

Local Content Policies in the Oil Industry:

A Comparative Analysis

by

Martín Vinet Brand

(Student ID number: 848814)

*Thesis submitted to Politecnico di Milano for the award of the
degree of Laurea Magistrale in Management Engineering*

Under the supervision of

Professor Marika Arena



STUDY COURSE OF MANAGEMENT ENGINEERING, LAUREA MAGISTRALE

SCHOOL OF INDUSTRIAL AND INFORMATION ENGINEERING

POLITECNICO DI MILANO

April 2017

ACADEMIC YEAR 2016-2017

Table of contents

LIST OF FIGURES.....	5
LIST OF TABLES	6
1. ABSTRACT	7
1. IN THE ENGLISH LANGUAGE	7
2. IN THE ITALIAN LANGUAGE.....	8
2. EXECUTIVE SUMMARY	9
3. INTRODUCTION.....	14
4. CONTEXTUAL BACKGROUND: THE OIL INDUSTRY.....	17
1. GENERAL OVERVIEW	17
2. LARGEST PRODUCERS	18
3. OIL PRICES OVER TIME	20
4. TRENDS OF NATIONAL PARTICIPATION	22
5. RELEVANT FACTS SPECIFIC TO THE OIL INDUSTRY.....	23
1. Types of extraction fields	23
2. Capital intensity.....	24
3. Licencing process.....	25
6. “THE CURSE OF THE NATURAL RESOURCES”	26
5. LITERATURE REVIEW AND ANALYSIS OF LOCAL CONTENT POLICIES	28
1. STRATEGIC DEVELOPMENT OPTIONS	28
2. WHAT IS A LOCAL CONTENT POLICY?	30
1. Local hires	31
2. Domestic sourcing of goods and services	31
3. Training programs for domestic workforce	31
4. Technology transfer.....	31
5. Other incentives for local business development.....	32
3. OBJECTIVES OF IMPLEMENTATION.....	32
1. Creation of local jobs	33
2. Promote local enterprise creation, development and competitiveness.....	33
3. Transfer of technologies and skills.....	33
4. Creation of a local, reliable supply chain	34
5. Improved relation with local stakeholders	34
6. Reduction of labour costs	35
4. CONSTRAINTS OF IMPLEMENTATION.....	35
1. Lack of capacity.....	35
2. Corruption	36
3. Creation of distortions and inefficiencies	37
4. Unsuccessful monitoring and implementation of policies.....	37
5. Barriers to future extractive businesses	38
5. KEY SUCCESS FACTORS	38
1. Requirements coherence with broad country context.....	39
2. Openness and transparency	39
3. Understanding costs and benefits for all stakeholders.....	40
4. Focusing on long term objectives	40
5. Providing right climate for local businesses and workforce to succeed	41
6. WHEN ARE LOCAL CONTENT POLICIES DESIRABLE.....	42

6. METHODOLOGY	43
1. OVERALL METHODOLOGICAL APPROACH.....	43
2. JUSTIFICATION OF SELECTION CRITERIA.....	43
1. Classification of Local Content Policies into four main areas	43
2. Contextual factors selection criteria.....	45
3. Country selection criteria	46
3. DATA COLLECTION METHODS	47
4. COMPARISON MECHANISM.....	47
7. POLICIES ANALYSIS OF DIFFERENT COUNTRIES	49
1. ANGOLA	49
1. Context	49
2. Local Content Policies applied.....	52
3. Outcome.....	53
2. BRAZIL	55
1. Context	55
2. Local Content Policies applied.....	58
3. Outcome.....	60
3. GHANA.....	61
1. Context	61
2. Local Content Policies applied.....	64
3. Outcome.....	66
4. INDONESIA.....	67
1. Context	67
2. Local Content Policies applied	71
3. Outcome.....	72
5. KAZAKHSTAN	73
1. Context	73
2. Local Content Policies applied	77
3. Outcome.....	78
6. MALAYSIA.....	80
1. Context	80
2. Local Content Policies applied	84
3. Outcome.....	85
7. NIGERIA.....	86
1. Context	86
2. Local Content Policies applied	90
3. Outcome.....	91
8. NORWAY	93
1. Context	93
2. Local Content Policies applied	97
3. Outcome.....	98
9. TRINIDAD AND TOBAGO.....	99
1. Context	99
2. Local Content Policies applied	103
3. Outcome.....	104
8. DISCUSSION	105
1. KEY FINDINGS	105
1. Local employment	105
2. Local sourcing of goods and services.....	108
3. Training requirements.....	114
4. Technology transfer requirements.....	115
5. Other relevant findings.....	119
6. Distinctions with previous literature	120

9. CONCLUSION	122
1. LIMITATIONS OF THE ANALYSIS	124
2. FURTHER RESEARCH AREAS	127
10. BIBLIOGRAPHY	128

List of figures

FIGURE 1: WORLDWIDE TOTAL PRIMARY ENERGY SUPPLY BY FUEL (1973-2014)	17
FIGURE 2: PROVED OIL RESERVES BY COUNTRY, AS PERCENTAGE OF THE WORLD'S PROVED RESERVES	18
FIGURE 3: CRUDE OIL PRODUCTION BY COUNTRY, AS PERCENTAGE OF THE WORLD'S PRODUCTION	19
FIGURE 4: EVOLUTION OF "WEST TEXAS INTERMEDIATE" BBL. OIL PRICES, INFLATION ADJUSTED (ADAPTED GRAPH).	21
FIGURE 5: CAPITAL INTENSITY OF SELECTED INDUSTRIES IN THE UNITED STATES, IN DOLLARS INVESTED OVER EMPLOYEE COUNT	25
FIGURE 6: GEOGRAPHICAL LOCATION OF ANGOLA.....	49
FIGURE 7: OIL PRODUCTION IN ANGOLA	50
FIGURE 8: GDP GROWTH IN ANGOLA VS. OECD	50
FIGURE 9: EVOLUTION OF HDI IN ANGOLA VS. OECD	51
FIGURE 10: GEOGRAPHICAL LOCATION OF BRAZIL	55
FIGURE 11: OIL PRODUCTION IN BRAZIL.....	56
FIGURE 12: GDP GROWTH IN BRAZIL VS. OECD	56
FIGURE 13: EVOLUTION OF HDI IN BRAZIL VS. OECD	57
FIGURE 14: GEOGRAPHICAL LOCATION OF GHANA	61
FIGURE 15: OIL PRODUCTION IN GHANA.....	62
FIGURE 16: GDP GROWTH IN GHANA VS. OECD	62
FIGURE 17: EVOLUTION OF HDI IN GHANA VS. OECD.....	63
FIGURE 18: GEOGRAPHICAL LOCATION OF INDONESIA.....	67
FIGURE 19: OIL PRODUCTION IN INDONESIA	68
FIGURE 20: GDP GROWTH IN INDONESIA VS. OECD.....	68
FIGURE 21: EVOLUTION OF HDI IN INDONESIA VS. OECD	69
FIGURE 22: GEOGRAPHICAL LOCATION OF KAZAKHSTAN.....	73
FIGURE 23: OIL PRODUCTION IN KAZAKHSTAN	74
FIGURE 24: GDP GROWTH IN KAZAKHSTAN VS. OECD	74
FIGURE 25: EVOLUTION OF HDI IN KAZAKHSTAN VS. OECD	75
FIGURE 26: GEOGRAPHICAL LOCATION OF MALAYSIA	80
FIGURE 27: OIL PRODUCTION IN MALAYSIA	81
FIGURE 28: GDP GROWTH IN MALAYSIA VS. OECD	81
FIGURE 29: EVOLUTION OF HDI IN MALAYSIA VS. OECD.....	82
FIGURE 30: GEOGRAPHICAL LOCATION OF NIGERIA	86
FIGURE 31: OIL PRODUCTION IN NIGERIA.....	87
FIGURE 32: GDP GROWTH IN NIGERIA VS. OECD	87
FIGURE 33: EVOLUTION OF HDI IN NIGERIA VS. OECD	88
FIGURE 34: GEOGRAPHICAL LOCATION OF NORWAY.....	93
FIGURE 35: OIL PRODUCTION IN NORWAY	94
FIGURE 36: GDP GROWTH IN NORWAY VS. OECD	94
FIGURE 37: EVOLUTION OF HDI IN NORWAY VS. OECD	95
FIGURE 38: GEOGRAPHICAL LOCATION OF TRINIDAD AND TOBAGO	99
FIGURE 39: OIL PRODUCTION IN TRINIDAD AND TOBAGO	100
FIGURE 40: GDP GROWTH IN TRINIDAD AND TOBAGO VS. OECD	100
FIGURE 41: EVOLUTION OF HDI IN TRINIDAD AND TOBAGO VS. OECD.....	101

List of tables

TABLE 1: LARGEST OIL PRODUCERS BY REVENUE IN 2015	20
TABLE 2: SELECTED EASE OF DOING BUSINESS MEASUREMENTS IN ANGOLA VS. OECD.....	51
TABLE 3: LOCAL EMPLOYMENT REQUIREMENTS IN ANGOLA.	53
TABLE 4: SELECTED EASE OF DOING BUSINESS MEASUREMENTS IN BRAZIL VS. OECD	58
TABLE 5: EVOLUTION OF LOCAL SOURCING REQUIREMENTS IN BRAZIL	59
TABLE 6: SELECTED EASE OF DOING BUSINESS MEASUREMENTS IN GHANA VS. OECD	64
TABLE 7: LOCAL EMPLOYMENT REQUIREMENTS IN GHANA.....	65
TABLE 8: SELECTED EASE OF DOING BUSINESS MEASUREMENTS IN INDONESIA VS. OECD.....	70
TABLE 9: LOCAL CONTENT REQUIREMENTS IN THE PROVISION OF GOODS IN INDONESIA	72
TABLE 10: SELECTED EASE OF DOING BUSINESS MEASUREMENTS IN ANGOLA VS. OECD.....	76
TABLE 11: LOCAL EMPLOYMENT REQUIREMENTS IN KAZAKHSTAN SINCE 2010	77
TABLE 12: KAZAKHSTAN SELF-IMPOSED PROCUREMENT TARGETS.....	78
TABLE 13: LOCAL CONTENT ACHIEVEMENT IN KAZAKHSTAN IN 2010 AND 2011.....	79
TABLE 14: SELECTED EASE OF DOING BUSINESS MEASUREMENTS IN MALAYSIA VS. OECD	83
TABLE 15: SELECTED EASE OF DOING BUSINESS MEASUREMENTS IN NIGERIA VS. OECD	89
TABLE 16: SELECTED EASE OF DOING BUSINESS MEASUREMENTS IN NORWAY VS. OECD.....	96
TABLE 17: SELECTED EASE OF DOING BUSINESS MEASUREMENTS IN TRINIDAD AND TOBAGO VS. OECD	102
TABLE 18: SUMMARY TABLE OF LOCAL EMPLOYMENT POLICIES	107
TABLE 19: SUMMARY TABLE OF LOCAL SOURCING POLICIES	113
TABLE 20: SUMMARY TABLE OF TRAINING REQUIREMENTS.....	115
TABLE 21: SUMMARY TABLE OF TECHNOLOGY TRANSFER REQUIREMENTS	118

1. Abstract

1. In the English language

With the objective of further enhancing gains from oil exploitation, countries have enacted local content policies. That is, leveraging on the positive externalities created by the oil extractive value chain, to foster the development of local businesses and people, by temporarily protecting them from foreign competition.

However, past experiences for implementations of these policies in different countries have achieved contrasting results. The purpose of the study was to analyse different types of local content policies, assess the results they achieved, and identify some possible contextual factors that could explain such results. It was hypothesised that similar policies could achieve changed outcomes if implemented under different social, political and economic contexts.

For this, nine countries were compared in terms of context, policies applied, and outcomes achieved. Then, patterns and trends were searched to understand how context influenced outcome, for analogous policies.

It was found that countries that had more suitable business environments achieved better results for policies including preferential treatment in contract awarding for local firms, and foreign sourcing quotas. Also, low corruption levels were determined critical when joint ventures were mandatory, since otherwise they led to rent-seeking behaviours.

What is more, it was observed that some contextual situations improved the overall results of many policies. These included countries enjoying relative political stability, having a more qualified workforce in terms of education, and sufficient R&D expenditures.

It was concluded that policy alone should not be the only focus of legislators, and that holistic analyses must be carried out to find the best way to adapt them to each country's context. Particularly, focus ought to be put in fostering local competitiveness, to avoid welfare losses coming from trade diversion.

Keywords: Local content; oil industry; national oil company; legislation; Angola; Brazil; Ghana; Indonesia; Kazakhstan; Malaysia; Nigeria; Norway; Trinidad and Tobago.

2. In the Italian language

Al fine di sfruttare i benefici derivanti dalle attività di estrazione del petrolio, i paesi produttori hanno adottato diverse politiche di local content. Cioè, hanno cercato di fare leva sulle esternalità positive create dalla catena del valore del petrolio, per favorire lo sviluppo delle imprese locali e del capitale umano, introducendo misure protettive dalla concorrenza straniera di natura temporanea.

Tuttavia, le implementazioni di queste politiche in diversi paesi hanno ottenuto risultati contrastanti. Lo scopo di questo studio è stato quello di analizzare diversi tipi di politiche di local content, valutare i risultati che hanno raggiunto, e identificare alcuni possibili fattori contestuali che contribuiscono a spiegare questi risultati. È stato ipotizzato che le politiche simili potrebbero raggiungere risultati diversi se attuate in contesti sociali, politici ed economici diversi.

Per questo, nove paesi sono stati confrontati in termini di contesto, politiche applicate, e risultati conseguiti. Poi, modelli e tendenze sono stati cercati per capire come il contesto ha influenzato il risultato, per le politiche analoghe.

L'analisi ha evidenziato che i paesi che hanno avuto ambienti di business più adeguati hanno ottenuto risultati migliori per politiche come il trattamento preferenziale in assegnazione dei contratti per le aziende locali, e le quote di approvvigionamento straniero. Inoltre, livelli di corruzione bassi sono stati determinati critico quando joint ventures fossero obbligatorie.

Inoltre, alcuni fattori di contesto hanno migliorato i risultati di molte politiche: relativa stabilità politica, avere una forza di lavoro più qualificata, e un'adeguata spesa per ricerca.

Si è concluso che la politica da sola non dovrebbe essere l'unico obiettivo dei legislatori, e che un'analisi olistica deve essere effettuata per trovare il modo migliore per adattarli alle contesti di ciascun paese. In particolare, dovrebbe essere dedicata particolare attenzione a promuovere la competitività locale, al fine di evitare perdite di benessere provenienti da diversione degli scambi.

Parole chiave: Contenuto locale; industria petrolifera; azienda petrolifera nazionale; legislazione; Angola; Brasile; Ghana; Indonesia; Kazakhstan; Malesia; Nigeria; Norvegia; Trinidad e Tobago.

2. Executive Summary

Due to its intensive usage as an energy source, oil has proved to become a critical resource for the last century. While its production industry was dominated by few international firms, since the 1960s a marked trend of national participation arose, leading government of oil-producing countries to implement different measures to further their countries' benefits obtained from oil extraction, increase their leverage in the international industry, enlarge their share of the profits, and acquire decision-making authority in the sector.

One of such approaches were **local content policies**. That is, the leveraging on the oil extractive value chain to foster the development of local businesses and people beyond simply oil revenues. The specific legislations enacted by different government to achieve these goals were at the centre of this research.

Their approach focuses mainly in temporarily protecting local business and personnel from foreign competition, usually by establishing foreign quotas, to give them a chance to grow and become competitive.

Nevertheless, past experiences for implementations of these policies in different countries have achieved contrasting results. The study of this topic becomes relevant nowadays in the contexts of several new countries implementing local content policies. However, the political appeal of safeguarding local people and firms from foreign intrusion has become a major issue, as the objective of improving local competitiveness is likely to have been misunderstood by legislators.

The purpose of the study was to analyse different types of local content policies, assess the results associated with them, and identify some possible contextual factors that could explain such results. It was hypothesised that similar policies could achieve changed results if implemented under different social, political and economic contexts.

The **literature review** section focuses on objectives, constraints and success factors of local content policies.

When a natural-resource-endowed country is evaluating methods for development, it can follow either a Revenue-focused approach (i.e. Letting market conditions prevail so that oil revenues are maximized, allowing to make the most out of tax revenues, which can later be used for development), or an In-Country-Value-focused approach (i.e. Mandating operators to retain a portion of the costs they incur to be spent in the local market, so as to incentivize local business expansion, productivity and workforce capabilities. These are internationally divertive measurements, meaning trade could be diverted from efficient suppliers to less efficient ones, giving rise to negative overall welfare effects, at least in the short run).

Local content policies fall into the latter category, yet their objective of leveraging on the extractive value chain to foster local productivity – and not just to entitle local entities to a share of the business

–, aims at allowing the *sacrifice* in short-term value to transform into welfare gains in the long-run, brought by competitive local businesses that enjoy the advantage of lower transportation costs due to proximity, no cultural barriers, and the fact that they will serve as a further source of tax revenues for the state.

Regarding their objectives from a country perspective, local content policies pursue to create local jobs, promote local enterprise formation, development and ultimately competitiveness at the international level, and enhance the transfer of technological know-how to local companies and relevant skills to the workforce. From the operator companies' point of view, they can be a method to achieve a reliable local supply chain, help improve relations with politically-empowered stakeholders, and even for attaining a reduction in labour costs.

As for constraints, authors have discussed the lack of competent local capacity, high corruption, distortions in the incentives for innovation, inefficiencies brought by increased operators' costs not offset by the benefits of policies' outcomes, unsuccessful monitoring, and barriers to future foreign investments as the main issues that can lead to failure.

All in all, previous literature on the topic suggests that the key success factors to achieve positive outcomes are the following: The policy obligations should be coherent with the broad country situation, they should be implemented in an open and transparent way, they should be examined in terms of costs and benefits for all stakeholders involved, they should have a focus on long-term objectives and a roadmap of how to attain them, and they should go together with initiatives to provide an appropriate climate for local businesses growth. In sum, “shielding” a country's economy from foreign superior competitiveness will only be positive if the benefits it brings are greater than the losses it produces – in the long term – from a welfare perspective that considers all stakeholders in the equation.

To answer the research question, the following **methodology** was employed: First, nine oil-producer countries where local content policies were enacted were selected, based on the existence of identifiable, available, and reliable information and analyses on these implementations.

Then, their policies were studied and categorized into four areas to ease comparison: Local employment, local sourcing of goods and services, local training, and technology transfer requirements. This proved useful to avoid categorizing a general outcome as successful when it was actually positive in some areas, but negative in others.

Afterwards, country-specific contextual factors – at the time of policy implementation, and their evolution through time – were analysed for each country. These included oil production, gross domestic product, the Human Development index, inequality, poverty and unemployment levels, quality of education, expenditure in research and development, levels of bureaucracy, accessibility to finance, infrastructure quality, the Ease of Doing Business index, monitoring capabilities, and corruption levels.

