local content is fairly limited. But it

> can hardly be argued that this lack of backward linkages in the supply chain is in any way related to the way in which the sector is structured. Given the relatively limited scope of the rest of the Kuwaiti economy, limited linkages are hardly surprising" (ESMAP, 2007, cited in Fattouh and El-Katiri, 2012, p 37).

This shows that the absence of data can be interpreted as caused by one of two reasons: limitation of the local content or lack of backward linkages in the supply chain, which is based on the way the economy is structured. It is important to take into account the second interpretation. Olawuyi (2017) completely ignores it, expecting that once there are monitoring policies it would lead to buying goods and services locally. Yet Qatar lacks the critical mass of input suppliers to fill this gap. This is not to ignore the importance of monitoring. But monitoring local content policies could be limited as a tool to supporting the growth of the local suppliers rather than creating them where they do not yet exist.

Another source of information about existing linkages are corporate reports. Maersk Oil Qatar (MOQ), in its sustainability report, indicated that in 2014, it spent more than $962 million on locally sourced goods and services , which accounts for 63% of its total spending. However, this raises questions about what kind of local goods and services are being purchased. Locke (2004; cited in Teka, 2011), for example, has indicated that effective local policy is about the type and the quality of goods and services. The percentage of goods and services sourced locally that MOQ reports is limited to one year, making it difficult to assess this aspect. It is also not clear how it is calculated and whether the other companies follow the same pattern. Most importantly, 'local' in this context perhaps refers to local fronting for imports, as Teka (2011, p. 52) suggests for the case of Angola: "Many of these local, general products are only local in the sense that they are imported by local trading firms." As Steven (2003) elaborates, backward linkages in the oil and gas sector aimes at using inputs from the rest of the local economy in all the phases of oil and gas industry projects. Thus, while it's true that procurement policy can play a role in this, such that contracts should have minimum of local content, it is not substitute for the willingness of companies to maximise local inputs. Here, petroleum companies should play a role in supporting and promoting the development of local capacity. The

companies can provide local enterprises with information of the type and the standards of inputs that are needed as well as how the tendering process will work. Oyejide and Adewuyi (2011) also suggest creating some type of "enterprise centre" to deliver information and help the local companies and enterprises meet the needs of oil and gas industry.

Linkages in the oil and gas could take many forms, including information exchanges, joint training, machinery lending, collaboration development or improving of products, and assistance to improve service delivery. The extent and depth of linkages that can be created depend on the needs of the industry, the expected advantages, well as other factors (Oyejide and Adewuyi, 2011). The challenge for Qatar is to foster the emergence of domestic private, public or hybrid sectors with the risk propensity, finance, and interest to take on the manufacturing projects and services that would be required by the oil and gas industry. To do this, it's important for Qatar to invest its rents from oil and gas and SWF into building the manufacturing sector. For that, industrial policy is crucial. According to Kaplinsky (2003, cited in Oyejide and Adewuyi, 2011) manufacturing is not simply the transformation of inputs into outputs by utilising standard tools and equipment. It's more about capacity to deploy knowledge and know-how in production. As indicated by the linkages framework, knowledge linkages are therefore essential to develop backward linkages into manufacturing.

5.3. Qatarisation

Description

Qatar's 2002 PSC (cited in Olawuyi, 2017, p. 25) states: "Contractor shall, in selecting its personnel to work on Petroleum Operations, give priority to the nationals of the State of Qatar. Contractor shall also prepare plans and programs for training and educating Qatari nationals." This rule gives priority to Qataris in employment. This rule comes with more enforcement than the procurement. Unlike procurement, it does not simply mention "where possible." This local content policy is supported under Qatarisation strategy, and Qatarisation is at the heart of the Qatar National Vision of 2008. Qatarisation as a comprehensive plan (2000-2005) was set in 2000 and it aims to reach 50% Qatarisation in the energy and industry sector. The plan defines Qatarisation as **"**the identification and

development of quality, competent Qatari male and female employees to assume permanent established positions" (Qatar Petroleum Website, n.d).[12] However, the plan failed to achieve its target within 5 years.

As a result, Qatar National Vision 2030 embrace Qatarisation in more comprehensive way, with considerations based on quality. In its current form,, the plan considers Qatarisation in terms of building human capital through education and qualifications. It also applies to all "operating and non-operating" companies in Qatar's energy and industry sector. The plan focuses on Qatarisation through quality employment, based on "emphasis on key and sensitive positions by applying performance-based, not time-based, training and development." The new target is to reach 50% of Qatarisation by 2030.

Qatar Petroleum (n.d) indicates that the Qatarisation plan is reviewed and updated every six months. 'The Strategic Qatarisation Plan' includes six-month and annual updates and is managed by steering committee supported by two subcommittees, one to deal with recruitment and the other focused on training and development. A Qatarisation Unit cooperates with the steering committee and is responsible for providing counselling, advice, and direction on strategies to increase the Qatarisation of the energy and industry sector companies, as well as companies outside the sector. The unit also meets formally with companies to assess their strategies in terms of Qatarisation and training, while also trying to build relationships with educational and government institutions to improve Qatarisation in the energy and industry sector.

Analysis:

One of the goals of this study is to evaluate Qatar's efforts to encourage knowledge linkages. As such, this section will investigate whether the Qatarisation policy has resulted in building knowledge linkages. This depends on how we see the ultimate goal of Qatarisation is: is it a strategy that seeks simply to reduce unemployment or does it also seek to make production dependent on the skills of its nationals who then replace foreign workers? To find if the Qatarisation policy fosters knowledge linkages, the analysis will

[12] n.d: No date is provided

be divided into two parts: first, of Qatarisation policies in terms of achievements and trends, and second, in terms of policy instruments.

The trends and achievements to date: type of employment?

Mohammed bin Saleh A-Sada, the Minister of Energy and Industry, in the 17th Annual Qatarisation Review Meeting, announced that the ministry achieved and maintained 29% of Qatarisation in 2017 and they are heading towards 50% of the Qatari workforce by 2030. According to him, the number of Qataris in the energy and industrial sectors hasmore than tripled from 2,900 in 2000 to 9,300 in 2017. Furthermore, in the mining and quarrying sector, the Ministry of Development and Planning Statistics reports that the number of Qataris represented 17.86% in 2016 (MDPS, 2016), with 5,746 Qataris employees versus 32,186 non-Qataris employees. (The percentage of Qataris versus non-Qataris in the mining and quarrying sector in 2016 is higher than 2014 (16%, with 6,464 for Qataris versus 40,300 for non-Qataris) (MDPS, 2014).)

Table 1. The number of employees, compensation of employees by nationality and main economic activity: Mining and quarrying statistics.

NUMBER OF EMPLOYEES & COMPENSATION OF EMPLOYEES BY NATIONALITY & MAIN ECONOMIC ACTIVITY
MINING AND QUARRYING STATISTICS
2016

TABLE (17) (Value QR000) — جدول (١٧) القيمة ألف ريال قطري

رمز النشاط Activity Code	Main Economic Activity	تعويضات العاملين Compensation of Employees			عدد المشتغلين Number of Employees			النشاط الاقتصادى الرئيسي
		المجموع Total	غير قطريين Non-Qatari	قطريون Qatari	المجموع Total	غير قطريين Non-Qatari	قطريون Qatari	
B	Mining and quarrying							التعدين واستغلال المحاجر
06	Extraction of crude petroleum and natural gas	10638407	6571715	4066692	17473	12022	5451	استخراج النفط الخام والغاز الطبيعي
08	Other mining and quarrying	38706	36356	2350	2306	2282	24	الأنشطة الأخرى للتعدين واستغلال المحاجر
09	Mining support service activities	1687178	1536503	150675	18154	17882	272	أنشطة خدمات دعم التعدين
	Total	12364291	8144574	4219717	37933	32186	5747	المجموع

Source: MDPS, 2016

However, these numbers (Mohamned bin Saleh statement and the table) do not indicate the type of employment that has been created. As they just the number of Qataris

and the percentage of Qataris employees, this does not provide the full picture that could be the basis for evaluating knowledge linkages. Some of this information can be gleaned by reviewing the QP annual reports from 2010 to 2016. (The annual reports give general information about the company, but this study focuses on the parts that detail Qatarisation policy). The 2010 QP annual report indicates that Qataris in permanent positions constituted 20% of the QP workforce, which becomes 35% if Qataris under training and development are included. In 2011, Qatari nationals accounted for 21% of permanent positions in the workforce. At the end of 2015, the Qatarisation percentage became 37%, which means a 4% increase from 2014. Qataris are mainly in managerial positions within QP, at 80% (QP Annual Review, 2016)[13]. It's not clear if the 2015 annual report is referring to Qatarisation with permanent positions or if it also included Qataris under training and development, which means we cannot measure the increase of Qatatrisation between 2010 and 2015. However, if one assumes that the percentage referred to in the annual report of 2015 included Qataris under training and development then the increase would be 2% points.

Qatargas was honoured for its commitment to Qatarisation, receiving the Qatarisation Award in 2010 and 2011 (QP Annual Report, 2011). According to the Qatargas Sustainability Report (2016), the company sets a target for itself each year, with the target for 2016 set at 23% of the total workforce. According to the report, Qatarisation in 2016 was 21.9%. However, according to the report, which is shown in table 2, if the calculation of Qatarisation was made taking only the permanent employees, excluding contractors and subcontractors, then the percentage becomes 25.3%. Qatarisation was mainly at management level and reached 47.3% in 2016, as shown in Table 2.

Table 2: Qatarisation rate, Qatari employees and Qatarisation of Management in Qatargas

Indicator	Unit	2012	2013	2014	2015	2016
Qatarization rate	%	25.8	26.1	24.1	24.6	25.3[2]
Qatari employees	#	572	613	602	622	611
Qatarization of Management	%	40.1	37.5	44.4	46.2	47.3

[13] The percentage of Qatarisation was not mentioned in the annual report of 2016, and the company did not publish an annual report in 2017. So, the trend of Qatarisation within QP is difficult to follow.

Source: Qatargas Sustainability Report 2016

Examining these reports, one notices that in national companies like Qatar Petroleum and Qatargas, Qatarisation is addressed in terms of targets in the managerial positions: 80% in QP in 2016 and 47.3%. in Qatargas. This raises questions about different the types of Qatarisation policies, as the focus is mainly on managerial position and it does not mention the type of the skills held by Qatari employees and their background. This also led to another question of where knowledge linkages are created -- is it within management or labour? Arventities and Villavicencio (1994) found that learning is a fundamental social process and not a managerial process. This means that learning cannot be limited to managers but must be done collectively and cumulatively.