Also, the outcomes obtained by the application of the obligations were thoroughly analysed for each country, in terms of each of the categorized local content areas, assessing increases in local employment and local sourcing of goods and services. Finally, countries that had employed similar policies were qualitatively compared to determine if there were some recurrent factors that could explain the achieved outcomes.

Data gathering was done using quantitative data from reliable datasets, particularly from the World Bank, The United Nations Educational, Scientific and Cultural Organization (UNESCO) Institute of Statistics, The Organization for Economic Co-operation and Development (OECD), The United Nations Development Program, and Transparency International. Furthermore, information regarding policy obligations for each nation was obtained from a mixture of relevant legislation examination, as well as through previous research done by relevant authors. Finally, outcomes on policies' implementations were also obtained through the analysis and comparison of previous studies, in a country-by-country fashion.

The results of the study were articulated into two parts.

First, the local content implementations in each country were exposed, describing the context, policies applied, and outcome achieved for each of them. In very broad terms, harsher policies were applied in Angola, Ghana, Kazakhstan, Malaysia and Nigeria, while the ones in Brazil, Indonesia, Norway and Trinidad and Tobago were less strict in comparative terms. On the other hand, relatively better results were achieved in Brazil, Malaysia, Norway and Kazakhstan in terms of local business development, while Indonesia, Brazil and Ghana succeeded in local employment.

Then, different countries were qualitatively compared, highlighting significant heterogeneity in the results that different countries obtained even when implementing similar types of policies or degrees of severity. This qualitative comparison allowed to identify some contextual factors that appear to be influential in shaping the outcome of the local content policies.

In particular, the analysis carried out in this thesis allowed to report a series of **findings** regarding different kinds of policies and contextual situations.

First, some measures were found to be linked with successful outcomes, irrespective of the country-specific contextual factors under which they were applied. These included policies such as the obligation for operators to provide training schemes, and the use of foreign employment quotas to increase local hires (although this last one mostly led to increases in unskilled labour only, and created adequately-skilled workforce shortfalls when values were set too high).

Further overall successful mechanisms involved having the legislators develop the policies in coordination with the oil operators, providing fiscal incentives to local businesses, and empowering the national oil companies to foster training and employment development themselves, a scheme that actually proved more determinant of rises in local hires than mandating quotas by law.

Second, certain contextual situations were concluded critical for the achievement of positive outcomes, regardless of the kind or degree of policies applied. These included the countries enjoying relative political stability, having a more qualified workforce in terms of education, and spending a sufficient amount of resources in R&D, a measure found key to achieve increases in the local sourcing of specialized goods and services (although it could be relieved with mandatory R&D contributions from operators).

Additionally, external factors such as the rise of oil prices and the growth of local oil production levels were concluded to be determinants of increases in local sourcing, even more so that the enactment of foreign sourcing quotas.

Third, as initially hypothesised, various local content policies were concluded to work differently under diverse country-specific contexts. Particularly, a suitable business environment that allows local firms to grow and develop – including an adequate infrastructure quality, access to finance for local firms, low bureaucracy, and low corruption levels – was found an important prerequisite for the successful implementations of various policies. These include the use of preferential treatment in contract awarding for local firms, foreign sourcing quotas that otherwise would create supply bottlenecks, and the fostering of national oil companies to take the lead championing local content initiatives themselves.

Furthermore, adequate monitoring capabilities were found essential for the implementation of any kind of policy, yet increasingly so for minimum sourcing targets, a mechanism that appeared to be highly reliant on such competences.

Finally, measures targeting the safeguarding of competition in the procurement process – an issue continuously discussed for its high relevance throughout this thesis – were determined critical to ensure it. Mandatory joint ventures and local-content-based competition in bidding were found useful mechanisms, however only if corruption was low, to avoid rent-seeking behaviour.

Concerning limitations of analysis, the first issue was the lack of publicly available quantitative data on policies' outcomes, which restrained the ability to carry out a more detailed time-series-based analysis.

Second, the number of the cases studied and the qualitative analysis performed allowed to identify some factors that appear to play a role in determining the outcome of local content policies, but are not enough to demonstrate the existence of a correlation. For this, examining similar policies that were implemented in relatively comparable industries – such as mining –, or adding the cases of newly implemented policies once enough time has passed to draw conclusions on their enactments, would certainly be positive.

Still, this research allowed to show that similar policies indeed worked differently when applied in different contexts, thus answering the initial research problem. Therefore, it can be **concluded** that countries can't simply copy other legislations expecting to achieve similar results. In turn, this becomes

very relevant for nations with new oil discoveries, for them to avoid making the same mistakes that occurred in the past.

The high risk of unsuccessful local content implementation appearing from past experiences, together with the menace of political manipulation, makes it unambiguous that local legislators should holistically study how to best benefit from oil exploitation. If local content is to be used, the policies enacted should be adapted to the country-specific context, to avoid supply bottlenecks, skills gaps, and rent-seeking corrupt behaviour. Particularly, legislators should understand that temporarily protecting local entities from foreign competition should be done to encourage local capacity growth, and that the long-term objective is to attain high performance, productivity, and ultimately competitiveness. If not done this way, there is a high risk of long-term failure, due to local suppliers being worse in terms of costs, time, and quality compared to foreign ones. In turn, this will hurt operators' profits, and so government's tax revenues. If the losses are higher than the gains brought by local content, then the outcome is undesirable.

3. Introduction

Oil has been a critical vehicle for development for more than a hundred years, because of its use as a key source of energy. On one hand, countries seek access to it so that their businesses can grow. On the other, countries endowed with the resource will leverage on its value to trade their excess with others, and so develop even further. This research will focus on the latter.

Due to a variety of reasons, including technological complexity, a relatively small number of oil producing companies dominated the international industry for many years. However, since the second half of the 20th century a growing focus has been put by governments to take control, or further leverage on the gains brought by this resource.

What is interesting though, is that while some oil-abundant countries have become rich through the exploitation of the resource, others have failed in doing so. Many reasons have been given to explain this phenomenon, including the so-called “curse of the natural resources”, a theory through which oil can be seen as a *curse*, serving instead as a deterrent for development.

What is more interesting, however, is the study of the countries that were successful in leveraging on the resource to achieve economic growth. In analysing these cases, the question rises of what were the specific reasons that led them to this outcome. Is it better to let international oil companies operate freely, and so develop through tax revenues? Or instead to nationalize its production, so that the proceeds remain in the country? Others argue, the answer might be neither. This topic represents an ongoing debate both among scholars and policymakers (Kalyuzhnova, Nygaard, Omarov, & Saparbayev, 2016).

It is in this context that the concept of local content policies arises. That is, the leveraging on the oil extractive value chain to foster the development of local businesses and people beyond simply oil revenues. The specific legislations enacted by different governments to achieve these goals will be at the centre of this research.

The history of local content policies dates back to 1960s, and has been evolving in type, reach and degree ever since. While most legislations don't address them as “local content” specifically, the concept of protecting local entities from foreign competition remains central in identifying them.

Research on this topic began to gain momentum in the 2000s, most of them aiming at explaining the successful implementation of Norway, and how it could be used in other countries. Still, the amount and extent of available studies is not so large, as local content as a separate investigation area is a relatively new affair. What has been mostly done are analyses of specific countries, in which foreign implementations are mentioned as means of comparison.

An important issue in the study of local content policies is their use for political reasons, especially in underdeveloped countries. Indeed, it sounds appealing to mandate very high quotas for foreign products or personnel, as a mean to charm people with the idea of retaining more of the oil wealth in

the country, instead of having foreigners appropriate it. It is particularly this topic that marks the importance of the comprehensive and cautious study of local content, so that legislators – as well as scholars – can further comprehend the objectives, constraints, and success factors that determine fruitful implementations, and also recognise what to do to avoid failure.

With this idea in mind, it has been found that most of the studies done so far regarding local content focus expressly on the assessment of the quality of the policies themselves, thus aiming at being able to distinguish good policies from bad ones. However, not much has been done to understand the contextual factors under which those policies are implemented. Furthermore, analyses usually focus on a single, or small group of countries, therefore missing valuable information for evaluation reasons.

The purpose of the study will be to analyse different types local content policies, assess the results associated with them, and identify some possible contextual factors that could explain such results. It will be hypothesised that similar policies can achieve changed results if implemented under different social, political and economic contexts.

This issue becomes relevant to understand if policy itself is – or not – the only problem to address, and so serve as an aid to determining the scope further research should have when addressing local content.

For this, it's important to clearly establish the scope this thesis will have. In order to precisely focus on the research question, this study will be delimited by the following topics:

1. It will not focus on the wealth created in the countries by the exploitation of oil resources, nor in how it's distributed so that the population benefits from it. Indeed, it will focus on assessing only the outcomes of local content policies applied from an efficiency and effectiveness point of view.
2. It won't concentrate on evaluating equity ownership issues in the oil producers. In fact, it will study local content outcomes irrespective of operators being international, national, private or state-owned companies.
3. It is not the objective of this thesis to provide guidelines or give recommendations to particular countries, nor to determine what their best course of actions should be. Instead, it focuses on recognizing which – if any – contextual factors play a role in determining outcomes, so that legislators can later carry out better performed analyses.

Still, some of these issues will be briefly discussed throughout the study, as their inclusion becomes relevant to address some topics.

The method used to study the research problem will be done in the following steps:

1. A set of oil-producing countries in which local content policies have been applied will be chosen.
2. The policies will be categorized in four topics, to allow easier comparison.

3. Country-specific contextual factors at the time of implementation will be analysed for each country, as well as the outcomes obtained by the implementation of the obligations.
4. A qualitative analysis will be done to determine the behaviour of similar policies under different contexts.

As a general roadmap, this thesis will begin by explaining selected contextual background information on the oil industry, so that the reader is familiar with relevant issues that shape the sector's function, as well as with specific terminology. Then, it'll move to a literature review section, in which the research and conclusions reached by relevant authors on local content policies will be exposed. Subsequently, the methodology part will serve as a more detailed description of how the analysis will be conducted, also explaining the rationale behind the data selection. Afterward, the local content implementations in different countries will be exposed, following a context, policy applied, and outcome fashion for each nation. Next, the different outcomes of the analytical comparison method will be discussed, highlighting key findings in each local content policy area, as well as contrasting these results with previous research. Finally, conclusions will be drawn regarding the research question, as well as other relevant topics.

4. Contextual background: The oil industry

1. General overview

Oil has been used by civilization for thousands of years. In early times, its functions were mostly to fuel fire and for war. Since the beginning of the 20th century it became the main energy resource of the planet, replacing the much-used coal during the industrial revolution and beyond (Grace, 2007). Therefore, it has become a vital commodity for the development of human civilization for more than a hundred years. A country's availability or access to this resource is hence crucial for its development.

Today, oil-based fuels represent more than 30% of the energy supply in the world. While the trend is indeed decreasing in favour of other resources, oil still represents the primary source of energy and serves as critical resource for all sorts of economics activities around the planet.

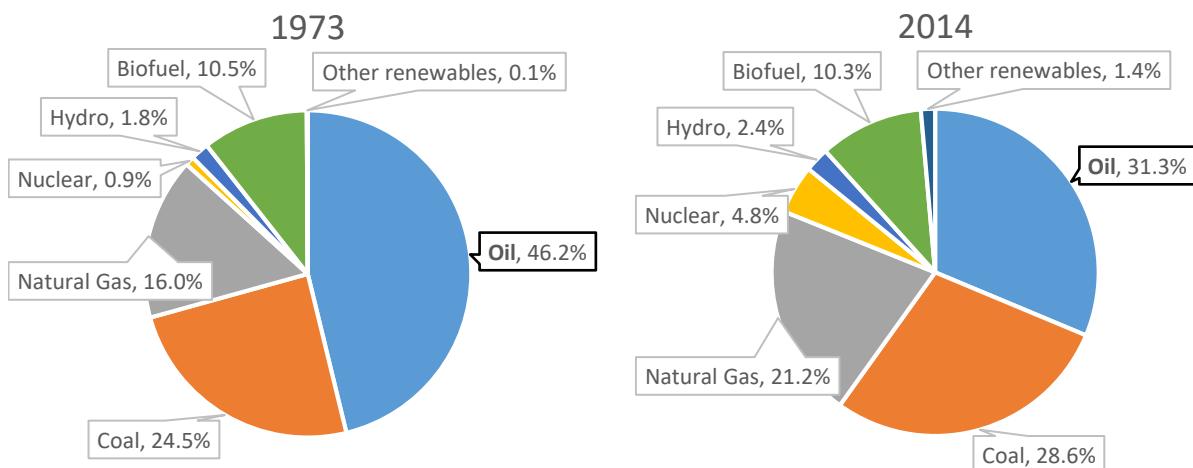


Figure 1: Worldwide total primary energy supply by fuel (1973-2014) (International Energy Agency, 2016)

Without aiming at explaining with detail all aspects of this industry – since this is not the topic of this thesis –, it is important that the reader is familiar with its most general aspects. Moreover, the following sections will describe a few further topics that are key to understanding the implications local content policies have on the oil sector, and vice-versa.

The oil industry is generally categorized in a three processes fashion: Upstream, Midstream and Downstream.

- **Upstream processes** correspond to first, the Exploration of oil fields through drilling underground (or underwater) until reserves are found. Subsequently, the Production phase starts in which different techniques are used to bring the oil to the surface. This business is characterized by the requirement of specialized equipment, infrastructure construction, and a variety of support services. These are provided by either by the same oil company (if “integrated”) or by specialized “Oil Field Service and Equipment” (OFSE)

companies. The fact that these OFSE companies can be foreign specialized international companies or local firm instead will be a topic of focus when discussing local content policies.

- **Midstream processes** are the one involving the transportation and storage of oil. They include the passage from field to refinery, and from refinery to distributors. Transportation is usually done by pipelines, by sea (with “Petroleum Tankers”), by rail, or by trucks. Again, different companies can provide these services.
- **Downstream processes** correspond to the post-production refining of the crude oil. This aims at creating products for the final consumers, such as gasoline, diesel oil, kerosene, lubricants, asphalt, etc. Marketing and transportation (Midstream) are sometimes also included in this category (The American Petroleum Institute, 2016).

2. Largest producers

The oil industry is a multi-billion-dollar business that takes part in a chain of activities around the planet. In fact, in the Fortune 500 ranking of companies by revenue, five out of the ten largest firms in the world are associated with the oil business, thus displaying how vast the scale of this industry is (Fortune, 2017).

Although refined oil is sold in all parts of the world, the extraction of the crude resource is limited to countries with oil fields. In this regard, since exploration activities have managed to make discoveries during different periods of time and considering that oil fields have a limited amount of resource, the sources of oil have varied with time. Nowadays, the largest proved oil reserves are located in the vicinity of the Persian Gulf. However, the single country with the proved largest reserves is Venezuela.

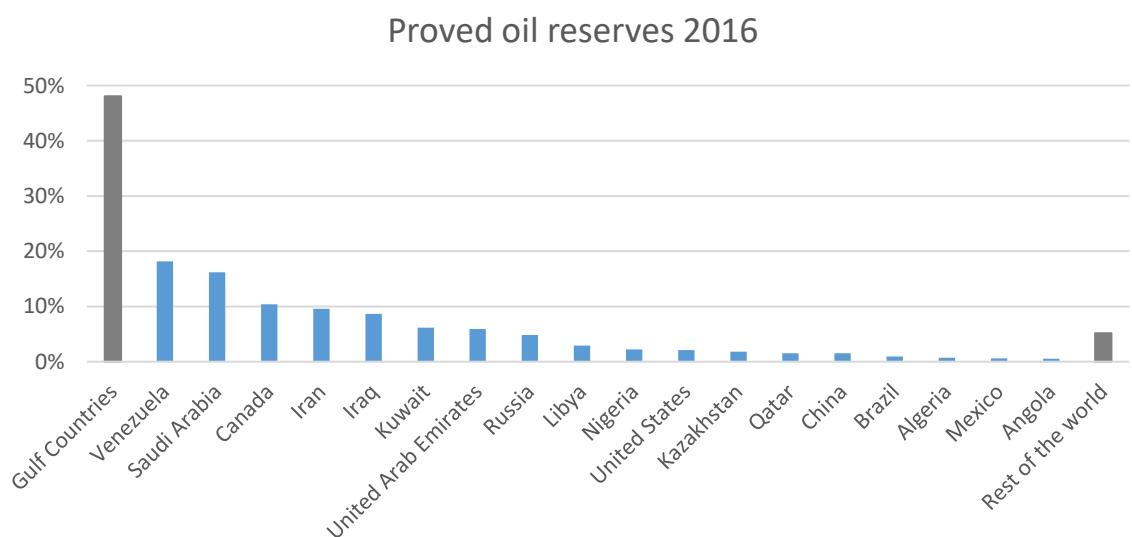


Figure 2: Proved oil reserves by country, as percentage of the world's proved reserves (U.S. Energy Information Administration, 2017)

It's important to stress that these are the *proved* reserves, as the actual values may vary. In fact, Venezuela had only proved reserves of 18 billion barrels in 1980, whereas the number today is far larger (U.S. Energy Information Administration, 2017).

As for the actual *produced* values, the numbers are rather different. While not having so large reserves in comparative terms, Russia, the United States and China emerge among the largest oil producers.

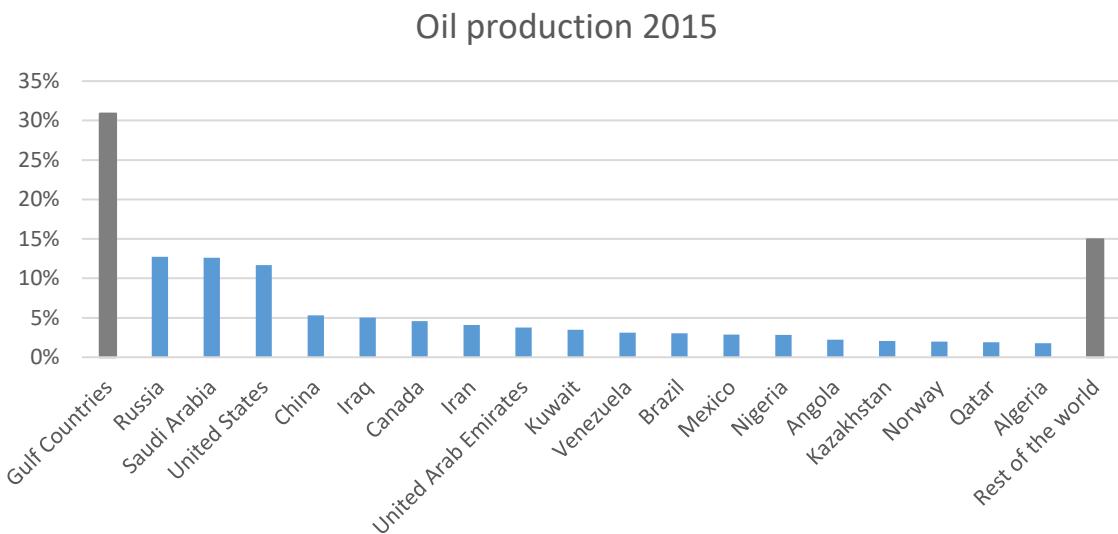


Figure 3: Crude oil production by country, as percentage of the world's production (U.S. Energy Information Administration, 2017)

In an attempt to have greater influence on global price determination – that previously was largely defined by American firms –, as well as to coordinate policies and provide stability, the Organization of Petroleum Exporting Countries (OPEC) was formed in 1960. It was originally established by the Persian Gulf countries plus Venezuela, but now it has 13 members. Together they add to around 42% of the total world production, thus giving them considerable power in the determination of the supply and pricing (OPEC, 2017) (U.S. Energy Information Administration, 2017).