As the available information does not provide details about the positions and skills of Qataris, this study looks at Qatarisation in foreign companies. The most detailed information is from Maersk Oil Qatar (MOQ), which, in May 2015, won the award for the 'Overall Best Support to Qatarisation' at the annual Qatarisation Review Meeting of the Energy and Industry Sector. The Maersk Oil Qatar Sustainability Report (2014) details the number of Qataris employed between 2009 and 2014. In Table 3, one notices that the number of Qataris increased from 112 in 2009 to 215 in 2014. The percentage of Qataris versus non-Qataris was 19.1% in 2009 and 22.75% in 2014. However, it has to be noted that the number of Qataris included trainees, in college, and on sponsorships, while the total number considers the number of full-time employees.

Table 3: Number of full-time employees and number of Qataris

	2009	2010	2011	2012	2013	2014
Number of full time employees	585	603	703	790	862	945
Number of Qataris	112	143	168	180	191	215

Source: Maersk Oil Qatar Sustainability Report (2014)

This data enables us to break down the type of skills and positions held by Qataris employees held in Maersk Oil Qatar. Out of the 215 Qatari nationals in the company at the end of 2014, 196 Qataris are direct hires, 16 are trainees on college and university sponsorships, and three are QP attachments. According to this calculation, the rate of Qatarisation was 23% in 2014. The report indicates that the number of Qatari managers increased from 11 to 20. In addition, the report mentions that 49% of Qataris are technical and engineers and 51% are supporting staff, without any further details. In this company, once can conclude that there are some forms of knowledge linkages that are created, especially once we consider the training and sponsorship for students among the 49% of technical and engineering positions.

Finally, data shared by an anonymous international company in 2018 shows the current Qatarisation rate, according to QP calculation, is below 14%, with almost 20% of the Qataris in a technical discipline and more than 80% in a non-technical discipline. A sample of Qataris' position in the company include Senior Business Analyst, Accountant, Lead Telecom Engineer, Health, Hygiene & Environment Advisor, Administration Officer – Contracted, Public Relations Manager, Head of PR Support, Junior Reservoir Engineer, Inspection Engineer, Head of Production, Buyer and the company research director. However, the data only provides the current percentage, without giving the trends over the different years. From this, we can conclude that Qatarisation in this company was not directed at building knowledge linkages.

To fully evaluate the depth of the knowledge linkages in Qatar, it's important to have data on the exact positions/skills/vocations and qualification the Qataris have in these oil and gas companies. As noted by Locke (2004; cited in Teka, 2011) effective local content policy should address the type of employment. Thus, my conclusions are somewhat limited by a lack of data on the exact type of employment in these Qatarisation efforts. However, based on the information on Qatarisation policy and instruments available, it seems clear that the knowledge linkages is weak. This argument is based on the following evidence:

First, based on several sustainability reports and Qatar petroleum reports, I found that there are shortcomings in the Qatarisation plan, especially because of its inconsistency.

One notices in different patterns of information about Qatarisation in different reports of the same company (QP). At the same time, there is a variance in how the different companies report their Qatarisation strategies and achievements. The lack of clear data poses a challenge to the effectiveness and efficiency of the steering committee and the Qatarisation Unit Committee, especially if one considers the low percentage of Qatarisation in the anonymous company A. In addition to that, I found that the Qatarisation plans lack transparency and clarity in terms of priorities or policy instruments. This finding is confirmed by Al-Hoor (2011)'s study 'Political Contingency and the Implementation of Qatarisation'. Through conducting an intensive case study on the oil- and gas-based industries and doing several interviews with oil and gas companies in Qatar, his study confirms that there is inconsistency in defining Qatarisation goals. Another conclusion of this research, in its evaluation of Qatarisation, is that there are no incentives for companies to achieve the 50% target or penalties if they do not. In fact, incentives were limited to the annual Qatarisation Awards. This is supported by the answer to a qualitative question sent to the anonymous company (A), which indicated that the company does not face any pressure with regards to Qatarisation or any kind of penalty for not achieving the target. Based on these findings, this study casts doubts on whether the current policy systems and procedures will help create knowledge linkages.

The second reason think that Qatarisation only creates weak knowledge linkages is based on the limits of how the plans define Qatarisation. Al-Hoor (2011) emphasises that the state in Qatar owns most of the productive and important sectors, and it plays an important role in employment. As a reult, Qatarisation is not directed towards benefiting the performance of Qatari employees but instead at reducing unemployment and capturing "foreign remittances" (Al-Hoor, 2011, p 42). A-Manssori (2010) and Al-Subaiey (2011), in another example, noted that the target for employers was just to hire Qataris to fill the quota regardless of their skills or abilities to fulfil the job responsibility and enhance performance. Interestingly, Hertog (2016) asserted that in Qatar there is a tendency towards "phantom employment" of nationals for the achievement of quotas. Qatarisation goals can also lead companies to increase the informal employment of foreign labourers, who do not officially appear on the companies' payroll (Hertog, 2016).

Other evidence that support the existence of only weak knowledge linkages is Jolo' (2008) study, which indicates that Qatarisation implementation is more challenging in the oil-based industries sector than the other sectors, as it involves demand for skills, primarily technical, that most Qataris do not have (Jolo, 2008). However, Jolo's study was done over ten years. Does this pattern still exist today? To explore such question, it's important to examine the ability of the Qatari education system to produce skills and training in Science, Technology, Engineering and Mathematics (STEM) for locals. In discussing what hinders Qatarisation, Al-Subaiey (2011) concures that it should be started from the foundation, which is education. If the foundation is weak, it is not surprising that the strategy has partially failed.

The current level of basic education does not provide an adequate pipeline for further education that could create a qualified national workforce with sufficient levels of general and technical skills (Jolo, 2008). Zanho and Gerian (2017) emphasised that the main barrier to Qatarisation is Qatar's primary education system, which poses an obstacle for Qataris' transition to secondary and tertiary education. Al-Saadi (2010) shows that QP indicates that the education system in Qatar does not sufficiently prepare employees for the workforce. The managers in the company asserted that they have to provide 26 weeks of courses, where they have to reteach basic academic subjects such as math and English to secondary schools graduates so they can then have the skills to join the company. The International Student Assessment (PISA) reported that Qataris aged 15 years old who took the PISA exam scored below the average for 35 Organization for Economic Cooperation and Development (OECD) countries in reading, mathematics, and scientific literacy. This is a challenge for the Qatarisation policy, which demands an increase in Qatari graduates in science and technology. Even on the level of undergraduate students, the number of Qataris engineers graduated from Qatar University is very limited. Based on 2011 Institutional Research and Data Warehouse (IRDW) at Qatar University, 2011 (cited in Abul-Ola, 2015), over the academic years 1976-77 to 2009-2010, there were only 721 Qatari male engineering graduates among 6,074 male Qataris graduates, and 302 Qatari women engineering graduates among 19,002 females Qatar graduates.

While the national and foreign companies have scholarships for student abroad, the problem is whether Qatarisation strategy takes into consideration the government-university-industry linkages that would overcome skills gaps of Qataris nationals. Al-Saadi (2010) asserts that there is a weak linkage between the education and industry. Indeed, although the country's economy is based on oil and gas, schools do not provide subjects related to the industry. In the higher education programs, there are more than six times as many PhD students in art and education as in engineering programs (Al-Saadi, 2010). A later study by Abduljawad (2013) asserts that Qatar University introduced many reforms in education in terms of scope and quality and helped form linkages between the university and the industry. In this relationship between the university and industry, knowledge flows from the university to the industry through internship students and knowledge flows from industry to the university, albeit to a lesser degree, formal and informal comments to reform the education curriculum. Abul-Ola (2016) reaches the similar conclusion that there are some forms of collaboration between the university and the industry after Qatar University reforms in 2003, but these forms of collaboration differ in terms of intensity and consistency. However, Jourdan (2013), in his linkages framework, emphasises that knowledge linkages require investment in all the level of education, including early schooling. Interestingly, Abul-Ola (2016) investigates the collaboration of industry and education not only in terms of university but also in terms of schools in Qatar. He finds that there is absence of effective collaboration with the high school, and this collaboration completely disappears in preliminary and elementary education. It's also important to note that Abul-Ola (2016) finds that, while the oil and gas industry provides advanced learning and development opportunities for its employment and sponsored students, there remain concerns about the ability of the oil and gas industry to offer attractive positions among engineering graduates, taking into consideration the progressive positions other sectors offer in the labour market. Thus, there is a need for the oil and gas industry to provide incentives for the engineers to join the industry.

In line with the state's strategy to meet the oil and gas industry demands, Texas A&M University at Qatar (TAMUQ) was opened in 2003. The university offers outstanding engineering program for undergraduate students in chemical, electrical, mechanical and petroleum engineering. The university programs are more directed toward

the need of oil and gas. In 2018, among 89 bachelor degree graduates, there are 49 Qatari students.

Political considerations:

It's important to note that exploitation of potential linkages depends not only on policy design and execution, which is evidently weak in terms of Qatar, but also on politics and social atmosphere. These important factors are also constraints on policy implementation.

The first limit comes from the fact that Qatar fits the rentier state model and the generous welfare system acts as a disincentive for Qataris from continuing their post-secondary education. Zaho and Gerian (2017) record this phenomenon among Qatari males. They show that Qatari males can easily get a job in the public sector without higher education. These jobs are characterized by lax working conditions, with short working day and high salary, which the other sector cannot provide. As a result, 75% of Qataris are working in the public sector (Zaho and Gerain, 2017).

The second is the problem of accountability. Participants in Al-Hoor's (2011) study argued that Qatarisation was only a "show" or a "game" and the authorities were not serious about their predetermined targets. Al-Hoor adds (2011) that this ambiguity in the Qatarisation approach is "intentional' on the part of the government and gives the oil and gas companies a big "room to manoeuvre." This also explains the difficulties in reaching the Qatarisation target.

Another factor that hinders the monitoring of Qatarisation can be found in Al-Hoor's argument that the Qatari state effects some plans and strategies through the manipulation of the management of these companies. To expand on that point, Al-Hoor (2011) said the state implements Qatarisation strategies in public companies by appointing employees who are loyal to QP, in addition to having good contacts with political elites through their networks and social connections. A participant in Al-Hoor's (2011) study in a top management position said that when they (the company) have to explain the specific situation about not reaching the target, they speak directly to the person responsible for monitoring Qatarisation, the Minister of Energy.