While in some countries production is largely entitled to national oil companies, international players are – and have been – major actors in the industry. Among the largest 15 oil companies by revenues in 2015, eight of them are fully international private-owned companies. They have operations beyond their country borders and are key players in the worldwide oil industry value chain (Fortune, 2017).

Company name	Country	Revenues		Type of company
		2015 (US\$ billions)		
Saudi Aramco	Saudi Arabia	478		State-owned
Sinopec	China	456		State-owned
China National Petroleum Corporation	China	429		State-owned
PetroChina	China	368		State-owned
Exxon Mobil	U.S.A.	269		Private-owned
Royal Dutch Shell	Netherlands & U.K.	265		Private-owned
Kuwait Petroleum Corporation	Kuwait	252		State-owned
British Petroleum	U.K.	223		Private-owned
Total S.A.	France	212		Private-owned
Lukoil	Russia	144		Private-owned
Eni	Italy	132		Private-owned
Valero Energy	United States	131		Private-owned
Petrobras	Brazil	130		Semi-state-owned
Chevron Corporation	United States	130		Private-owned
Petróleo de Venezuela S.A.	Venezuela	128		State-owned

Table 1: Largest oil producers by revenue in 2015 (Fortune, 2017)

3. Oil prices over time

Like any other commodity traded internationally, oil prices fluctuate according to the laws of demand and supply. However, given its crucial importance as a major energy source, governments and major corporations have played an important role in the determination of its price, thus illustrating how political influences have been key in this matter.

In turn, oil prices have been a major determinant in the fostering (or discouragement) of oil exploration and production. Moreover, they have played a central role in important government policies, such as the expropriation of international oil companies, the creation of national oil firms, and have even been key in the context of political elections (Guriev, Kolotilin, & Sonin, 2011).

While it might appear that oil prices are a mere determinant of firms' profits, its social, political and economic implications in the world have been of great magnitude, thus showing the importance of understanding their fluctuations to contextualize the *local content policies* that will be deeply analysed in the following sections of this thesis.

Non-refined oil prices are usually measured in United States dollars per barrel of oil (abbreviated "bbl.", which is roughly 159 litres). Since different factors determine oil prices, such as its quality and location, there are different *benchmarks* used by traders. The following analysis will use the "West Texas Intermediate" benchmark price. It's worth noting that the difference between benchmarks is not significantly high, and price fluctuation over time accounts expressively more to market conditions than to oil quality (Ratti & Vespiagnani, 2016).

The following graph shows the evolution of international oil prices since the 1950s, with prices adjusted for inflation, to better appreciate real fluctuations.



Figure 4: Evolution of "West Texas Intermediate" bbl. oil prices, inflation adjusted (Adapted graph). (Macrotrends, 2017).

1. First oil shock

In the context of the increased tension between Arab states and Israel during the late 60s and 70s, the Organization of Arab Petroleum Exporting Countries enacted an **oil embargo in 1973**, against the United States and several other countries because of their support to Israel in the Yom Kippur War. This led to a considerable increase in oil prices, causing shocks in the global politics and economy (Kisswani, 2014).

2. Second oil shock

Due to the **Iranian Revolution in 1979**, oil production in that country fell sharply. Even though their share of the world supply was not so great, wide-ranging fear is believed to have caused a speculative price rise (Kisswani, 2014).

3. First oil glut

The high prices of oil of the 70s caused reduced economic activity in industrialized countries, which led to a general reduction of consumption. At the same time, oil producing countries increased oil output attracted by high prices. This led to an **excess supply during the 80s** which tremendously decreased the commodity's international price (Kisswani, 2014).

4. Gulf war

Iraq's invasion of Kuwait in 1990 caused speculative forces to sharply increase prices. This shock was rather short as a U.S.-led coalition repelled Iraqi forces, so prices returned to pre-war values in less than a year (Kisswani, 2014).

5. 2000s energy crisis

No single factor is usually attributed to the steady rises in oil prices between the early **2000s and 2008**. It has been argued that reasons include rising demand from China due to its fast growth, decreases in oil reserves around the globe, growing political pressure in the Middle East, among others (Gronwald, 2016).

6. Global financial crisis

The **global recession in 2008** led to a substantial reduction of demand for energy, as firms were forced to considerably reduce output. Nevertheless, economic recovery was achieved in the following years, thus increasing oil prices again (Gronwald, 2016).

7. Second oil glut

The return of high oil prices added an increasing supply of oil – partly due to the perfecting of the “fracking” extraction technology in the United States and Canada –, but also because of a deceleration of the Chinese economy – and so its oil demand – led to a sharp **decline in prices between 2014 and 2015** (Chen, Yu, & Kelly, 2016) (Gronwald, 2016).

4. Trends of national participation

Most underdeveloped countries in which oil resources were found relied on international companies to operate the extraction process, as they did not have the technical or financial capabilities to exploit the resources themselves. Thereby, they benefited by receiving tax, royalties or one-off payments in return (Bird & Brown, 2005).

A growing sentiment on these countries began to gain momentum in the 1950s and 60s, where the idea that the international oil corporations were manipulating prices to control the payment of taxes and so benefit at the expense of these nations (Bird & Brown, 2005).

It was in this context that OPEC was initially formed, with the aim of having more standing in the industry through coordinated actions and a shared voice (Kobrin, 1985).

The major wave of nationalization (i.e. the state action of taking control of private assets) in the oil industry started with Algeria in 1971. This was rapidly followed by a series of national equity participation measures taken in several countries. By 1976, many of the oil producing countries in the Middle East, Latina America, Africa and Asia had accomplished an important share of national participation in the industry (Kobrin, 1985).

The main factors that led to this happening particularly at this period are the following:

1. The First oil shock led to an important rise in oil prices in the 70s, thus making countries realize that oil was a strategic source of revenues.
2. The economic and social development gained through oil tax revenues in previous years further increased the need of more resources in these countries, as local economies began to expand.
3. Worldwide technological innovation, as well as local industrial, financial and technical development made it more plausible for these countries to carry out upstream operations themselves (Kobrin, 1985).

One particular method of national participation is the so-called Production Sharing Agreements (PSAs). It's based on a contract between a foreign oil company and a country's government in which the company performs exploration and production of oil, bears all the financial risks, can cover its costs, and finally revenues are split. Important differences with simply taxing the company's profit are first, that in most PSAs the volatility of international oil prices is absorbed by the foreign company, thus implying increased risk for them. Second, the amount of costs companies can recover from the "pre-split" revenues are limited to a contractual amount, thus ensuring the government that oil revenues will be received. PSAs will be further discussed when analysing local content policies applied in different countries (Paliashvili, 1998).

Finally, two important implications of the surge of nationalization will be mentioned.

1. The rupture of industry's vertical integration. While the upstream sector was taken over by national companies, the downstream refining capabilities remained with experienced international companies for many years.
2. Large international companies lost an important share of their relevance, giving rise to new political powers in the industry (Ayoub, 1994).

5. Relevant facts specific to the oil industry

1. Types of extraction fields

In the upstream processes of exploratory drilling and production two main kinds of extraction fields can be identified, onshore and offshore. The difference between them is critical in the requirements they pose to the oil company.

Onshore drilling is the traditional method in which oil is pumped from beneath the earth from a platform that is located on the land's surface. Without going into detail, this technique has been polished since the 19th century, it is well-studied, and its technological and capital requirements are lower than the offshore counterpart (Speight, 2015).

Offshore drilling, on the contrary, is a relatively newer technology in which oil is pumped from beneath the earth, but underwater (i.e. from the *seabed*). That is, a *conductor* is used to unite a station on the water surface to the seabed, where in turn another hole is used to create a well (i.e. a *wellbore*) that goes further beneath the earth until the point where oil is obtained. There are different types of offshore platforms, some are attached to the seabed and some are floating units, that are used for different sea depths and environmental conditions (Speight, 2015).

In response to the critical reduction of access to onshore oil fields due to the discussed chain of nationalization ventures in the 1970s, particularly in the Middle East, international oil companies sought new ways to access oil reserves in other countries. For this, they started large-scale offshore activities in the early 70s (Speight, 2015).

While both techniques have the same objective of pumping oil, offshore methods carry increased challenges. These include

- Higher costs of production facilities.
- More advanced technological know-how and equipment.
- Increased logistics and storage costs.
- Human resources difficulties, as workers have to be stationed in the platforms.
- Additional environmental and safety issues (Speight, 2015).

For these reasons, newer national oil companies have faced trouble in offshore exploration and production, thus allowing international companies to perform this kind of activities under certain contracts, as will be discussed later in this thesis.

2. Capital intensity

Industries in which high large sums of financial resources are needed to achieve the desired outcome in comparison to the labour required are often called **capital intensive**. In other words, sectors in which the *ratio* of capital requirements to labour requirements is high.

In general, extractive industries are considered to be very capital intensive. That is, they require large sums of money to start and run the business. Particularly, the oil industry is among the top, as they require significant investments in advanced equipment (Kalyuzhnova, Nygaard, Omarov, & Saparbayev, Local Content Policies in Resource-Rich Countries, 2016).

The following table shows a selected list of industries and their respective capital intensities, measured in the form of investments over number of employees. Extractive industries are highlighted in orange.

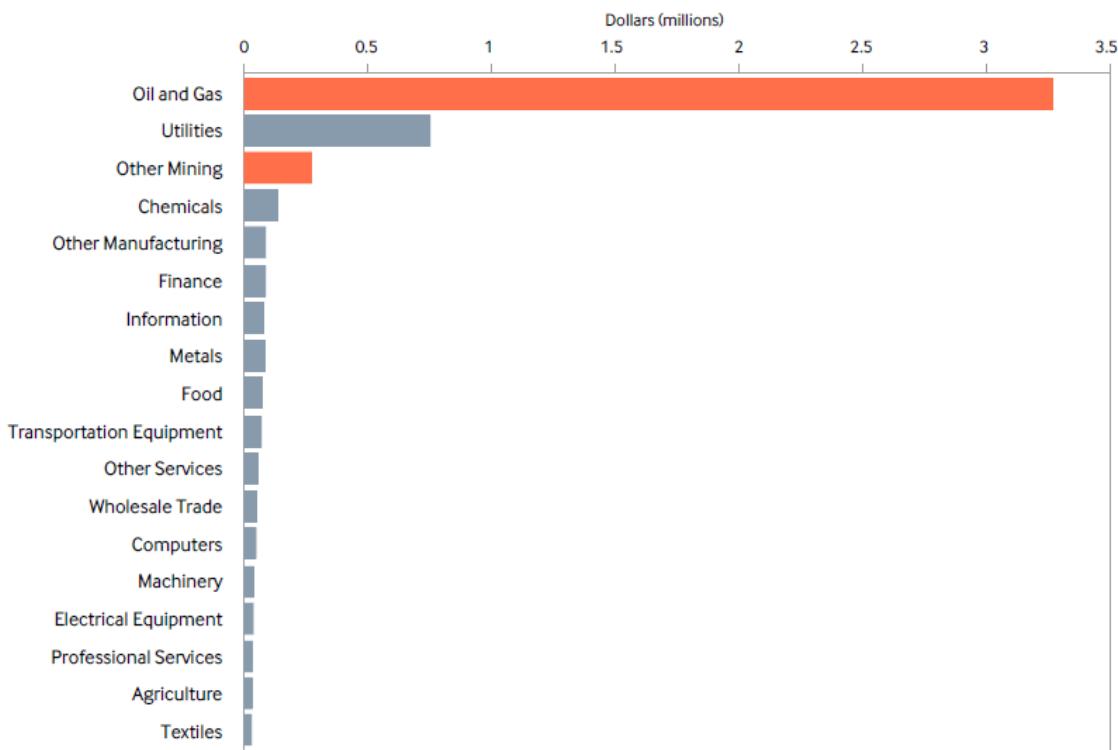


Figure 5: Capital intensity of selected industries in the United States, in dollars invested over employee count (Ross M. , 2012)

As can be seen, the oil sector is mostly run by capital expenditure and thus doesn't employ a large number of employees, in *comparative* terms. That is not to say that they don't hire many staff in *absolute* terms. In fact, in February 2017 the oil and gas industry employed more than 178,000 people only in the United States. This, however, represents a mere 0.15% of total private employment in that country, ever though oil companies are amongst the largest, highest revenue firms in that nation (Fortune, 2017) (Bureau of Labor Statistics, 2017).

Nevertheless, it has been the case that in some countries high expectations have been built among the population that new oil discoveries, trends of industry nationalization, or regulations towards quotas of foreign hires would translate into a significant source of local employment. The capital intensity of the oil sector shows that these beliefs are ill-founded, as the nature of the industry is hiring few employees (Natural Resource Governance Institute, 2015).

This issue will be a recurrent one in local content policies, as it will be discussed how pressures from the civil society have led governments to foster such types of measures.

3. Licencing process

When a country decided to allow the exploration and production of oil, agreements should be made between the state – that owns the resources – and the prospect operator company. The country, on one hand, craves for economic development. The company, on the other hand, aims for new sources of revenues.

The agreements are usually carried out when national laws allow one of the following three scenarios.

1. There are no national oil companies in the country.
2. Oil development is not limited to national oil companies.
3. The national oil company doesn't have the capital, technology, or skill to carry out the activities (Tordo, Warner, Menzano, & Anouti, 2013).

These agreements usually allow a company to explore and extract the resource (i.e. they grant them a *licence*) under pre-agreed rights and obligations, including time limits, monetary payments, and a variety of other duties (Norwegian Petroleum Directorate, 2017).

Examples of licences forms include the above-mentioned Production Sharing Agreements, in which oil revenues are shared between the state and the oil operator, Concessions, a form in which a fixed fee is paid to the state per unit of oil produced, or less structured negotiated contracts (Tordo, Warner, Menzano, & Anouti, 2013).

The licencing process is one characterized by the participation of different bidders. That is, different companies participate in a formal procedure in which legally pre-established rules will grant the licence to the best suited company. Indeed, competition aims to ensure a maximization of value for the state through the provision of the operation by the most competitive company in terms of costs, skills, technology, etc. (Norwegian Petroleum Directorate, 2017).

Moreover, each licence is given for a specific geographical area, be it onshore or offshore. Therefore, the licensee will be able to perform activities under the contractual agreement only in that specific area (Norwegian Petroleum Directorate, 2017).

Finally, licences bids processes are carried out in periodical – usually yearly – *rounds*. During each of these rounds a number of zones will be open to bidding under the specified rules (Norwegian Petroleum Directorate, 2017). In many cases, the requirements will vary in different rounds, as will be further discussed in this thesis.

6. “The curse of the natural resources”

Several studies have been conducted since the 1950s analysing the contradiction of many natural resource-abundant countries having difficulties developing economically and socially. While it remains a theory, the **resource curse** argues that natural resources – such as oil – serve more as a deterrent to development than as a vehicle for it, as countries seem to be unable to leverage on the created wealth to foster growth (Ross M. L., The Political Economy of the Resource Curse, 1999).

What is more, the concept maintains that it is exactly those new riches that are the source of burden, thus serving as restraints to development. Arguments supporting this idea include the following.

- The local currency appreciation brought by the resource exports makes imports of other goods and services cheaper, thus damaging other national sectors' competitiveness in the local and export markets. This leads to an increase focus on the resource exploitation at the expense of other industries. However, problems arise in the local economy when changes arise in the international demand and supply of that resource, as the country is left off with weaker other industries, possibly causing a recession. This issue is often called **Dutch disease**, alluding to a similar problem faced by the Netherlands in 1959 (O'Neil, 2004) (The Economist, 1977).
- Some natural resources prices are highly volatile – oil being a good example as explained in part 3 of this section –. When a state's source of revenue highly dependent on that resource, and no adequate hedging mechanisms are in place, a sudden fall in prices can have overwhelming consequences in the government's budget. This issue can cause negative economic, social and political effects, such as increased debt, cutting of social programs, weakening of the rule of law, and even revolts (Venables, 2016).
- Deterrence to investments in infrastructure or in vehicles to foster other businesses developments, as the resource extraction is significantly more competitive and lucrative.
- Lowered incentives to invest in education, for the same previous reason. Additionally, the resource extraction will drain the most talented human capital, in-line with usual higher salaries.
- The fact that control of the extraction process provides large revenues for those linked to it can lead to conflicts to its access. If political stability is at a critical level, this can foster authoritative governments, undermine democracy, encourage corruption, destabilize international cooperation, and even create armed conflicts (Ross M. L., 2011).

While many studies have addressed this topic concluding the existence of a resource curse, it's worth noting that there have been recent researches arguing that the correlation between natural-resource abundance and weakened development does not necessarily imply causation in the previously thought way. In other words, they state that weak governance and inadequate policies are the source of the economic reliance on the resource, and not the other way around (Brunnschweiler & Bulte, 2008).

Finally, even though there is not a general agreement on the veracity of the so-called resource curse, it will be important for the following sections of this thesis to understand the positive and negative implications of a country's high reliance on oil revenues.

5. Literature review and analysis of Local Content Policies

With the objective of providing a general overview of the current status and findings of the research on local content, the following section will be articulated in the following manner. First, strategic methods that countries can follow to develop will be exposed, and so local content will be framed within them. Then, local content policies will be defined, delimiting their scope. Followingly, their different objectives will be explained. Next, the constraints and success factors to the achievement of positive outcomes will be discussed. Finally, an outline will be done to discuss when local content policies are generally desirable.

1. Strategic Development Options

The Encyclopaedia Britannica defines Economic Development as the “process whereby simple, low-income national economies are transformed into modern industrial economies” (Anne O. Krueger, 2011). In turn, this “modern industrial economies” are characterized by higher standards of well-being. Although the implication of *improvement* in the broad sense is clear in this matter, what really defines *well-being* is not. Be it local purchasing power, quality of infrastructure, security, political stability, the level of healthcare, cultural values, crime rate or even happiness, what makes a country more developed than another is a matter of perspective.

This being said, and not to fall into the endlessness of definitions, there are a series of recurrent measurements that are widely used to quantify well-being. One such concept is that of *Economic Growth*, which is measured through the increase in the Gross Domestic Product (GDP): the “total market value of the goods and services produced by a country’s economy during a specific period of time” (Bondarenko, 2016). This definition usually includes private consumption, investments or business expenditures, government spending and net exports. The usefulness of this measurement is that it allows for the *suggestion* that a higher GDP can actually “buy” higher well-being in any other form. In other words, a higher output would most normally imply a greater purchasing power by individuals, more public infrastructure being developed by the government authorities, a higher expenditure on security, better financed institutions, better healthcare, etc.