Al-Saadi (2010) also describes some challenges for Qatar's education as well as other social factors that are not usually recorded in the literature. These factors become visible in many cultural items such as newspaper cartoons, which portray the impulsive reply of senior managers justifying their decisions. According to him, these behaviours arise from the significant changes Qatar has witnessed, especially moving from poor country to a country which is rich with resources and the rapid transformation from a traditional to a modern society. These problems are both social and political and described by Al-Saaddi (2016) as destructive attitudes, the first of which is impulsive decision-making. Decision makers tend to make decisions that influence large segment of society without sufficiently studying the impacts. This is because the officials feel that they are supported by the highest leadership and can deploy flexible financial resources with minimal consequences. As the decision maker wants to gain the admiration of the leader who hired him, he wants to rapidly achieve results and achievements quickly, and this is usually at the expense of quality and service. Moreover, these behaviours of the officials arise because of their anxiety about losing their positions if they oppose the higher leaders. The second factor reported by Al-Saadi (2010) is the absence of communication within and across government's agencies and organisations, with the attitude that it's a waste of time to allow "others" to be part of the decision-making process. The third problem lies in not allowing constructive criticism and emotions to direct discussions and meetings. The fourth is complacency, as there is a high dependency on others to perform one's job. The fifth is that employment is mainly based on personal relationship and not performance. This situation is very common in Qatar and follows from the absence of accountability.

5.4. Building R&D Capacity and Capability

General introduction about the importance of R&D

Technology transfers and R&D are important for industrialisation and building linkages (Jourdan, 2014). Enhancing R&D capacity is critical for countries endowed with oil and gas as economies. Those that have successfully transformed from natural-resources-based to industrialised economies have prioritised technological transfer and localisation

of R&D to build industrial capacity, particularly in the extractives supplier industries (backward linkages) (Locke, 2004; cited in Teka, 2011). Developing countries derived the technology that is required to increase efficiency and scale from developed countries. Thus, to strengthen knowledge linkages, a devoted technology development and skills transfer scheme is essential to ensure both the transfer of skills required to use the technology as well as to leverage the transfer of technology to the host country. According to Segura et al. (2007) improving the capability and capacity to use and "disseminate" technologies encourages the diffusion of new technology in the domestic market. This has larger positive effects as it, leads to a rise in the number of operators and scientists, who in turn becomes more aware of new technologies and encourages their uptake.

Qatar's strategy for R&D

Part of Qatar's strategy to become a knowledge-based economy has been the Qatar Science Technology Park (QSTP), which offers incentives to international companies to establish their own world-class research centres, funded by the state. More precisely, QSTP provides a "free zone," encouraging foreign companies and granting them permission to set up a 100% owned entity, without the obligation for duties or corporate taxes. Total, ExxonMobil, and Shell all opened R&D entities in QSTP between 2006 and 2009 (Qatar Science and Technology Park, 2012).

Another part of Qatar University's strategy is to build state-of-the-art research facilities to motivate the oil and gas industry to conduct their research activities on the university's campus. The hope is that these activities will develop the capacities of the faculty and students (Abduljawad, 2013). In addition, Texas A&M University, an American branch campus, has established collaboration research programmes with the international oil and gas companies to support the industry's need.

The Qatar National Research (QNR) has set four pillars for its National Priority Research Programme (NPRP), with the first being the energy and environment pillar. Under this pillar are the themes of oil and gas (exploration, production and transformation), solar energy, cooling and energy efficiency, advanced materials for high added value products and process, cooling and energy efficiency, advanced materials for high value-added products and process, water management and improving environment quality. The

target is economic diversification, IP (intellectual property) generation, service development, and a hydrocarbons support industry in Qatar (Qatar Science and Technology Park, 2012).

Analysis of Qatar's R&D strategy and achievements

Qatar imports advanced technology, but there is little evidence to evaluate whetehr it is capable of absorbing these technologies into the economy. In fact, Qatar lacks a science and technology policy or industrial policy. Abduljawad (2013) finds that an absence of technology transfer structures and mechanisms capable of being commercialised, although they are currently being developed (Al-Saadi, 2010).

Qatar's approach to building capability in R&D has been to open domestic branches of US universities and operate R&D entities in its QSTP, both aimed at commercialising start-ups and developing products that will benefit national industries, especially in the gas and oil sectors (Qatar Science and Technology Park, 2012). Qatar provides incentives for international companies to conduct research. However, there is no enforcement of the rules or penalties, such as a target percentage of turnover to be spent on R&D in Qatar with fines for non-achievement. As mentioned above, these companies are free from corporate tax and duties (Qatar Science and Technology Park, 2012). This all raises questions about whether the international companies will engage in serious R&D in the absence of rules that oblige them to conduct R&D activities in Qatar. Even as they may conduct R&D activities inside Qatar, we should ask: what is the size (budget) and outputs of these operations and do they align with national strategies or their local operations and global interests? These questions are important to determine whether R&D activity that enhances backward and forward linkages, as well as knowledge linkages, in the oil and gas companies.

Information shared by the anonymous company (A) helps to answer these questions. They indicated that they had conducted R&D activities in Qatar, and their activities have to be aligned with both the national vision and local content as well as the global agenda. They have some policies for technology transfer in Qatar, but it depends on the agreement that is in place and the venture projects being entered into between QP and the international company. According to the company's response, there is some level of

technology transfer. Now the question is: in which fields, and as mentioned above, what is the size of the R&D operations? Based on the analysis of different projects mentioned in *The Gulf Intelligence* (2013) and the information shared by the anonymous company (A), the R&D activities are in the following areas: water, environment and geology, subsurface, CO_2 capture utilisation, reservoir management, oil production and carbon footprint. These projects are managed either as internal projects in the company's lab or with Qatar University or Texas A&M University.

The anonymous company (A) did not respond to the questions regarding the size of their R&D operation and their outputs. In general, one notices that R&D activities in Qatar are very minimal and mainly in environmental areas.[14] This can be interpreted as due to various reasons: fragmentation in the vision for R&D; miscoordination in terms of collaboration between the different agents, or direction of research more towards the global interests of the international oil companies. These reasons are substantiated in an interview conducted in 2013 by *The Gulf Intelligence* with Soren Frank, the director of Maersk Oil Research and Technology Centre.There, he indicates that there are different approaches to building R&D capacity as well as mis-coordination in collaboration between the various agents, particularly academia, industry, and government. Academia's vision for R&D is motivated by publishing its findings, while the oil and gas industry is more interested in applied research to reduce costs and/or increase production and recoveries, if commercialised. Thus, the industry needs more engagement from academia in applied research. Collaboration with the local universities is hindered as international oil companies are interested in technologies that distinguish them from their peers (IP) and are therefore not always willing to collaborate with local universities on research projects that involve competitors. Collaboration therefore takes place when the international oil companies have a common interest and there is less incentive to compete, which mainly occurs in environmental research and water usage.

In an industry-university-government study, Abduljawad (2013) finds that there were weak linkages between various agents in Qatar, as well as a lack of enforcement. The Qatar government and Qatar University are motivated to stimulate R&D activities, but this

[14] The anonymous company (A) did not provide details on R&D expenses, or the size of R&D operations.

is not the case for the oil and gas companies. There, the barriers appear to be a lack of clarity and commitment. The lack of motivation found by Abduljawad (2013) was clarified by one of the participants in his fieldwork interviews. According to this participant, the national oil and gas industry in Qatar has explored and exploited the natural resources through relying on the knowledge and expertise of external Western companies. For them, as the technology is already in place, the industry has no need for research. In other words, IOCs help Qatar have acquire new technologies and test and implement them in a short time, and this discourages national companies from building R&D capacities. According to Al-Derham, the vice-president for research at Qatar University, industries are used to relying on international consultancies to solve specific problems (*The Gulf Intelligence*, 2013). Abduljawad's (2013) research makes the same argument. From the last two points, it is clear that national oil and gas companies are devoting little attention to developing their R&D capacities.

Moreover, building R&D capacities is also associated with HR, which is discussed in the Qatarisation section. Whereas much of the literature deals with R&D technology and HR separately, in reality, as indicated above, technological development and HRD are linked, as a rise in the availability of one promotes the development of the other. Thus, in line with technology development strategies, the state has to provide skills development plans that define technology development skills gaps and provide up-skilling and training to the fill skills gap. Shorates of engineers and technicians are common in developing countries, so foreign labour is often used to install, operate and maintain equipment. Human capital is a major challenge in building long-term, sustainable R&D capacities. As referred to by Abduljawad (2013), building local R&D capacities in Qatar is also hindered by the frequent departures of the many expatriates who have the knowledge. For example, in the R&D entity of anonymous company (A), none of the researchers are Qataris, and there is reason to think this is the case in the other international companies with regard to building long-term, national-level R&D capabilities.

However, the development of manufacturing capabilities need not necessarily originate from within these IOCs. Linkages can be developed from another sector to meet the need of the oil and gas industry. IOCs can play a pivotal role in terms of partnering

with local manufacturing and services business in transferring knowledge through mechanisms like joint ventures, matching with subsidiaries, and an enforced learning-by-doing process. Norway, for example, through the 1989 concession agreement, imposed that at least 50% of the total expenditures on R&D covered by the license would be spent in Norway and in cooperation with Norwegian contractors and firms. Norway sought, through this local content policy, to develop the competence and know-how of the Norwegian suppliers who developed new technologies (Bjørknes, 2014). In the case of Qatar, such a policy it totally absent, and as far as this research found that R&D collaboration of IOCs is limited with Academic institutions.

5.5. What Are The Untapped Opportunities?

As this discussion makes clear, Qatar has low backward linkages and investment in knowledge linkages is needed, as shown in Figure 6. There are many untapped opportunities with regards to material inputs that can be produced locally, as well as building services to serve the oil and gas industry. Examples of services inputs are repair, engineering, and maintenance that can contribute to building industrial capabilities.

Figure 6: How the knowledge linkages lead to the realization of the other linkages



Source: Jourdan (2012)

An important factor in resolving the human capital problem is to make licences for resource exploration activities include conditions to develop HR as well as conduct R&D that enhances the backward and forward linkages. This must go hand in hand with incentives and penalties (Jourdan, 2013). To understand why this is important, one has to refer to the Social Exchange Theory (SET), which understands human behaviour as an exchange between actors in business. According to Chalu et. al. (2015), firms assess economic and social results from each transaction and compare them to what they think it is worth. In this process, companies look for additional benefits that can be gained from

other potential exchange partners. The transaction between thecompanies is the key that governs the relationship -- whether it will expand, remain as it is, or dissolve.