Again, this suggestion is only that, a *possibility*, and by no means a clear fact. Many studies however have found clear correlations between various of the above mentioned measurements of well-being and GDP (Anghelache, 2011) (Jiao, Wang, Jin, & Du, 2016), making it clear why it is a widely used measurement of development. What is more, it’s rather intuitive to add that its quantification scale is more objective than that of other measurements, such as cultural values or happiness.

Nevertheless, the emphasis on the *possibility* will be a recurrent topic in this essay, as the correlation does not apply the same way on developing nations. Where the levels of inequality are high, when

the government is corrupt in its spending, or when unemployment is in critical levels, having a higher GDP doesn't always translate into a better well-being (Mazumdar, 1999).

For the time now, the focus will be put on *how* to develop. For the reasons explained above, a simple yet good measurement is economic growth. In the pursue of increasing GDP, a country facing the discovery of a natural resource, such as fossil fuels, can choose between a series of exploiting mechanisms to take advantage of this resource and thus increase its GDP.

On one end, countries can follow a **Revenue-focused** approach. This usually means letting private or public operators seek the cheapest and fastest way to extraction and sale. In the aim of maximizing profits from the natural resource, the way of handling operations and management is entirely up to the company, so as to ensure market conditions prevail in terms of costs, capacity, expansion, etc. The government in turn will benefit from the exploitation of the resource by charging the operator with royalty payments and taxes. Then, the government can use this income to spend in any way of development, or in previous words, to "buy" higher well-being for the country. The focus of this approach is the neo-liberal view of *competitive advantage*, in which countries will produce what is competitive to do at home, and will import what is more competitive in a foreign country, so as to assure a maximization of welfare.

On the other end, countries can pursue an **In-Country-Value (ICV)-focused** approach. In this case, the government will impose, incentivize or suggest public or private operators to retain some of the costs they incur to be spent in the country, so as to incentivize local business expansion, increase local productivity and develop local human capabilities. It's key to note that these are internationally divertive measurements, meaning trade/capacity will be diverted from efficient exporters/suppliers to a less efficient one, giving rise to negative welfare effects (at least in the short run). This implies that the government will be willing to take lower revenues in exchange for ICV. Instead of "buying" well-being with royalties and taxes, now it's making the operator develop the local businesses and people; a different way of achieving the same objective: *development*.

The central difference between the Revenue-focused and ICV-focused approaches lies in the fact that the latter *sacrifices* short-term value with the aim of achieving greater development in the long-run (Ovadia, The Role of Local Content Policies in Natural Resource-Based Development, 2015) (Kalyuzhnova, Nygaard, Omarov, & Saparbayev, 2016). While ICV will be less efficient in the short-term due to the trade diversion, the promotion of development and use of the local capacity should make it more competitive in the long-run, to the point when operators will naturally prefer to use local capacity because of the savings in transportation costs and cultural barriers. It could even make local businesses competitive in a global level, making them exporters.

Finally, it's worth going back to the emphasis on the *possibility* mentioned at the beginning of this section. While these two approaches give rise to two ways governments can foster *development*, by no means it directly translates into one approach being necessarily better than the other. To the contrary, it is clear that each method supposes a possibility of "transforming" natural resources into

development, but the real outcome will come from how efficiently and how effective the policy implementation is. This gives rise to a series of scenarios, in which the best outcome can be achieved with one approach, the other, or a configuration between the two, highly depending on each country's economic, social and political context.

2. What is a Local Content Policy?

In the context of several countries finding new fossil fuel reserves in the recent years, and others which already have their reserves being exploited, the concept of *local content* has begun to take force in the light of both public and private extracting companies highly relying in foreign capabilities to carry out numerous parts of the industry's operations.

The definition of *local content* has been outlined by several authors. While some consider it to be a branch of Corporate Social Responsibility, others regard it as a different field of study. Some researchers address it as a mechanism linked to a legislative mandate, while others let spontaneous company-led implementations also fall under the definition. Furthermore, certain academic papers only link the term to local business development initiatives, while others focus on a wider range of objectives (Macatangay, 2016) (Kalyuzhnova, Nygaard, Omarov, & Saparbayev, 2016) (Ovadia, 2016) (Ngoasong, 2014).

The definition that will be used for this thesis is the following:

"Local content is the extra value that an extraction project brings to the local, regional or national economy beyond the resource revenues, achieved by leveraging on the extractive value chain." (The Natural Resource Governance Institute, 2015)

The emphasis on this value being beyond resource revenues means that it's an *extra* benefit that an agent of the country will receive, apart from the royalty's payments/taxes or dividends (if public) the extracting company will pay to the government.

With the aim of improving the local economy and thus achieving a higher level of development, governments try to *leverage* the linkages of these extractive projects to other industries to foster local firms/people to provide these services, in a way that they will also benefit from the extraction procedure.

Therefore, they can enact *local content policies*, that is, a legislation of mandatory nature with the objective of achieving the mentioned purposes. Nevertheless, that is not to say that companies can't spontaneously and unconditionally implement *local content* themselves, though those initiatives don't fall under the category of *policy*, a distinction that will be used throughout this thesis.

The usual way in which countries can do this is by establishing requirements for extractive companies to "interact" economically with local agents. These requirements usually come in the following forms:

1. Local hires

Legal frameworks can require operators that a percentage of their employees are citizens of the country or region. In some cases, a distinction is made between unskilled labour, upper-level management and other positions in between. In other cases, policies can be less prescriptive and only require *priority* given to local workforce.

2. Domestic sourcing of goods and services

This category includes procurement of goods (materials, equipment, components) and provision of services (contracting companies, legal counselling, provision of financial services, etc.) required for the set-up, construction and operation of the oil exploitation activities.

Since it can be seen that the broadness of the topics in question is large, it's worth noting that in many cases country's requirements will be very unspecific, often only providing general guidelines.

Requirements often include one or more of the following items:

- A percentage quota required of goods/services to be procured/provided by local firms (in monetary terms).
- A preferential treatment policy in which local bidders will be granted contracts even when their price quotation is within a percentage margin above the lowest bidder.
- A requirement of international providers to enter into joint ventures with local firms.
- A simplification of the contracts, so as to make it easier for local firms to bid.
- The unbundling of contracts, to have smaller work packages in line with local capability.

3. Training programs for domestic workforce

Although not having a direct influence on jobs creation or empowerment of local businesses, a requirement to provide technical field-related education to local workforce also aims at enhancing local capabilities and building skills in the long term.

Requirements of this type include training sessions for current workforce (when it's tied with local hire requirements), monetary commitments for government funds that aim to provide training to locals in diverse instances, or the condition to submit a company-devised plan for local education.

4. Technology transfer

Aiming at improving the local knowledge and capacity to perform skilled work, these measures will often centre in Research and Development investments in local universities or institutes.

Requirements often include percentages of revenues or profits to be given to local research centres or government funds, or the condition to submit a company-devised plan for the transfer of technology.

5. Other incentives for local business development

A variety of other measures can be categorized as local content so long as they aim to increase the local capacity by linking the extractive company's requirements to the local industries.

These can include business incubator centres financed by oil operators to help local start-up companies, assistance in providing better access to finance to small and medium local firms, among others.

As is can be seen, local content policies fall into the category of In-Country-Value when analysing them as a strategic development approach. They "sacrifice" short term productivity by making companies modify their market-oriented way of allocating resources, but aim at "investing" this misalignment in future capacity growth, through one or more of the methods previously described, so as to achieve greater development.

Finally, it's important to note that while this essay will mostly focus on the *policy* approach of local content (that is, considering it as an encouragement or requirement from the government to the operating company) there are cases in which operators will *autonomously* foster the development of local capacity. Knowing and having analysed the benefits of having local provision of quality goods, services and personnel, the benefit of these kind of investments can not only help economically local firms, but also oil companies themselves. Such cases should also be considered *local content*, although they are not strictly government-imposed *policies*.

3. Objectives of Implementation

Now that it's clear that local content policies are a form of In-Country-Value and thus focus on fostering a country's *development* in the long-run, it is suitable to stipulate what are the specific *aims* of the implementation of these measures that will lead to higher levels of developments, in one way or another.

As mentioned, local content policies can serve as a source of improvement not only for the local community, government, business and people, but also for the operator company. For the following classification of objectives, points "a" through "c" represent benefits for the former, and "d" through "f" are the main advantages for the latter.

1. Creation of local jobs

Even though the oil extraction industry is very capital intensive, a regulatory framework requiring the hire of nationals will certainly translate into a source of some jobs for the citizens (provided that the workforce available have the required skills, and that this requirement won't be harsh enough to downsize the scale of the local operation) (The Natural Resource Governance Institute, 2015).

While the job pool is relatively small, this is still usually the number one concern from the community, and serves as the main pressure from civil society to implement local content policies (WorldBank, 2013).

2. Promote local enterprise creation, development and competitiveness

Leveraging on the oil extractive value chain to source procurement of goods and provision of services to local providers through policies will give a boost and encourage the creation of local firms. These companies, in turn, will provide the before mentioned services instead of foreign suppliers.

The fact that local businesses development serves as a key factor for an economy's growth is a well-studied phenomenon (Bagley, 2012) (Brown, n.d.). In fact, it creates local jobs, adds value to operations, serves as a source of tax revenue for the government, and makes profits for shareholders.

If developed sufficiently, these local firms should be able to become as competitive as foreign firms in the long run, only that they will keep having the advantage of distance and culture (i.e. local language, local norms of conduct, etc.)

3. Transfer of technologies and skills

Requirements such as training programs for the workforce and R&D expenditure should translate into people's professional development and transmission of technological and procedural know-how to local companies. In turn, this should make it easier and encourage local people and companies to provide the services previously offered by foreign entities.

In other words, this objective can be seen as a pre-requirement for the achievement of the previous two. In order to increase the number of local hires and to create local capacity, it is necessary that the people and the firms understand how the industry works, what are the required skills, the current state of the global industry, what are the most important services/goods required, where are the business opportunities, etc.

Without this, local entities will probably be doomed to face a steeper learning curve, sacrificing efficiency, lacking relevant skills, and even not being able to provide enough input for the operators to work normally under new stricter local content policy requirements.

4. Creation of a local, reliable supply chain

Regarding procurement practices, it is expectable of companies to put focus on costs and efficiency. That is, oil firms will want materials and equipment to be available at the extraction site for a low cost and in a reliably short period of time.

For these reasons, oil companies will usually favour established business and global supply chains, as they can provide reliable and timely inputs at a competitive price, even if they are facing long transportation distances, high transportation costs, and higher labour costs (Macatangay, 2016).

While this means a short term *cost premium* in mounting a local supply chain, studies suggest local providers can offer better value in the long term (Kalyuzhnova, Nygaard, Omarov, & Saparbayev, Local content policies in resource-rich countries, 2016). The reason being mainly due to the savings in time and cost emerging from shipping the supplies from a closer geographical area. Also, possible lower labour costs could add up to cost reductions.

Of course, this objective highly depends on the local firms being able to achieve at least similar production costs with their international competitors, and that they manage high levels of reliability. As will be discussed later, these prerequisites may prove to be very challenging for local, emerging companies.

5. Improved relation with local stakeholders

It is common in countries rich in natural resources that base a significant part of their economies on extractive industries to face a pressure from civil society regarding the distribution of the wealth generated by these businesses. These pressures arise from possible negative externalities produced by operators, such as the depletion of non-renewable resources, the environmental impact, or the displacement of land of local communities (El-Katiri, Fattouh, & Segal, 2011).

This is specially the case for private-owned oil extracting companies, and the pressure intensifies even more when they are foreign-owned.

Although these companies will pay taxes on their profits, an additional demand for extra benefits to the local society is a common phenomenon.

For this reason, it could be in the operator's interest to comply with local content regulations or to foster additional local content measures themselves, so as to ensure a constantly reinstated licence to operate and to maintain good terms with the different external stakeholders, especially the ones with political power, such as government institutions, labour unions, local communities, etc.

6. Reduction of labour costs

Both skilled and unskilled staff coming from abroad are subject to the opportunity cost of staying in their home country, which translates into operators being constrained to offering them salary packages that are competitive in terms of the employees' home countries' salaries.

If the extraction operation is being done in a country with a relatively lower equivalent salary in terms of similar jobs (when compared to the salaries of the countries the operator would usually hire from), then they could benefit from a reduction in labour costs.

This case is very recurrent as most oil companies having operations abroad are based in "rich" developed countries, yet have operations in many "poor" underdeveloped ones (ExxonMobil, 2015) (Royal Dutch Shell, 2015) (British Petroleum, 2015) (Total S.A, 2015) (Eni S.p.A, 2015)

This being said, it's important to mention again that the oil extraction industry is very capital intensive, meaning the cost reductions from labour are not a big share of the total costs. While being indeed a cost reduction opportunity, it's shadowed by other possible benefits, such as the previous points "d" and "e".

4. Constraints of Implementation

When understanding the general aims of the introduction of local content requirements (be it as policies coming from the government or as self-proclaimed goals set by operators) and analysing what is possible to achieve, one should also examine the limitations that could arise given the countries' specific situations.

It will be a recurrent notion throughout this essay that different local content requirements behave differently in different countries, giving rise to different outcomes (in terms of the before mentioned objectives of implementation) from the implementation of similar policies. For this reasons, it will be pointed out that local authorities should understand the entire "picture" before imposing prescriptive regulations.

As for this section, possible outcomes of poorly-implemented local content policies will be exposed and discussed.

1. Lack of capacity

The biggest risk of implementing a local content plan is that it results in the local entities not being able to provide the required inputs, while incapacitating operators from getting them from abroad. This case would give rise to an operation downsizing, thus reducing the amount of taxes and royalty payment collected by the government, without developing local businesses instead.

It has been argued that for underdeveloped economies it's very hard to quickly supply specialized goods and services to the oil industry (Heum, Local Content Development: Experiences from oil and gas activities in Norway, 2008), because of the technical complexity of producing them, the specific skills required and the large size of the contracts, among others problems. This gives rise to *supply bottlenecks*, that in turn limit the operators' productive capacity.

What is more, local firms will usually face a more *restricted access to finance*, further confining their capacity of building a large and reliable supply chain. This issue is particularly problematic for Small and Medium Enterprises, that face the challenge of higher interest rates, significant collateral requirements, and lack the knowledge and skills to prepare attractive business plans for loan proposals (Cerbusca, 2015).

Finally, it's important to note that while the lack of capacity can come from a procurement perspective, it can also be an issue in the hire of local personnel. When local employment quotas are in place, operator companies not being able to find local people with the necessary knowledge and skills can result in a similar negative outcome at the total welfare level.

2. Corruption

Since local content policies imply the creation of business opportunities for local companies and people, the degree of *transparency* on how these openings are communicated to the public are of great importance.

If the opportunities are kept undisclosed by government officials or selected economic elites, cases could arise in which only the informed parties will hoard all the contracts and provide all the services. From an economic perspective, limiting supply to a selected number of firms will be less efficient than a perfectly competitive environment, thus giving rise to welfare losses (The Natural Resource Governance Institute, 2015).

What is more, if corruption goes one step beyond, informed parties could create dishonest enterprises with the only objective of securing contracts, given that if no competition arises these bids will be won because of legal local content requirements. To various degrees, these firms could provide severely flawed services or goods, in a long and inefficient manner (Ovadia, The Making of Oil-Backed Indigenous Capitalism in Nigeria, 2013).

Likewise, new job openings could be kept secret to assign among circles of influence of political elites. Again, this gives rise to an inefficient employment selection due to the lack of competition.

A different problem in the same line refers to the distribution of the oil wealth benefits among different sectors of society. When oil exploitation activities create negative externalities to specific communities, such as displacement from land or social or environmental issues, it makes sense that the amount of benefit that accrues to these communities should be higher than to unaffected ones, so as to at least compensate their loss. The possible dilemma comes around if government officials

evenly distribute the local content benefits among society, without giving some sort of priority to affected individuals or businesses, thus effectively choosing to make a group better-off and another worse-off.

3. Creation of distortions and inefficiencies

If the policies put in place are not tied to incentive structures and appropriate aid packages for local firms, it is possible that businesses won't be able to achieve competitive prices at an international level, even in the long term. If this is the case, the inefficiency created might make the local content policy's outcome not enough to offset the operator's productivity loss due to increased inputs' costs (and so the government's tax/royalty earning loss), meaning an unsuccessful strategy due to overall national welfare losses.

What is even more challenging, is the fact that local content policies that grant by law a portion of the contracts to local suppliers give rise to a decrease in their incentives to invest in R&D and innovation, as the jobs are assured to them, without facing foreign competition (Heum P. , Quale, Karlsen, Kragha, & Osahon, 2003). Again, this makes procurement quotas a "*double edged sword*", since they can serve as a deterrent to achieve greater levels of competitiveness.

4. Unsuccessful monitoring and implementation of policies

Even if policies have been meticulously analysed and ensure a priori national welfare developments in the long run, it will be hard for any outcome to materialize if the policies are not adequately implemented and monitored.

The issue is rather more complicated than simply "passing the law". In fact, it has been argued that the actual implementation process, if done correctly, can be more challenging than the study, debate and approval of the legislation (Heum P. , Quale, Karlsen, Kragha, & Osahon, 2003).

If no formal information flow mechanism is implemented, local businesses and individuals will not be aware of the opportunities in place, and if the rules are not clear a number of legal, coordination and financing problems can arise. On the other hand, a lax monitoring process can lead to operators hiding, withholding, or strictly not complying with the legal requirements intentionally.

As described in the International Petroleum Industry Environmental Conservation Association's (IPIECA) "local content strategy" guidance document of 2011, "The implementation of local content programmes requires extensive cross-departmental coordination and work. Effective local content management may also require modification of existing business processes and systems, especially project management, procurement and human resource management. In large organizations, any attempt to change business processes is a complicated and resource intensive activity. In drawing up a local content strategic plan, it helps to start by identifying key internal stakeholders and developing an understanding of their business plans and objectives."

Finally, it's worth adding that the high administrative costs of putting in place and monitoring these sort of specific legal requirements serves as an additional burden to the local government. Prosecuting, investigating, taking cases to court, and penalizing operators can be a very tedious and expensive process, making the likelihood of a relaxed approach even greater.

5. Barriers to future extractive businesses

As a last possible negative outcome of local content policies lies the future deterrents to doing business in a country because of the imposition of too prescriptive regulations.

Both current operators and international companies considering a country for future business expansions can see some practices as restrictive and unprofitable, leading them to study other location for future operations.

Experiences such as severe penalties causing operator licence withdrawals, procurement or employment quotas being too strict, or weak or non-existent domestic capacity can lead international oil companies to “pass the page” when looking for future expansion opportunities.

It has been argued that foreign investment has historically been a source of local employment and business opportunities for developing nations (Bénassy-Quéré, Coupet, & Mayer, 2007). What is more, foreign companies add up to the government treasury by paying taxes, and can also create value chain *linkages* that can be leveraged to foster local business development. It is then reasonable to argue that it is in most countries’ interest to avoid situations that would jeopardize the future entry of foreign companies.