The crucial insight SET offers is the equation of power with resources or wealth and the association between power and dependence. The theory of economics posits that a company's incentive to comply with regulations is an aspect of the cost of both compliance and noncompliance (Chalu et al, 2015). Compliance costs in this sense comprise the expense of applying the rules. On the other hand, non-compliance costs are linked to the possibility that the regulator will notice the shortage in compliance and enforce a penalty (Chalu et al, Tordo et al, 2013).

Tordo et. Al. (2013) argue that, if a country wants to impose certain local content policies, it is likely that implementation will be ineffective if companies think that needed or promised subsidies can be avoided or no penalty or a negligible penalty exists. In this regard, even if the state introduces policies and regulations, companies may not comply without credible threats to impose penalties. In most developing countries, there is a skills gap in the oil and gas industry and so a combination of incentives and mandatory rules are needed to support local content implementation (Tordo et al., 2013). Tordo et. al. (2013) bring in successful case studies of polices that fostered R&D and technology transfer, showing that in Malaysia, for example, the state asks every oil and gas company to contribute to the annual research input at least 0.5% of the total of the cost of oil, as well as a share of the profit. The country uses tax incentives, but to obtain them companies have to spend at least 1% of their gross sales on local research and development.

According to Jourdan (2013), the tertiary education system is essential to building HRD and R&D capacities. Qatar has a weak education system and thus needs extensive reforms of the whole system. In addition, there have to be policies that encourage Qatari citizens to work in this field, not only through sponsorship and scholarship, but also through making other specialisations like literature and art more costly than the scientific and mathematics specialisation. It is true that many studies, such as those by Hvidt (2013) and Al-Subaiey (2011), argue that the quota for Qatarisation is unrealistic when one considers the small size of the population (2.57 million). However, my findings point to the fact that a higher level of Qatarisation can still be achieved in the oil and gas sector

through improved education and incentives, especially if one considers that only 9% work in the hydrocarbon sector. The focus should not be on reaching 50%, as this would be difficult considering the small size of the population. Thus, Qatar's target should not be to create a large number of jobs with low or medium knowledge but to create fewer jobs with a very high knowledge level. The reason for this is that if Qatar had a large number of varied industries, it would have to depend heavily on importing its workforce (Hvidt, 2015).

It's important to take into consideration political economy. Fina and Rustomjee (1996) asserted that designing industrial policy requires negotiation, as various political and economic interests affect all choices about rents allocation and policy direction. To form backward linages, the challenge for Qatar would be to create the emergence of domestic private, public, or hybrid sectors with the risk propensity, finance, and interest to take on the manufacturing projects and services that would be required by the oil and gas industry. To do this, it's vital for Qatar to use its oil and gas rents and SWF as a source of productive rents that would be invested into building the manufacturing sector. Industrial policy is crucial for that goal and, as I argued earlier, also requires developing knowledge linkages-- a prerequisite for having the technical skills and competencies to develop an industrial base. Qatar needs to form an industrial policy and a clear local content policy with firm targets and effective instruments. Support and monitoring institutions are important, as they contributed to achieving local content policies in other successful cases. However, robust industrial policy should look beyond imposing local content policies on IOCs and use those as seeds for attempting to develop a broader range of industries.

Chapter 6. Conclusion and Recommendations

6.1. Summary and Recommendations

This study has provided a broad overview of the factors that make Qatar's present-day economy vulnerable, all of which follow from its dependence on international commodity prices. This vulnerability became painfully clear after the recent fall in oil and gas prices, as well as during the blockade by Saudi Arabia and its allies. Qatar's dependence on foreign labourers, who do not have the right to permanent residence or citizenship, is an additional barrier to building a sustainable economy. Based on this analysis, this study suggests an alternative approach to diversification, where the developmental state enables linkages from the oil and gas industry to other sectors that lead to further industrialisation.

Chapter 2 provided a review of the literature on the 'resource curse', which argues that countries endowed with natural resources tend to have slower economic growth, Dutch disease, rent-seeking behaviour, and corruption. Based on these assumptions, this research calls for a significant reduction in the state's role in industrial policy. However, drawing on counter-arguments, the chapter shows that the resource curse theory discounts other factors, such as the role of political and economic institutions, as well as social elements. Taken together, these factors show that the there is no universal resource curse and that the state can use industrial policy to counteract the potentially negative consequences of natural resource endowments.

Chapter 3 advanced the 'linkages framework' as a way to avoid or escape the resource curse. The chapter discussed how productive and knowledge linkages can provide a solid basis for industrialisation and diversification. It also discusses how countries like Norway used their natural resources to foster industrialisation by building linkages and enforcing local content policies. Norway's local content policies impose licence conditions on IOCs and encourage collaboration with local universities to help develop HR and R&D. Overall, this chapter emphasises the important role industrial policy and local content policies can play in building linkages.