5. Key Success Factors

Now that both the objectives and the constraints of implementing local content policies have been exposed, it is crucial to determine what are the *specific country factors* that will determine the success or failure of such policies.

As mentioned earlier, similar policies will have diverse effects in different countries. That is, because the specific situation in different countries – such as the ease of doing business, the rule of law, the current local capacity, the workforce’s educational level, etc. – will influence *to which degree* the local content policy manages to leverage on the positive externalities generated by the extractive value chain, without causing harmful effects on the national welfare in the long term.

For this reason, it's vital for the success of any policy implementation that legislators develop a detailed strategic plan in which a thoroughly analysis has been made, so as to avoid problems with the previously exposed constraints, and maximize the desired objectives.

The following is an outline of the *key factors* that have been discussed in the literature to be the most influential to determine the accomplishment of positive local content objectives.

1. Requirements coherence with broad country context

In order to have successful policies, whatever they prescribe should be actually achievable by the countries' different entities in the short or long run, depending on the specific requirements. If not, previously discussed risks - such as supply bottlenecks - could arise.

Key factors include current and expected future local industry:

- Relevant knowledge and technological know-how,
- production volume capacity, and
- workforce industry-relevant skills.

In turn, these country circumstances will only receive meaning when compared to the actual and expected future *demand requirements* coming from the oil extraction operators. These factors will serve as a sign of successful local content policy implementation if their values are enough to cover the newly created local demand due to a new local content regulation put in place (Kalyuzhnova, Nygaard, Omarov, & Saparbayev, Local content policies in resource-rich countries, 2016).

Other measurements that could serve as proxies to determine a country's current and future local capacity-building capabilities include quality of education, infrastructure and financial markets. These factors are prerequisites for sound business development and the availability of a capable local labour force (Klueh, Pastor, & Segura, 2008).

Summing it up, countries should avoid imposing prescriptive solutions hoping that they will be a rapid motor of change and capacity development. It has been argued that a more cautious, progressive and flexible approach can help avoid supply bottlenecks (Marcel, Tissot, Paul, & Omombude, 2016).

2. Openness and transparency

It's vital for the achievement of competitive and capable local businesses creation and development that citizens become aware of the opportunities arising from new regulations. On the other hand, oil extractors should become aware of the available local suppliers and their capabilities. In other words, an efficient and transparent *information flow* mechanism should be put in place.

With this objective in mind, IPIECA recommends implementing a *communication plan*, arguing that this is a relatively low-cost solution that helps the correct functioning of the markets, so as to ensure competition in quality and price. This information management mechanism, they point, should be made considering the country's specific situation, so as to ease the flow of information in the smoothest way possible. For instance, the plan should use local language, be distributed through

local channels, and include information about future business opportunities well in advance (to give local firms and individuals time to invest in equipment, skills and expertise) (The International Petroleum Industry Environmental Conservation Association (IPIECA), 2011, pp. 28-29).

A further factor that determines the achievement of policy objectives is the quality of the penalty (or incentive) system governing the compliance of the specific local content policies. It has been discussed in the previous section that a lax monitoring can be a source of corruption and opportunistic behaviour by informed elites, giving rise to inefficiencies causing a national welfare loss due to lack of competition.

The ensured availability of a third-party – such as a jury, judge or arbitrator – in the case of a dispute, and the establishment of an audit process, can reduce the scope of bureaucratic discretion. This key procedure is especially important if governance capacity and the general quality of the regulatory frameworks (rule of law) in the specific country happens to be low (Macatangay, 2016).

3. Understanding costs and benefits for all stakeholders

To achieve a positive national outcome from a welfare perspective, it will also be crucial to consider the case of all parties being affected – positively or negatively – by the policy implementation.

As mentioned, the quality of the oil wealth distribution mechanism will be a key factor in determining the regulations' success. The benefits should accrue to affected and unaffected communities and individuals in a proportional way, so as to effectively account for the losses incurred by some, and avoid secondary risks emerging from political retaliation.

For the case of the operators, the regulating authorities should aim to understand their cost structure, capacity and personnel requirements, and business objectives by carrying out professional consultations. A key policy success factor will be its ability to keep the oil extractive industry working “as usual”. That means to avoid production downsizing, expensive lawsuits and litigations, too complicated and inefficient procurement processes, or deterrents to future foreign investments.

Local authorities should always consider the potential losses in taxes and royalty payments arising from harmful outcomes of local content policies to operator companies.

4. Focusing on long term objectives

It is a clear risk that local authorities – and the local society in general – become excessively enthusiastic with regulations implementations, expecting immediate or short term results.

The reality is that, as discussed, the achievement of positive welfare outcomes will usually come at the long term. That is, when the available local supply is established and can provide competitive prices.

That is why a decisive success factor will be the development of a local content plan that bears in mind from the start that the objectives of implementation will materialize in the long run.

- Local employees will need time to learn in order to move into managerial roles, so imposing hiring quotas for this segment during the first years would be less reasonable.
- Local firms will need time to increase capacity to serve larger contracts, so not requiring operators to unbundle, or simplify contracts would also not be in-line with policy objectives.
- Operators will need time to get to know and understand local suppliers, the local workforce, their language, capabilities, and the norms of doing business.

For these reasons, it has been argued that if there are significant gaps between the local entities and the operators, a time-phased, progressively developed plan should be put in place. This means, a design in which regulations will change over time: starting from mild and non-binding, slowly changing towards more restrictive and binding (Marcel, Tissot, Paul, & Omonbude, 2016).

More realistic objectives can help manage expectations from the government, civil society, local business and oil operators.

5. Providing right climate for local businesses and workforce to succeed

To achieve capacity and competitiveness in the local market in the long term, it will be a prerequisite and a key factor of success that the country provides an environment in which it will be easier for local businesses to thrive.

Relevant measurements for this issue include:

- The availability and access to adequate infrastructure, such as roads, bridges, tunnels and rail roads for material transportation, available and reliable electricity, water supply, sewers, etc.
- The availability and access to finance at competitive costs, meaning with interest rates and collateral requirements low enough to make it possible for local companies to expand or start new operations.
- A relative ease of starting and doing business in the country. This includes the amount of cumbersome bureaucratic procedures, the complexity of regulations, the protection of property rights, tax payment mechanisms, the enforcement of contracts, etc.
- Adequate investment in R&D and technology to reduce costs and improve productivity. This should go in hand with mechanisms and instances to transfer these knowledges to local companies.

Studies from the World Bank suggest that there is a strong correlation between these factors and economic growth (Doing Business, 2016).

Similarly, for oil operators to successfully meet employment quotas with qualified personnel, key conditions will be needed. Adequate workforce development will only be achieved with suitable levels of education and training programs.

Finally, it's important to mention that all of these key requirement factors for a successful local content implementations and development should be in-line with the size and complexity of the new opportunities created for the local entities. That is, depending on how large and prescriptive the policies are, so well should these key factors be matured in the country, in order to successfully meet the new local demand requirements.

Furthermore, additional changes or progressions to local content requirements with time should take into consideration how these measurements have improved, to correctly assess if further obligations can be put in place.

6. When are Local Content Policies desirable

As a summary to the previous sections, it can be resolved that local content policies should be implemented only if the benefits they bring are greater than the losses they produce, in the long term. This means, they should be approached from a *total welfare* perspective, considering all stakeholders in the equation.

For any policy implementation, the positive objectives analysed in part 3 of this section should be compared to the drawbacks that could arise, shown in part 4. Then, considering the specific country situation – explained in part 5 – an appropriate assessment can be carried out. Only when understanding all the factors of the problem it will be possible to decide which are the local content policies that will best fit a specific country, and so maximize the positive welfare that can be achieved.

Since local content regulations are a form of *protectionist measures*, meaning that they aim at “shielding” a country’s economy from foreign superior competitiveness, it has been shown in this section that it is crucial that this protection ultimately results in an increase in local performance, productivity, and finally competitiveness. If this result is not achieved in the long term – or there are no clear signs of improvements –, such as uncompetitive sectors persistently not being able to respond to new business opportunities, this can be a clear sign of a failure in the policy implementation (Macatangay, 2016).

Going back to the beginning, the main implication of adopting an In-Country-Value development approach is to sacrifice tax revenue for business development. The local content principle states that this strategy can maximize welfare because of the leveraging on positive externalities in the extractive value chain. However, if local content policies fail to achieve business development, then the opportunity will be lost, and the country might be better off going back to a simpler Revenue-focused development approach.

6. Methodology

1. Overall methodological approach

In order to be able to understand how and to what degree contextual factors could influence the outcomes of specific policies, the applied mechanism relied in observation, comparison, and analysis of results achieves in different countries, under different circumstances.

First, nine countries were selected for examination. For each of them, several country-specific contextual factors were chosen and studied, as they were hypothesized to be relevant for policy implementation. Each country's factors' values were shown in different periods of time, to accurately understand how the contextual situations changed with the years.

Then, the different local content policies they applied throughout the years were broken down and categorized into four main areas: Local employment, local sourcing of goods and services, local training, and technology transfer requirements. For each of them, every country's policies were pointed out and discussed, so as to understand their kind and degree of strictness when compared to other countries' obligations.

Afterwards, the outcomes achieved by each country, for each category of policies, at different periods of time were researched and analysed, pointing out constraints and/or success factors mentioned by relevant authors.

Finally, comparisons were made for each policy category. The usage of different countries allowed to identify potential relationships between contextual factors at the time of policy implementation and outcomes of those same regulations. Indeed, similar policies were compared when they were applied under diverse contexts, and so their outcomes could be assessed taking that into consideration.

This approach fits the research question, as it explicitly aims at finding patterns and trends that allow to conclude that policies' outcomes are influenced by country-specific contextual factors. In turn, this is key to determine if policy itself is the only problem to address, or not.

2. Justification of selection criteria

1. Classification of Local Content Policies into four main areas

The separation of policies into different areas was done with three objectives in mind. First, it would allow for easier comparison, as each area has identifiable and cleared criteria of success. Second, it's useful to avoid categorizing a general outcome as successful when it was actually positive in some areas, but negative in others. Third, to emphasise the different scopes local content policies

have had in different implementations. For example, if country “A” only implement local employment requirements, while not addressing any other local content issues in their legislation, it’s clear that its outcome cannot be compared to other countries’ in term of local sourcing requirements.

Local content policies aim directly at modifying the behaviour of oil operating companies in the applied country. The four categories used were the following:

1. **Local employment requirements:** these usually include minimum local hire targets (in percentage terms), and/or approval required from relevant authorities to hire foreigners. Their success was measured in term of both increases in the number – and/or percentage – of local workers in those companies, as well as on their ability to avoid creating skill gaps (i.e. shortfalls of skilled workers created by the lack of capable local personnel).
2. **Local sourcing of goods and services:** these usually include minimum targets (in percentage terms) of the goods and services purchased by the oil operators (usually measured in monetary terms). Sometimes these obligations categorize goods and services, thus assigning different percentage targets for each category. Also, they can include preferential treatment measures (i.e. giving a “price premium” to local firms’ bids in the contract awarding processes, thus allowing them to win the bids with a price quotation within a margin higher than the lowest foreign providers’ prices). Furthermore, a variety of other measures fall into this category, as will be mentioned in the following sections of this thesis. Their success was measured in terms of increases in local business activity (i.e. them providing more goods and services to the oil operators in both absolute and percentage terms), and in terms of their ability to avoid creating capacity gaps (i.e. supply bottlenecks, delivery delays, worse quality, etc.) when compared to the market-led foreign suppliers’ capabilities.
3. **Local training requirements:** these usually include minimum monetary commitments (in absolute or percentage of revenues/profits terms) to firm-led or state-led oil industry-oriented employee-focused training programs. Also, they can include the mandatory provision of yearly training plans. Considering the long-term impact of these policies, as well as the fact that employee capability can be influenced by a variety of other reasons, their success was measured mostly in terms of qualitative evaluations and conclusions made by relevant studies that analysed each country. Also, they were compared with local employment outcomes to assess their incidence in the previously mentioned skills gaps.
4. **Technology transfer requirements:** these usually include minimum monetary commitments (in absolute or percentage of revenues/profits terms) to firm-led or state-led oil industry-focused research and development programs. Also, they can include the mandatory participation in cooperation agreements with local firms, such as joint ventures or partnerships, aimed at improving the technological and business-specific know-how of those local companies. Due to their direct linkage with local suppliers’

capabilities improvement, their success was measured in terms of increases in local businesses oil-related activity, and reduction of capacity gaps.

2. Contextual factors selection criteria

The following are the country-specific contextual factors whose evolution through time were studied for each selected country. The reasons for their selection were guided by the previous literature on local content, different country-specific analyses carried out by relevant authors, as well as for the particular reasons outlined in the following points.

1. **Oil production:** Taking into consideration a country's economic dependence on oil – as well as the increase/decrease trend in production over the years – was thought as relevant to explain a variety of issues, including political decisions and degree of policy strictness.
2. **Gross domestic product (GDP), Human development index (HDI), Inequality (measured through the GINI Index), and poverty levels:** These measurements were used to assess the general level of development in each country. Their relevance was thought to rely in the fact that when the oil industry accounted to a significant share of the economy, their changes over time might be partly due to oil-related initiatives, such as local content requirements. Also, better values in these factors have been linked to healthier business environments (Deneulin & Shahani, 2009) (Stewart, 2013), thus helping fostering local companies' development and so aiding in the development of local goods and services supply chains. This issue was believed to be relevant for the avoidance of capacity gaps.
3. **Quality of education and unemployment:** Values for these measurements were believed to be determinant of the knowledge and expertise the local workforce and entrepreneurs could have to carry out relevant industry-required actives. Therefore, they were expected to be linked with the success of local employment, local training, and local sourcing policies.
4. **Expenditure in research and development (R&D):** Sustained higher values over time were thought to be linked with better technological capabilities of local businesses, thus helping them to achieve better levels of competitiveness relative to international suppliers. Therefore, they would become relevant to determine the level of local business activity, as well as to avoid capacity gaps.
5. **Levels of bureaucracy in business procedures, availability and access to credit for local firms, infrastructure quality, and overall ease of doing business:** These measurements were thought to be critical prerequisites for the formation and development of a local suppliers, thus serving as key determinants for the increase in local business activity, and the avoidance of capacity gaps.
6. **Monitoring capabilities:** A country's ability to enforce contracts, and supervise the correct implementation of its policies was deemed a primary necessity for the success of any kind

of policy. Therefore, it could become relevant for the attainment of positive results in all the four local content policies areas.

7. **Corruption:** Given the previously discussed political-manipulation risk of local content legislations, it was determined that corruption levels could be relevant to determine the formation of any kind of scheme in which individuals or firms could take advantage of the protection from foreign competition, using it as a way to secure revenues rather than to increase local competitiveness.

3. Country selection criteria

Due to the methodological approach this thesis would follow, a moderately large number of local content implementation cases were required to be able to make comparisons and successfully find patterns and trends. Although some countries implemented two or more approaches to local content throughout the years, still several different countries were required to reach a large enough sample of cases with diverse contextual backgrounds.

For the selection of these countries, the following criteria were used:

- The country's implementation of local content had to be before the year 2013 (ideally older), to allow enough information available on its outcome to draw conclusions.
- The country's implementation of local content had to be identifiable and measurable, although this didn't mean the legislation had to explicitly refer to it as "local content".
- Sufficient available information and studies had to be available about the country's local content implementation's outcome and achievements, in the English language.
- The sources of these studied and information had to come from reliable sources. This unambiguously excluded any local content success/failure analyses coming from newspapers, blogs or videos.
- Due to the mandatory nature of local content legislations, cases of countries in which oil operators voluntarily carried out local content initiatives were deemed non-comparable for the purpose of assessing the relevance of contextual factors in policies' outcomes. Therefore, such countries were excluded from the selection process.

Finally, this allowed for the study of the following nine countries: Angola, Brazil, Ghana, Indonesia, Kazakhstan, Malaysia, Nigeria, Norway, and Trinidad and Tobago.

3. Data collection methods

First, contextual information particular to each country was gathered through research based on different studies that examined each country's history, particularly the ones that focused on the oil industry and its evolution in each of the selected countries. While some background was common to all countries – such as global political and economic events –, it was key to understand how these episodes affected each country, and to which degree.

As for the contextual factors studied, quantitative data was obtained from reliable datasets, particularly:

- World Bank databases,
- The United Nations Educational, Scientific and Cultural Organization (UNESCO) Institute of Statistics,
- The Organization for Economic Co-operation and Development (OECD),
- The United Nations Development Program, and
- Transparency International

Second, values and directives of local content policies were obtained through a mixture of relevant legislation examination, as well as through previous research done by relevant authors. When done in this last fashion, a data triangulation mechanism was used to make sure information on policies was correct. The reason for this approach was that many of the specific countries' legislatures were not available in the English language, thus impeding this thesis' author to understand them.

Finally, outcomes on policies' implementations were also obtained through the analysis and comparison of previous studies. It's important to mention that most of the results were assessed in a qualitative manner, mostly for two reasons. First, the availability of quantitative information regarding some policy areas were sometimes not publicly available, an issue that was pointed by several authors in different studies. When this was the case, other mechanisms were used by these authors, such as interviews and surveys. Second, when numerical information on increases or decreases in relevant areas were available, it was difficult to determine what precise degree of success/failure they represented. Therefore, it was found to be more significant to point out those authors' conclusions of whether the results were positive or negative.

This last issue proved to somewhat of a limitation to the comparison method, as will be further explained in part 5 of this section.

4. Comparison mechanism

The comparisons between context and outcome were carried out in a policy-by-policy fashion. That is, in each local content policy area, for each similar type of policy, the following method was used.

First, only those countries that actually applied a type of policy were compared. For example, when analysing local employment requirement, if countries could follow the “A”, “B” or “C” methods (or any combination of them, or none), a different analysis would be done for each of them. If when “A” is analysed, only five out of the nine countries studied used it, then only those five countries would be compared (irrespective if those five countries also applied “B” or/and “C”, since this first analysis would be done on policy “A”). This was critical to understand how different policies behave.

Second, the contextual factors specific to each country were determined with the average values they had between the time of that specific policy implementation and the following ten year (or until the latest data entry available if ten years have still not passed). For example, if country “X” implemented policy “A” in 1995, then contextual factor “W” would be calculated as the average value it had in that country between 1995 and 2005.

Third, the outcome of that specific policy in that country would be assessed reviewing the previously researched analyses done by relevant authors.

Fourth, contextual factors achieved values for each country were categorized in a relative scale ranging from very positive to very negative, so as to be able to compare them to the values of the other countries. Similarly, policy outcomes were also graded.

Finally, for each policy type, potential relationships were made between each contextual factor and the achieved outcomes. When a connection was found, it was examined to determine if it was possible that it implied causality, and also assessed with previous research mentions of it, if any. For example, if for policy type “A” it was found that four of the five applicable countries had a high score in contextual factor “W”, and those achieved a relatively successful outcome, then that case would be studied in more detail.

When notable exceptions were found in the connections, they were examined and further explained, so as to understand their particular reasons and possible implications.

Furthermore, when relationships appeared too strong between a specific policy type and an outcome – irrespective of the context –, they were also inspected. Similarly, when a degree of a contextual factor and an outcome were strongly connected – irrespective of the policy – they were also studied. For example, if when reviewing local sourcing, contextual factor “Z” had a low score in five out of the nine countries studied, and those same countries achieved low scores in outcome, while the ones with a higher “Z” value achieved better scores, all irrespective of the types of local sourcing policies, then that case would also be further investigated.

7. Policies analysis of different countries

1. Angola

1. Context



Figure 6: Geographical location of Angola

Since Angola's independence from Portugal in 1975, oil has been essential for its economy. The country underwent a 27-year civil war immediately after its independence until the year 2002.

During all this time – and until today –, the Marxist “Popular Liberation Movement of Angola” (MPLA) has been in control of the government and the country’s oil resources, a nationalized sector mostly operated by the state oil company Sonangol.

However, so as to not discourage international companies to operate in the country, Sonangol was allowed to partner with foreign oil firms. These links resulted vital for the transfer of knowledge and technology for future production, as well as for the training of its local personnel (Oliveira, 2007).

During the civil war period Sonangol operated in relative isolation. However, the consequences for the rest of the country were very harmful. The non-oil industry was severely damaged (Oliveira, 2007). In response, the government introduced local content policies in the oil sector aiming at improving the country’s economic situation (National Assembly, 2003).

Since the end of the war, **oil production** has rapidly increased, partly due to the increased stability, but also because of new reserves discoveries (Tordo & Anouti, 2013). Also, this is the time local content policies were implemented. For this reason, this analysis will mainly focus on the period from 2002 onwards.

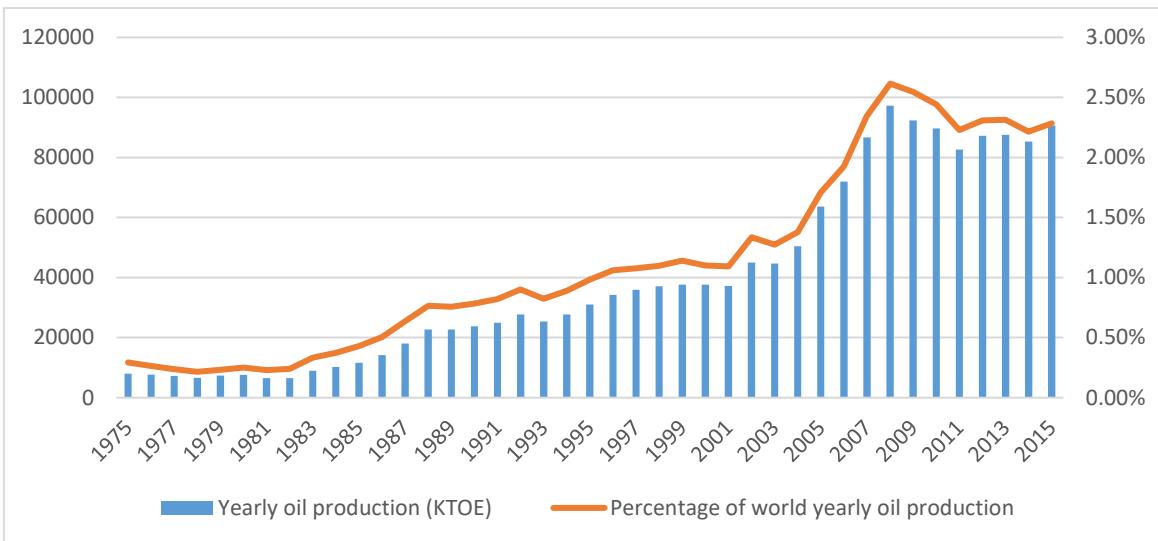


Figure 8: Oil production in Angola (OECD data, 2016).

The following are selected measurement to assess development in Angola over the years.

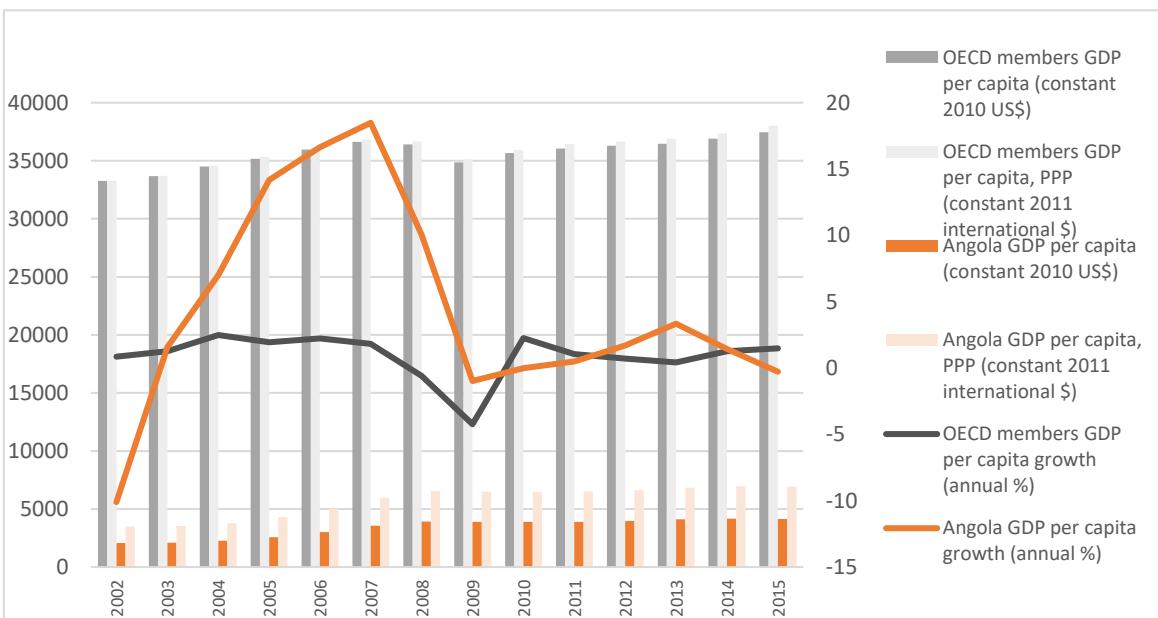


Figure 7: GDP growth in Angola vs. OECD (World Bank data, 2016)

The World Bank classifies Angola as an Upper-Middle-Income economy. Its **GDP growth rate** increased significantly after the civil war, but has been mediocre since world economic crisis in 2009. The period of rise in GDP was in line with the country's increased stability, new oil reserves discovered, and the high oil world prices during that time frame.

Though its GDP is not so low, Angola's **Human development** classification is Low (United Nations Development Programme, 2016). What is more, its amount of population living under poverty remains very high at 30% in 2008, with only a small improvement from 32% in the year 2000. Regarding **inequality**, its GINI index was 43 in 2008, a value ranked as Medium. It's important to note that in the year 2000 this value was of 52, implying a significant decrease in inequality over this time frame (World Bank data, 2016). Going back to its HDI, although low, Angola has managed

to rapidly increase it since the end of the war. Still, a big portion of this change accounts for changes in GDP.

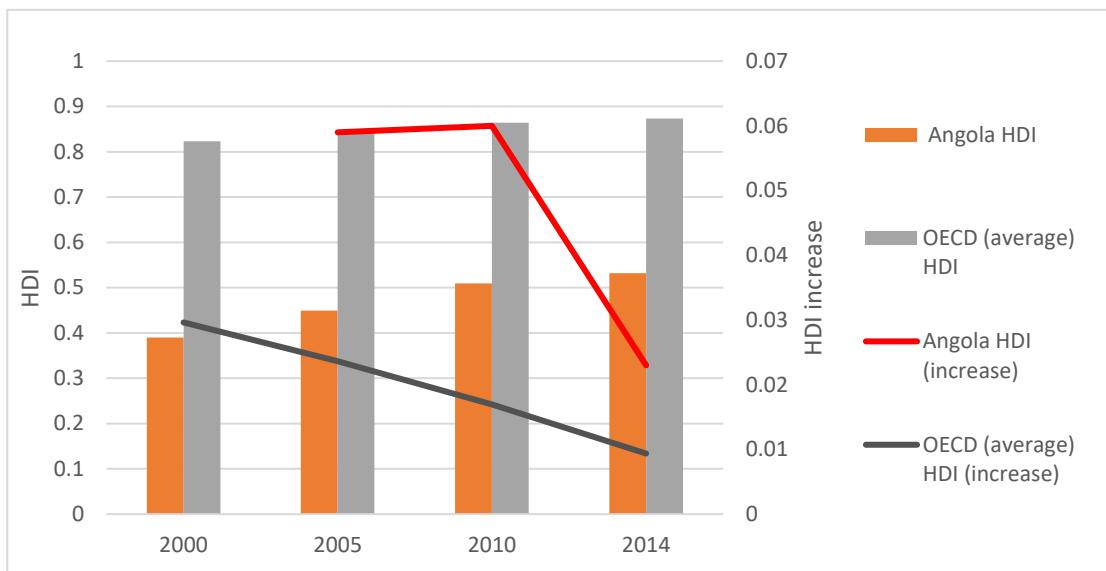


Figure 9: Evolution of HDI in Angola vs. OECD (United Nations Development Programme, 2016)

Regarding **unemployment** in the labour force, its values have remained relatively low and very stable over the years, averaging 6.8% since 2002 (World Bank data, 2016).

As for **educational measurements**, values remain low but growing. Angola's duration of compulsory education is 6 years (up from 4 in 2007), a small amount when compared to OCDE's 10 years. Its government expenditure education was of 3.4% of GDP in 2010, an important leap from 2.1% in 2005 (OECD expenditure has remained steady at around 5% since 2002) (World Bank data, 2016). Angola's labour force remains lowly educated.

Concerning measurements related to **fostering local business activity** in the country, the values remain exceptionally low.

Although Angola has managed to decrease the difficulties of starting a new business, the values today remain very problematic.

Country	Measurement	2005	2010	2015
Angola	Cost of business start-up procedures (% of GNI per capita)	653.8	226.6	22.5
	Start-up procedures to register a business (number)	12	8	8
	Time required to start a business (days)	83	66	36
OECD avg.	Cost of business start-up procedures (% of GNI per capita)	9.10	5.95	3.99
	Start-up procedures to register a business (number)	6.97	5.85	5
	Time required to start a business (days)	23.69	13.55	8.52

Table 2: Selected Ease of doing business measurements in Angola vs. OECD (World Bank data, 2016).

Moreover, local companies' **access to credit** is very limited and cumbersome. Angola's depth of credit information index is 0 (out of a maximum value of 6), and its strength of credit legal rights index is 1 (out of a maximum value of 10). These values have not improved over the years and remain among the lowest in the world (World Bank data, 2016).

Overall, the World Bank ranks Angola in the position 182nd in the Ease of Doing Business index, at the very end of the list.

As for **monitoring procedures**, the World Bank's Time Required to Enforce a Contract measurement value is 1296 days in 2016 (up from 1011 in 2003). This value is more than double the OECD average of 545 days. Regarding the increase over the years, it was in-line with an increase in the world overall (World Bank data, 2016).

Angola's **infrastructure quality** is – and has historically been – poor, serving as a further limitation for business development. Its Quality of Trade and Transport-related Infrastructure is 2.1 in 2016 (out of a maximum value of 5) and has fluctuated up and down over the years (2.3 in 2007, 1.7 in 2010). To compare, the OECD's average in 2016 was of 3.7 (with a slow and steady progress over the years) (World Bank data, 2016).

Finally, **corruption** perception has historically been very high in Angola, with virtually no improvement over the years. Since 2002 its Corruption Perception index score has averaged 20.2 (out of 100, which means zero corruption), this value is notoriously eclipsed by an OECD average of 69.3 in the same time period (Transparency International, 2015).

2. Local Content Policies applied

Since 2003 Angola follows a complete set of local content policies covering local employment, domestic sourcing of goods and services, as well as training and R&D expenditure requirements.

Regarding the **hire of nationals**, legislation has been in place since 1982. This "Angolanization of the workforce" requires operators to

- Hire nationals whenever their experience and qualifications meet requirements.
- Submit recruitment plans to be approved by the Ministry of Petroleum annually.
- Get approval from the Ministry of Petroleum to hire foreigners (Tordo & Anouti, 2013).

More specifically, strict target quotas were set to the minimum percentage of national employees that oil operators must have. These values were divided by skill level and increased over the years, so as to allow workforce skill capacity building. Nevertheless, the values remain very high when compared to other local content implementations.

Employee Category	1985	1987	1990	2010
Unskilled staff	100%	100%	100%	100%
Midlevel staff	50%	60%	70%	80%
Upper-level staff	-	50%	80%	70%

Table 3: Local employment requirements in Angola (Council of Ministers, 1982) (Council of Ministers, 2009).

Concerning the **sourcing of goods and services to local providers**, legislation since 2003 gives preferential right to state companies and those owned by Angolan citizen (minimum 51% capital ownership).

More precisely, a distinction is made for goods and services requiring limited (or extensive) capital, and nonspecialized (or specialized) know-how. For the first, exclusivity is given to Angolan companies. For the second, a joint venture is required between an international and domestic firm (Tordo & Anouti, 2013).

Additionally, preferential rights are given to domestic companies for any bid if their price quotation is within 10% higher than the lowest bidder. Public tendering of contracts is required by law. However, Sonangol has a deep influence over the awarding of the contracts (Tordo & Anouti, 2013).

As to **training and R&D requirements**, operators are required to provide annual local capacity building programs, including

- Career development plans for local workers.
- A detailed plan explaining the skills and knowledge to be transferred.
- Goals in terms of integration of the local workforce (Council of Ministers, 2009).

Furthermore, US\$0.15 for every barrel produced have to be paid to the authorities for a training fund. Out of these, typically US\$0.09 go to the Ministry of Industry and Petroleum (US\$0.03 of these go to local universities (Gomes & Weimer, 2011), the rest can be used for operators to train their staff (Tordo & Anouti, 2013).

Additional policies aiming at training include \$100,000 annually for holding a licence to operate and \$300,000 annually for exploration activities (Council of Ministers, 2009).

3. Outcome

Oil wealth has not been efficiently managed, it has been characterized as fraudulent, not transparent and politically motivated (Tordo & Anouti, 2013). What is more, it has not managed to accrue in an even way to the population in general, specially to the poorest, considering the persistently high poverty levels. However, improvements have been seen in GDP and HDI, giving rise to the conclusion that indeed a portion of the population – probably the politically-well-connected or linked to the oil business – has been made better off.

High corruption has played an important role in this mismanagement, with cases of unlawful appropriation of oil revenues exposed by the IMF and Human Rights Watch (Andre, 2010).

More specifically and regarding procurement requirements, conflicts of interest have been uncovered from Sonangol's role of operator and shareholder in local service companies, considering the domestic sourcing policy requirements, and particularly in the formation of joint ventures (International Energy Agency, 2006).

The previous points give rise to the idea that local content measures in Angola have been a source for the local elites to accumulate wealth, however at the expense of efficiency.

These sorts of uncompetitive behaviour could be attributed to the fact that monitoring capabilities have been historically very low. Without much improvement over the years, they are likely to continue (Kirk, 2011).

Moreover, since the implementation of these policies, international operators have had to face the challenge of working with inexperienced local firms, giving rise to supply bottlenecks. Particularly, it has been hard for local service providers to cope with the low levels of infrastructure, hard access to financial resources, and low levels of technical know-how. Measures started to take place in the form of public-private partnerships between the government and international oil companies to improve these issues, but they came late and results have been rather slow (Tordo & Anouti, 2013).

As for local employment requirements, they have been a source of a considerable skill gap. The local levels of education have not been enough to satisfactorily prepare the workforce, particularly in the high-skilled bracket. To solve this, many international operators have to rely on external support to train their employees (Gomes & Weimer, 2011).

Regarding training programs, they have had relative success. Through cooperation with renowned international institutions, national training programs have managed to prepare 1,790 high-skilled employees between 1983 and 2008. Also, international players have implemented positive training courses. Nevertheless, the results have been low-reaching and not sufficient to counter the skill gap (Tordo & Anouti, 2013).

On the other hand, Angola has indeed managed to create new businesses. New facilities are being open, support centres are being implemented, and contracts are being won by local firms. "...by 2010 assisted Angolan firms won 309 contracts worth a total of US \$ 213,540,807, leading to the creation of 4,236 jobs" (Ovadia, The Petro-Developmental State in Africa: Making Oil Work in Angola, Nigeria and the Gulf of Guinea, 2015).

2. Brazil

1. Context



Figure 10: Geographical location of Brazil

With a population of just over 200 million, the largest country in South America has been commercially extracting oil since 1939 (Tordo & Anouti, 2013). Ever since, politics have had a major role in the industry development.

Until 1945, during the presidency of dictator Getulio Vargas, the sector was nationalized and all oil-related economic activities were monopolized by the state. After he was overthrown in 1945, oil concessions were opened to foreign companies aiming at developing the industry due to insufficient local capabilities (Tordo & Anouti, 2013).

However, in 1953 Getulio Vargas was elected president again and national control was restored. The same year, the national oil company Petrobras was created and granted monopoly right in all oil-related processes. Fostering of local content measures started at this point (Tordo & Anouti, 2013).

Between 1954 and 1960 local procurement of goods increased from 5% to 60% due to Petrobras' stimulus. This value later increased to 80% by 1979. This was a period of strong economic growth in Brazil (Brandao, 1998).

The 80s were characterized by lower growth and increasing inflation. Accordingly, Petrobras' investments were low. Nevertheless, thanks to import restrictions put in place, local content levels remained high. Local goods sourced by Petrobras accounted to 91% in 1989 (Brandao, 1998).

The 90s were marked by a shift towards international trade liberalization. Economic plans were put in place to foster Brazil's economic growth. In 1997 the oil industry was again liberalized, and local content initiatives lost importance (Tordo & Anouti, 2013).

With the rise to power of the Workers Party in 2002 plans to develop local capacity were put again on the table. This was addressed by a series of legislations since 2003 (Tordo & Anouti, 2013).

The oil industry has been an important part of Brazil's economy. It represented roughly 10% of the country's GDP in 2010, a percentage that has been more or less stable over the years (United Nations, 2010). Oil production has been on the rise, expressly since the sector's liberalization in the year 1997. Nevertheless, Petrobras remains nowadays as the biggest oil producer in the country, with over 90% of the production share (Agência Nacional de Petróleo, 2014).