Chapter 4 introduced Qatar as a case study. It argues that Qatar fits the model of a rentier state, with a generous welfare system and employment for its citizens. However, these benefits decrease when there is a slump in the oil and gas industry. The chapter also examines Qatar's national vision for diversification and shows that these policies are usually designed by external consultancies, rest on a shallow, neoliberal agenda, failing to take into account the specific, real needs of Qatar's economy. This chapter shows that the various infrastructure projects the Qatar government invests in do not lead to real diversification or create sustainable employment. On the contrary, they appear to increase the country's reliance on foreign labour.

Chapter 5 answered the research question and provided empirical support for the main claims of this study. Examining Qatari content policies and their implementation, as well as data from public corporate reports and an anonymous survey of a company, it concludes that local content in terms of buying local goods and services is overly flexible, such that it lacks specified time frames and the monitoring institutions to achieve the policy goals. This is an indication that the state is not paying attention to developing backward linkages. It is not fully clear what has been achieved, but the evidence indicates it is relatively limited. The second major policy, Qatarisation, seeks to reach 50% local workers by 2030. Analysis of this policy shows that it lacks consistency and transparency. In general, Qatarisation focuses on leadership positions. Weak monitoring and insufficient human capital development limit the Qatarisation policy, as most Qataris do not have the skills to meet the needs of industry. It is further hindered by weak linkage between universities and industry. With regards to R&D, the state provides infrastructure for the IOCs and encourages them to conduct R&D. While these companies receive incentives, there were no reciprocal obligations or a clear vision of what the R&D should encompass. Not surprisingly, these companies have made limited investments in R&D, investing mainly in environmental issues. The Qatar case study provides clear evidence that achieving local content targets requires state intervention and robust accountability institutions.

This chapter's findings further suggest that a minimal level of achievement in knowledge linkages is necessary to develop backward linkages. There have been many lost

opportunities, and the key is to design and enforce local content policies with a clear vision and explicit targets. The Qatari state needs to frame these targets as licence conditions for the IOCs and enforce them through incentives and penalties. Another recommendation is to form institutions to monitor performance in achieving these targets. However, as a first step, the state needs a clear industrial policy, which is, at present, absent in Qatar. Developing human capital is also needed, and this cannot be addressed without reforming the education system, from the primary level to tertiary education and PhD programmes. In addition, incentives for students to study major subjects related to this field would encourage human capital formation, while, at the same time, universities need to introduce programs to meet the industry's needs.

While this study cites successful stories about the local content policies like Norway, we Qatar has its own characteristics in terms of history, culture and politics that set barriers to implementing similar policies. Qatar has a different governance structure and different technological capabilities than Norway. Yet, as discussed earlier, local content policies can help overcome many of these challenges. However, enforcing local content policies and industrialisation requires strong political will and a long-term vision. The development of local content policy relies on the quality of the relationship between political, infrastructure, environmental, and local capability circumstance, all of which need to be considered in the Qatari case.

Qatari also needs local expertise to develop its distinctive vision and policy. While Qatar tends to rely on external experts and consultants, it is not the case that it lacks domestic expertise. Ali Al-Kuwari, for example, has occupied several positions in the oil and gas sector, and wrote the book "The People Want Reform in Qatar." He has critised Qatar's visions and policies, such as the reliance on the foreign labour. The Gulf Center for Developmental Studies is a very significant example to show that Gulf countries can rely on local experts. The Center includes researchers from all the Gulf countries and has developed several critiques of Gulf policies. There researchers could be further trained to serve their countries' needs.

6.2. Limitations

As noted in Chapter 1, there is no literature in this particular area that focuses on Qatar and its specific context. I sought to access to information through fieldwork, to conduct interviews, or to get answers for a questionnaire sent to different institutions, but these efforts were unsuccessful. Therefore, while this study compiles the available data and was able to use the results of one anonymous survey, this data was limited and does not provide a detailed picture of various relevant aspects of local content and Qatarisation policies. For example, with regards to R&D, some parts of this study depend on information about one international oil and gas company, such that the results might not apply to the other oil and gas companies. Also, due to the limited scope of this data, the study does not discuss forward linkage. The anonymous survey, while it provided detailed information about one company, does not enable comparison between companies in the sector. The company's answers also, at times, lacked detail, and they failed to respond to some questions.

6.3. Future Research

Future studies should include how forward linkages can be developed to push for local production of final products. Moreover, a crucial question is: will Qatar formulate a new vision for its economy after the blockade? Amsden (2010, p 46) states, "The developing world's national economy emerged out of war, political independence and indigenism, or an international redistribution in the ownership and control of resources." This could apply to Qatar after the blockade, pushing them to develop a new vision that considers industrilisation and economic independence. This is a question worth further exploration, especially as Qatar has announced, after the blockade, that it has a larger number of small and medium enterprises and is seeking to innovate in new industries, such as dairy.

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Figures and Tables

Figure 1. Major exports of Qatar in 2018.

Figure 2. Reserves of oil and gas support Qatar's economy.

Figure 3: Building resource's linkages.

Figure 4: Economic Diversity in Qatar, Sectors as percentage of GDP in 2016.

Figure 5: Qatar Exports and Imports of Product Groups from 2012 to 2016

Figure 6: How the knowledge linkages lead to the realization of the other linkages.

Table 1. The number of employees, compensation of employees by nationality and main economic activity: Mining and quarrying statistics.

Table 2: Qatarisation rate, Qatari employees and Qatarisation of Management in Qatargas

Table 3: Number of full-time employees and number of Qataris.