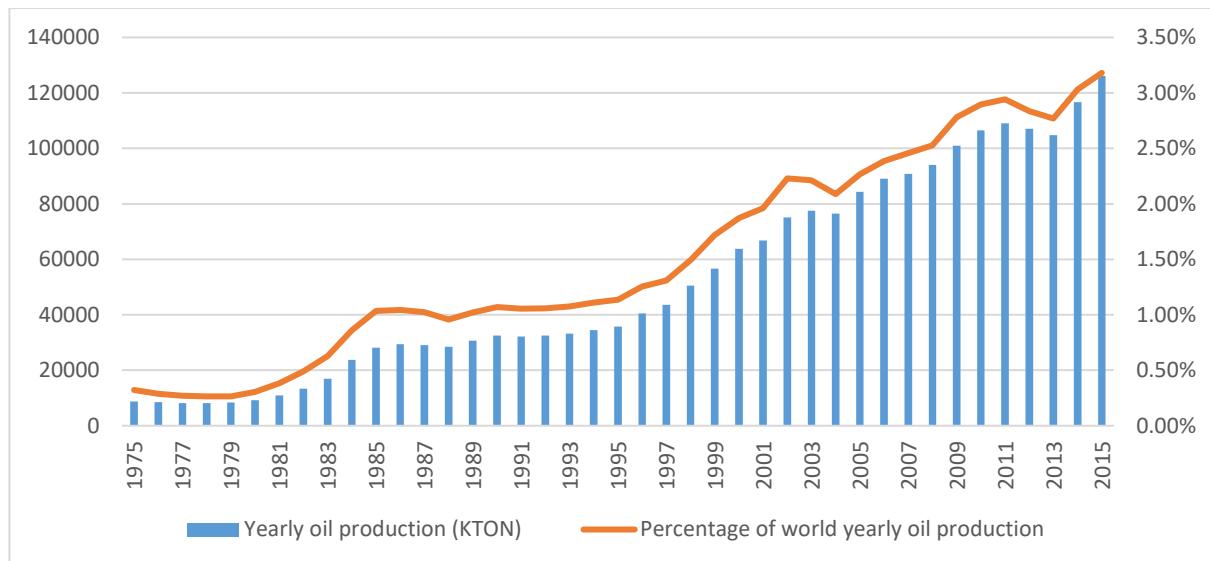


Figure 11: Oil production in Brazil (OECD data, 2016)

The following are selected measurement to assess development in Brazil over the years.

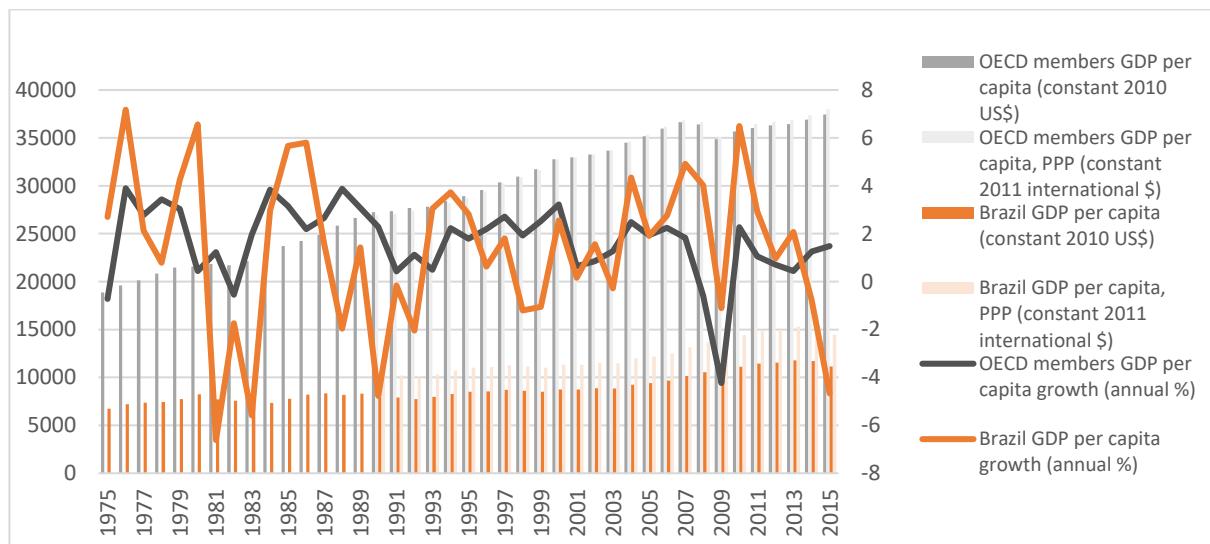


Figure 12: GDP growth in Brazil vs. OECD (World Bank data, 2016)

The World Bank classifies Brazil as an Upper-Middle-Income economy. The country is characterized by a large internal market, making it less susceptible to external crises. Its **GDP growth rate** was low during the 80s partly because of very high inflation and economic closure. The 90s saw a surge in foreign direct investment, which had positive repercussions in growth. International oil prices don't seem to have obvious connections with GDP movements, this can be partly explained by the fact that Brazil only became a net oil exporter in 2011 (Tordo & Anouti, 2013).

Though its GDP is not so high, Brazil's **Human development** classification is High (United Nations Development Programme, 2016). Mostly, this measurement has been increasing more so than in the OECD countries in the past decades. What is more, its amount of population living under poverty has been constantly decreasing, from 30% of the population in 1983 to 3.6% in 2014. Regarding **inequality**, its GINI index has been persistently high over the years – averaging 57 since 1981,

without major improvements. This value is among the highest in the world (World Bank data, 2016).

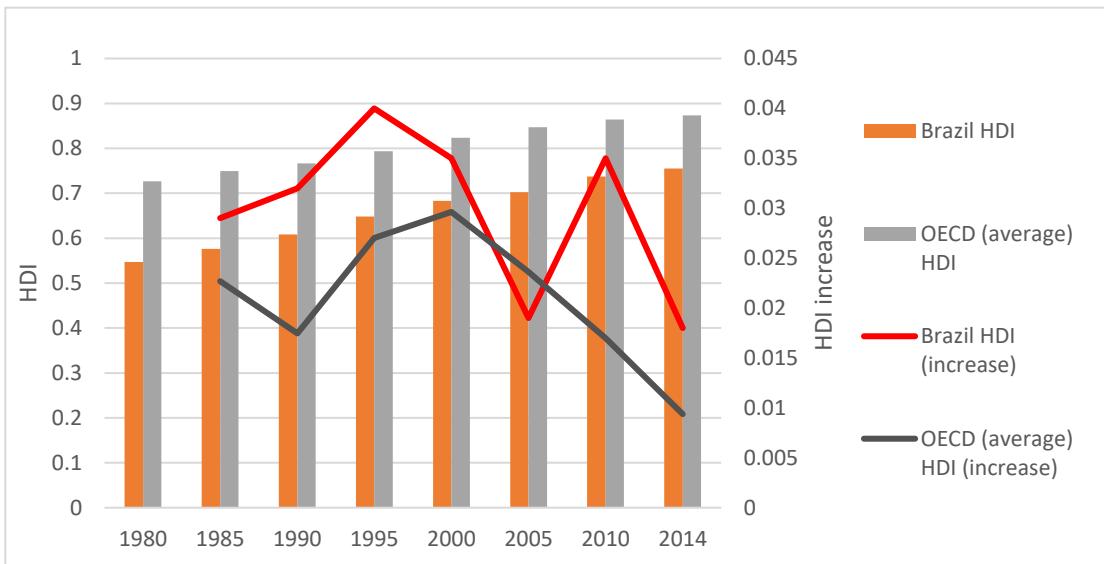


Figure 13: Evolution of HDI in Brazil vs. OECD (United Nations Development Programme, 2016)

Regarding **unemployment** in the labour force, the values were low during the 80s, averaging 3.7% of the population. The 90s and early 2000s saw a progressive increase in joblessness, from 6.4% on 1992 to 9.3% in 2005. After this, values have been slowly decreasing, reaching 4.8% in 2014 (World Bank data, 2016).

As for **educational measurements**, values are mixed. Expenditure levels have been almost in-line with OECD averages since the late 90s. Educational expenditure was around 4.5% of GDP the second half of the 90s, this value decreased to approximately 3.9% between 2000 and 2005, and has been rising ever since, reaching 5.9% in 2012 (OECD expenditure has remained steady at around 5% for the same time frame) (World Bank data, 2016). Nevertheless, this has not resulted in similar attainments in education to the OECD. Particularly for tertiary education, the percentage of Brazil's labour force with it has been low over the years – averaging only 9% –, although values have slightly increased more recently, reaching 13% in 2013. This is dramatically overshadowed by an OECD value of 32% of the population in 2013.

Research and Development expenditure levels are moderate, with an average of 1% of GDP since the year 2000. This value has been slowly increasing over time (UNESCO Institute of Statistics, 2016).

Concerning measurements related to **fostering local business activity** in the country, the results are mixed.

As for starting new businesses, costs are in-line with the OECD, however there seems to be a high degree of bureaucracy.

Country	Measurement	2005	2010	2015
Brazil	Cost of business start-up procedures (% of GNI per capita)	10.1	7.3	4.8
	Start-up procedures to register a business (number)	17	13	11
	Time required to start a business (days)	156	122	83
OECD avg.	Cost of business start-up procedures (% of GNI per capita)	9.10	5.95	3.99
	Start-up procedures to register a business (number)	6.97	5.85	5
	Time required to start a business (days)	23.69	13.55	8.52

Table 4: Selected Ease of doing business measurements in Brazil vs. OECD (World Bank data, 2016)

Regarding local companies' **access to credit** results are also mixed. Brazil's depth of credit information index is very high, but its strength of credit legal rights index is very low (World Bank data, 2016). Nevertheless, it has been argued that the country's financial sector is strong (Tordo & Anouti, 2013).

Furthermore, Brazil's tax system has been mentioned to be particularly cumbersome and rigid. This has served as a deterrent for small and medium-sized companies development (Tordo & Anouti, 2013).

Overall, the World Bank ranked Brazil in the position 123rd in the Ease of Doing Business index in 2016, in the lower end of the middle of the list.

As for **monitoring procedures**, the World Bank's Time Required to Enforce a Contract measurement value was 731 days in 2016 (down from 751 in 2003). This value is moderately above the OECD average of 545 days (World Bank data, 2016).

Brazil's **infrastructure quality** is mediocre, and has not changed much the last couple of years. Its Quality of Trade and Transport-related Infrastructure was 3.1 in 2016 (out of a maximum value of 5), and its Quality of Port Infrastructure was 2.7 the same year (out of a maximum value of 7). To compare, the OECD's average in 2016 were of 3.7 and 5.1 respectively (with a slow and steady progress over the years) (World Bank data, 2016).

Finally, **corruption** perception has historically been moderate in Brazil, with no noticeable improvement over the years. Since 2002 its Corruption Perception index score has averaged 38.7 (out of 100, which means zero corruption), this value is shadowed by an OECD average of 69.3 in the same time period (Transparency International, 2015).

2. Local Content Policies applied

Since 1999 Brazil implemented a series of policies aimed at leveraging on the recent increase of oil production. These measurements come mainly in the form of requirements of local procurement and mandatory R&D expenditures, but also include business support initiatives and fiscal incentives.

The policies don't cover employment in any form, as this is expected to increase naturally through the development of local businesses (Tordo & Anouti, 2013).

Regarding the **sourcing of goods and services to local providers**, the law works from two different angles. First, it considers local content as a weighting criteria for the bidding process in the concession licencing phase. That is, the more local goods and services prospect operators offer to source in their bid, the higher the chances of winning the licence. Secondly, since 2003 minimum local procurement percentages have been in place. Consequently, in order to win the licence, an operator's proposal will have to 1. Satisfy the minimum requirements, and 2. Offer the best value to the government according to the evaluation weighted criteria, to which local procurement is a factor (Tordo & Anouti, 2013).

It's worth noting that since the exploration and development phases are different in terms of capital and technological necessities, local sourcing requirements change according to each phase.

Similarly, considering that offshore oil productions requirements in terms of capital and technology are higher, the minimum local content obligations are lower, so as to be more in-line with limited local capabilities.

To illustrate this, the following table shows the yearly bidding rounds between 1999 and 2007, with their respective local sourcing requirements.

Year	1999 - 2002		2003 - 2004		2005 - 2011	
Minimum local sourcing for bid to be accepted	Exploration phase	-	30% deep water 50% shallow water 70% onshore	37% deep water 51% shallow water 70% onshore		
	Development phase	-	30% deep water 60% shallow water 70% onshore	55% deep water 63% shallow water 77% onshore		
Local sourcing percentage weight in the criteria for bid evaluation		3% exploitation phase 12% development phase	15% exploratory phase 25% development phase	5% exploratory phase 15% development phase		

Table 5: Evolution of local sourcing requirements in Brazil (Agência Nacional de Petróleo, 2015) (Moen, 2013)

Concerning **R&D requirements**, operators are mandated to spend a minimum of 1% of gross revenues on oil-related research (Filho, 2000). Since 2005, at least half of this amount has to be destined to research performed by local universities. The rest can be used for studies carried out in the operators' own research centres, but necessarily in Brazil (Tordo & Anouti, 2013).

Additionally, a variety of fiscal incentives are offered by the government to foster local business development, such as tax reductions and subsidies (Tordo & Anouti, 2013).

Finally, the PROMINP business initiative was launched in 2003 to connect most of the industry's stakeholders and allow to efficiently maximize the usage of local capacity. The program's strategy focuses on fostering the workforce's adequate qualifications, finding opportunities for local small

and medium enterprises, facilitating the access to finance for them through agreement with Brazilian banks, and identifying capacity gaps so as to act ahead of time (among others) (PROMINP, 2011).

3. Outcome

Local content policies in Brazil implemented since the late 90s have been successful in increasing the share of goods and services sourced from domestic suppliers. These initiatives have been mostly led by Petrobras. Nevertheless, it has been argued that local content policies have been a cause for supply bottlenecks, particularly affecting operators' time schedules.

Historical data shows that the average commitment to local content during concession rounds increased at a very fast rate until 2003, when it became steady at around 80% for development phases (and slightly lower for execution phases) (British Petroleum, 2012). In the same line, PROMINP's local content index data shows marked increases until 2005, after which percentage growth slow but steady. The same index shows that local content levels have been constantly above targets since 2004 (PROMINP, 2011).

It has been argued that the increases in local content levels can largely be accounted to PROMINP's initiatives, which have allowed to increase local capacity and employment (Kalyuzhnova, Nygaard, Omarov, & Saparbayev, Local Content Policies in Resource-Rich Countries, 2016) (Tordo & Anouti, 2013). This gives rise to the idea that legislative measures are insufficient without proactive fiscal policies to foster business development.

On the bad side, local content policies in Brazil have been pointed as the source of delivery delays and higher costs, as domestic providers fail to be as competitive as international ones (Moen, 2013) (Tordo & Anouti, 2013). Petrobras has had trouble to accomplish production targets in multiple years, especially because of suppliers' delays (Kalyuzhnova, Nygaard, Omarov, & Saparbayev, Local Content Policies in Resource-Rich Countries, 2016). In an interview in 2015 a former Petrobras CEO argues that Brazil's operators don't have the capacity to compete at an international level. Moreover, he maintains that the recent decline in oil prices proposes a further challenge to local business development, as operators will seek cost-efficient international suppliers (Gabrielli, 2015).

Finally, recent corruption scandals in 2014 involving Petrobras and several suppliers have been considered as reason to believe that the protectionist nature of local content policies have been used in Brazil to the advantage of *rent-seekers*. That is, to the benefit of individuals linked to non-competitive companies supplying services and equipment without competitiveness improvements, thus creating welfare losses even in the long term. A recent study suggests, however, that local companies benefiting from local content regulations were the ones that contributed the least to these bribes (Lima de Oliveira, 2015).

The particular problem in 2014 was a scheme in which a group of local contractors paid bribes to politicians and Petrobras' executives (Lima de Oliveira, 2015).

3. Ghana

1. Context



Figure 14: Geographical location of Ghana

Ghana declared independence from the United Kingdom in 1956. Since then, it has been governed by a sequence of alternating civilian and military governments, resulting in high instability. Since 1992, however, it enjoys a relatively stable democracy and economic environment (Sakyi & Adams, 2012).

Ghana's history in the oil business is rather recent. Even though there was some sporadic exploitation during the twentieth century – particularly a small field during the 70s and 80s –, quantities were not significant for economic development (Sarpong, 2015).

However, the discovery in 2007 of large offshore reserves in the Western Maritime Zone of Ghana has radically changed this scenario (Armah & Torku, 2014).

Development phase began immediately and production started in 2010. While quantities are still low, high growth is expected. Additionally, other oil fields have been found in the country since then (Sarpong, 2015).

For rather poor Ghana, the discovery created very high expectations. The authorities, aware of multiple failure cases in the oil industry in underdeveloped countries, aimed at avoiding a case of "curse of natural resources" by developing regulations at the early stage to make sure the oil wealth accrues to the general population and serves as a motor for development (Senoo & Armah, 2015).

While there were some previous laws regulating oil activity, the major initiative started in 2010 when – facing growing pressure from civil society – the government carried out stakeholder consultations to later draw a draft policy (Sarpong, 2015).

In 2011 a local content framework was put in place, which later translated into the 2013 Petroleum (Local content and Local Participation in Petroleum Activities) Regulations. This comprehensive legal agenda has been key for setting the oil industry ever since.

As can be seen in the following figure, commercial **oil production** began in 2010. While Ghana's history in the oil industry is still very new, the sector already accounts to approximately 6% of its GDP (Ghana Statistical Service, 2016). Moreover, in 2014 it represented 28% of its total exports,

surpassing Gold and Cocoa beans as the country's largest export since 2013 (Harvard Atlas of Economic Complexity, 2016). The reliance on oil revenues in the close future appears imminent.

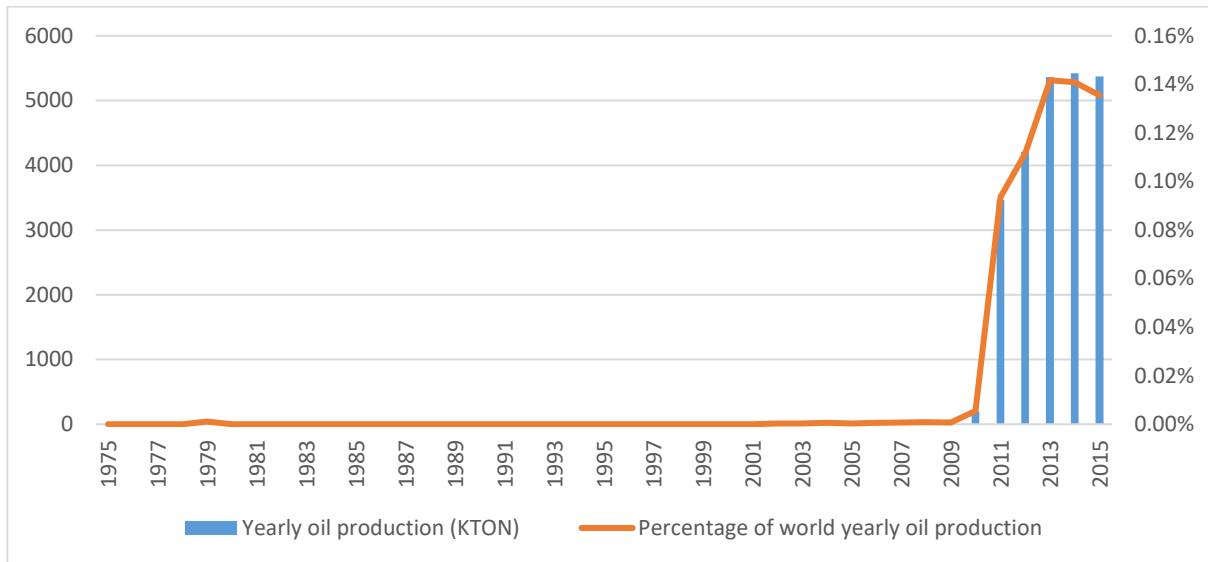


Figure 15: Oil production in Ghana (OECD data, 2016)

The following are selected measurement to assess development in Ghana over the years.

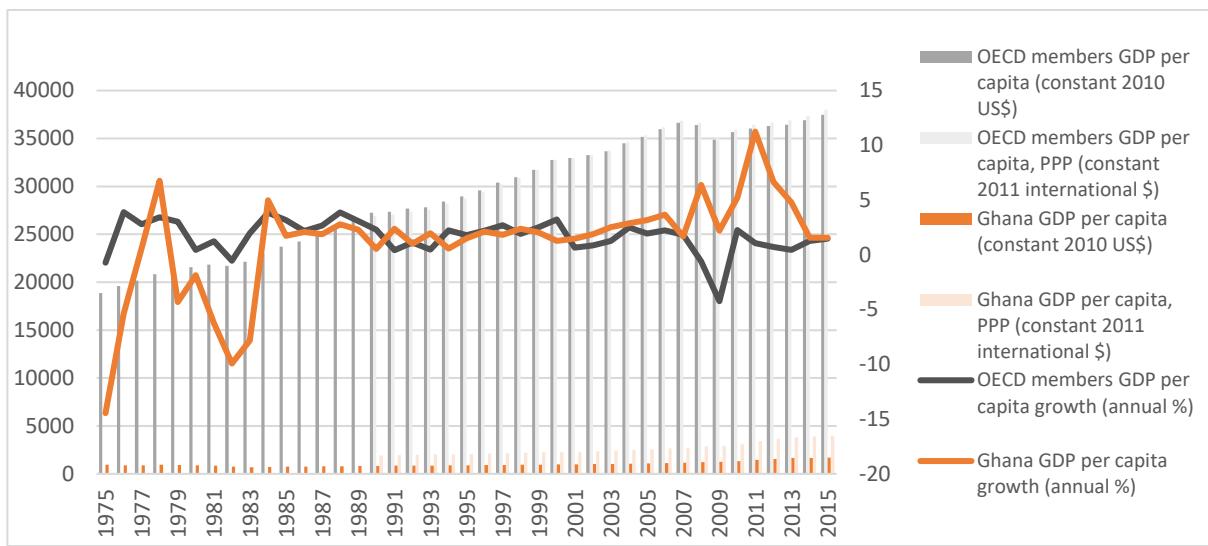


Figure 16: GDP growth in Ghana vs. OECD (World Bank data, 2016)

The World Bank classifies Ghana as a Lower-Middle-Income economy. Its **GDP growth rate** was very negative during the turmoil times of the military governments, to later achieve relative stability in the mid-80s. As can be appreciated, the discovery of oil fields in 2007 and its later exploitation brought on significant economic growth.

Though its GDP is still low, Ghana's **Human development** classification is now Medium (United Nations Development Programme, 2016). Major increases in HDI in the past decade account to GDP growth brought by oil discoveries. Regarding population living under poverty, national poverty lines suggests this value was reduced from 31.9% in 2005 to 24.2% in 2012. As for **inequality**, since economic stability was achieved in the late 80s, its GINI index has been on the rise. From a value of

35 in 1987 it progressively increased to 43 in 2005 (World Bank data, 2016). It has been suggested that inequality has remained rather stable since then, with a GINI value of 41 in 2013, a value ranked as Medium (Cooke, Hague, & McKay, 2016). It can be then deduced that the oil introduction has not alleviated nor worsened this situation.

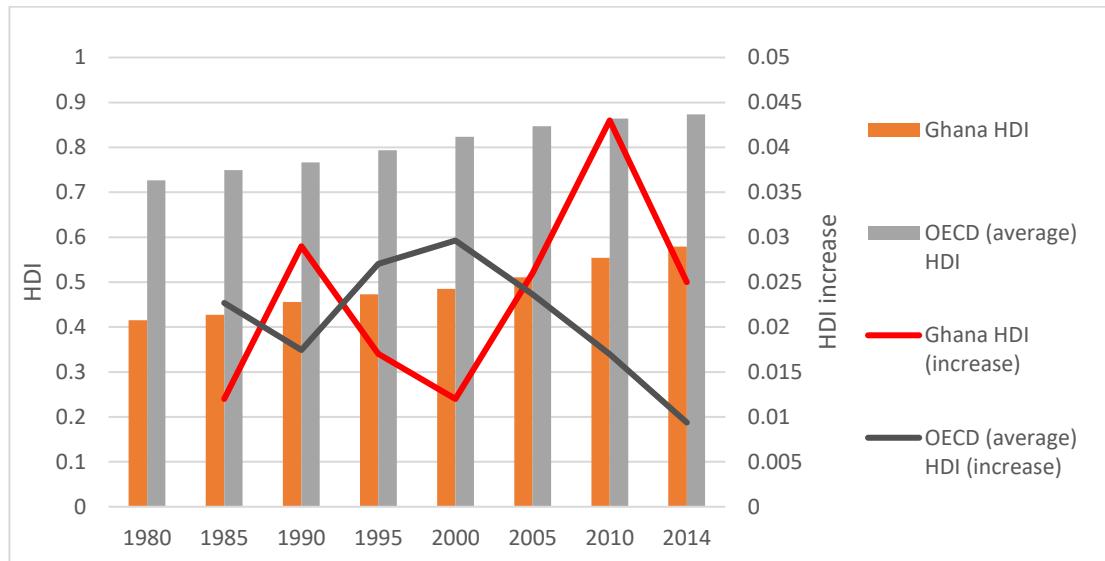


Figure 17: Evolution of HDI in Ghana vs. OECD (United Nations Development Programme, 2016)

Regarding **unemployment** in the labour force, values have been on the decline over the past 15 years. From 10.4% unemployment in the year 2000, this number was reduced to only 2.4% in 2014, a very positive level (World Bank data, 2016).

As for **educational measurements**, expenditure levels have been very high and steady since the 2000s. Between 2004 and 2013 Ghana spent an average of 6.4% of GDP in education, which accounts to roughly 25% of the total government expenditure. These numbers are high even when compared to the OECD's 5.1% and 12.4% respectively, for the same time periods. This being said, educational attainments are still low; the percentage of the labour force that underwent tertiary education was at a very low of 2.5% in 2010, a value highly eclipsed by the OECD's 29.6% in the same year (World Bank data, 2016). It has been suggested that Ghana's labour force today still remains highly undereducated (Senoo & Armah, 2015).

Research and development expenditure in the country is low. In 2010, this factor accounted to only 0.38% of GDP, a low value compared to an OECD average of 2.4% for the same year (UNESCO Institute of Statistics, 2016).

Concerning measurements related to **fostering local business activity** in the country, the conclusions are mixed.

Ghana has been relatively successful in facilitating administrative procedure to start new businesses in terms of costs and time. While values are still poorer than OECD standards, they are not vastly distant.

Country	Measurement	2005	2010	2015
Ghana	Cost of business start-up procedures (% of GNI per capita)	55.8	30	19.4
	Start-up procedures to register a business (number)	11	7	8
	Time required to start a business (days)	17	11	14
OECD avg.	Cost of business start-up procedures (% of GNI per capita)	9.10	5.95	3.99
	Start-up procedures to register a business (number)	6.97	5.85	5
	Time required to start a business (days)	23.69	13.55	8.52

Table 6: Selected Ease of doing business measurements in Ghana vs. OECD (World Bank data, 2016)

As for local companies' **access to credit**, results are mixed. Ghana's depth of credit information index is 6 (out of a maximum value of 6), and its strength of credit legal rights index is 7 (out of a maximum value of 10) (World Bank data, 2016). However, it has been pointed out that small and medium sized suppliers find it hard to get loans. High interest rates in the country are quoted as a major issue (Bloch & Owusu, 2012). In the same line, another study concludes entrepreneurship activity in the country is severely limited because of a lack of local financial support (Amoako-Tuffour, Aubynn, & Atta-Quayson, 2015).

Overall, the World Bank ranks Ghana in the position 108th in the Ease of Doing Business index, around the middle of the list.

As for **monitoring procedures**, the World Bank's Time Required to Enforce a Contract measurement value is 710 days in 2016 (up from 552 in 2003). This value is higher than the OECD average of 545 days (World Bank data, 2016). Contract enforcement capabilities are moderate.

Ghana's **infrastructure quality** is – and has historically been – moderately poor, serving as a limitation for business development. Its Quality of Trade and Transport-related Infrastructure was 2.5 in 2016 (out of a maximum value of 5) and its Quality of Port Infrastructure was 3.5 (out of a maximum value of 7) in the same year. To compare, the OECD's averages in 2016 were of 3.7 and 5.1 respectively (World Bank data, 2016).

Finally, **corruption** perception has considerably improved in the last two decades. With a consistent increase since 1998, Ghana's Corruption Perception index score was of 47 in 2015 (out of 100, which means zero corruption). While this value falls still short of an OECD average of 69.7 in the same year, it's still among the mid-higher-end of the list of all countries (Transparency International, 2015).

2. Local Content Policies applied

The first mention of local content related topics was in the Petroleum Act of 1984. Here, it was required that operators conduct technology transfer plans aimed at transferring knowledge to the newly founded Ghana National Petroleum Corporation. Also, some local employment fostering

requirements were in place. This regulation was intended to be very business-friendly, as during this time the state's focus was on attracting investors (Sarpong, 2015).

The most relevant source of regulation, however, was the Petroleum (Local content and Local Participation in Petroleum Activities) Regulations of 2013. This legal framework follows a holistic approach, addressing local employment, domestic sourcing of goods and services, as well as training and R&D expenditure requirements.

Regarding the **hire of nationals**, the following schedule shows the minimum employment requirements for operators.

Employee Category	2014-2019	2019-2024	2024 onwards
Other staff	100%	100%	100%
Technical staff	30%	85%	90%
Management staff	50%	80%	80%

Table 7: Local employment requirements in Ghana (Amoako-Tuffour, Aubynn, & Atta-Quayson, 2015)

Besides, succession plans need to be submitted for all foreign hires to ensure the position is filled by a Ghanaian in a pre-established timeframe (Columbia Center of Sustainable Investment, 2014).

Concerning the **sourcing of goods and services to local providers**, the main requirements are the following.

- Minimum local content in the value of goods and services sourced, depending on their particular type. Overall, the policy mandates 10% at start, 50% after five years, and 60%-90% after 10 years of implementation.
- There is a price preference for local companies. During the contracts bidding phase, if a local supplier's bid price is less or equal to 10% higher than the lowest bidder's price, the contract shall be awarded to the local firm provided that it is "qualified" to do the job.
- In the same process, if two bids are equal, the contract must be awarded to the one with highest local.
- Foreign suppliers can only provide goods/services through a joint venture, in which a minimum 10% local ownership is required.
- Some industries are reserved for local suppliers, including legal services, provision of insurance contracts, and financial services. However, exceptions can be granted in specific cases.
- Operator must hold a local bank account, and perform business transactions through it (Columbia Center of Sustainable Investment, 2014).

As to **training requirements**, relevant educational and training programs shall be given to all local employees. A specified plan has to be submitted annually to the authorities (Columbia Center of Sustainable Investment, 2014).

Finally, **technology transfer obligations** are less prescriptive. Still, operators are required to submit plans which should include a three to five years R&D initiatives sub-plan, joint venture facilitation

programs between local and foreign firms, among others. These plans are to be reviewed and approved from the relevant authorities (Columbia Center of Sustainable Investment, 2014).

3. Outcome

Since the implementation of the policy began in 2014, the available information is not broad enough to draw accurate conclusions. Nevertheless, some clear trends can be seen in the past years.

As for employment measurements, data collected by the Ghanaian authorities suggest the local employment levels in 2014 were 80% in the upstream sector (5,589 people of a total of 6929 hires) and 64% in the operators' staff (2315 people of a total of 3616 hires). These came mainly from lower-skilled positions though, where locals vastly outnumbered foreigners. For technical and management positions the employment was distributed more or less 50-50 (Amoako-Tuffour, Aubynn, & Atta-Quayson, 2015). This information suggests outcome is in-line with initial policy requirements.

Regarding sourcing of goods and services, a study suggest positive outcomes have been achieved in the provisions of goods and services requiring lower capital and technological knowledge, particularly the ones that are less linked to the oil industry and were already provided in other sectors. These include construction, catering, logistics, and welding (Amoako-Tuffour, Aubynn, & Atta-Quayson, 2015). Particularly, a report suggests in 2015 the amount of contracts awarded to Ghanaian companies accounted to roughly 60% to 75% of the total. However, since they were mostly low-value, they represented a mere 5% of the total price of all contracts (Ovadia, 2016). This value falls short on the overall 10% initial requirement.

What is more, local businesses so far have found it rather difficult to win bids. Their capacity and lack of certification has been a major issue for this.

In general, the local content requirement in Ghana are among the most prescriptive in the world. What is more, they were implemented in a country without any significant prior experience in the oil industry. Even though the business environment and the socio-political environment is considered to be more positive than countries which implemented similar policies, there is a general consensus among studies that Ghana's policy was guided by political, rather than proper economic analysis. They argue the results achieved so far are poor – except for the case of employment –, and will largely fail to provide positive results in the future due to the “impossible” timeframe (Amoako-Tuffour, Aubynn, & Atta-Quayson, 2015) (Sarpong, 2015) (Senoo & Armah, 2015).

Particularly it has been claimed that if policy enforcement in the medium term is strict, international operators will have severe difficulties achieving the targets. This will results in very high costs for them to make up for supply bottlenecks, lower standard and longer delivery times, thus hurting profits and so government revenues through taxes (Senoo & Armah, 2015).

To conclude, the main reasons that have been pointed out as catalysts for future failure are the following.

- A complicated and reduced access to finance at all levels of the value chain. Particularly, high interest rates.
- Lack of skills and technical know-how in local businesses, due to inexperience in the industry. This makes it difficult for them to engage in more complex projects in the short-medium term in a competitive way.
- Poor infrastructure, including power supply, roads and rail lines (Amoako-Tuffour, Aubynn, & Atta-Quayson, 2015) (Sarpong, 2015) (Senoo & Armah, 2015).

4. Indonesia

1. Context



Figure 18: Geographical location of Indonesia

Oil production in the fourth largest country by population (over 250 million by 2016) started in 1890. Since then and during the first half of the 20th century the industry was dominated by international oil companies (Heum P., Quale, Karlsen, Kragha, & Osahon, 2003).

Later, after its independence from the Netherlands (1945), in the 1950s and 60s the government interest in the sector became clear. Production Sharing Agreements (PSAs) were put in place as a way for the government to earn more revenues from oil extraction activities (Tordo & Anouti, 2013).

As a way of improving relationships with the Indonesian government – and in the context of nationalist politics –, foreign companies spontaneously began hiring more local workers. These efforts proved successful for the hire of unskilled labour (Tordo & Anouti, 2013).

In 1968 the national oil company Pertamina was established, mostly with regulatory objectives regarding PSAs. It later expanded operation to several non-oil-related sectors as a way of investing oil revenues, as part of the government's industrialization objectives. This effort however didn't have positive results, and was later terminated (Heum P., Quale, Karlsen, Kragha, & Osahon, 2003).

During the 70s the local content agenda began addressing backward linkages. Partnerships of local and foreign service and equipment providers were forced as a way of achieving local business development. Moreover, import tariffs were put in place. Again, this effort didn't have much impact and the authorities allowed foreign procurement anyway (Tordo & Anouti, 2013). Local content ranges were estimated at around 10% and 20% by the year 2000 (Nordas, Vante, & Heum, 2003).

In 2001 the Oil and Gas Law was established, aiming at strengthening the local market capabilities. For this, priority was to be introduced for local businesses and personnel, as a way of protecting and fostering their development (BPMIGAS, 2011).

Oil revenues were key for the economy for almost a century, yet recent **oil production** has been on the decline and has been replaced with gas as the main natural resource. When considering both industries together, their relevance on GDP has been on the increase since the 70s, reaching about 40% of GDP in 2010 (United Nations, 2010).

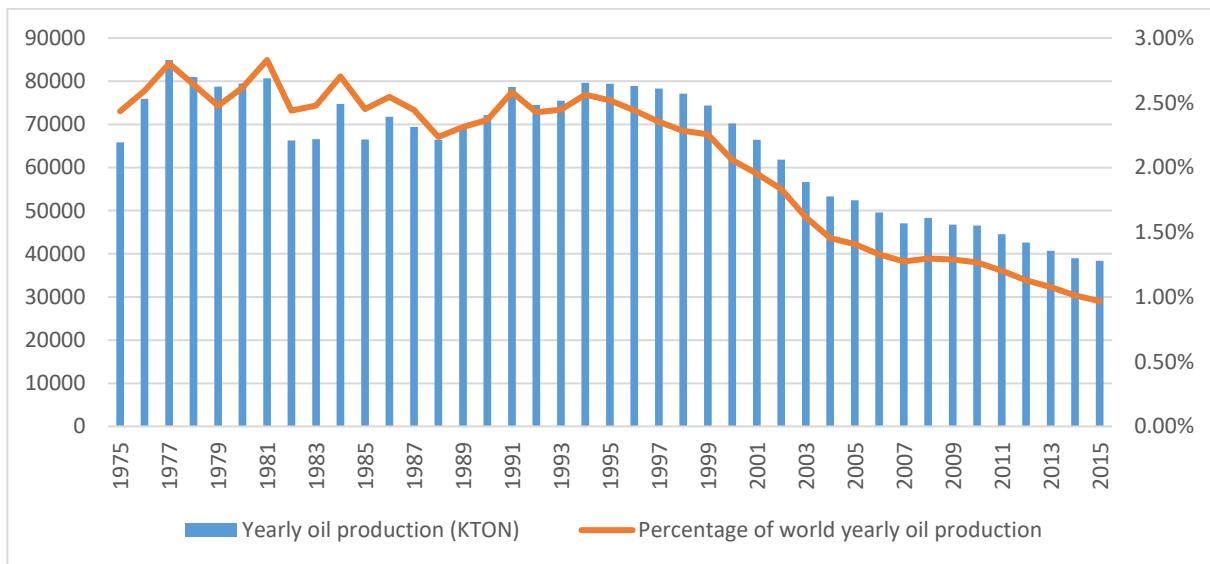


Figure 19: Oil production in Indonesia (OECD data, 2016)

The following are selected measurement to assess development in Indonesia over the years.

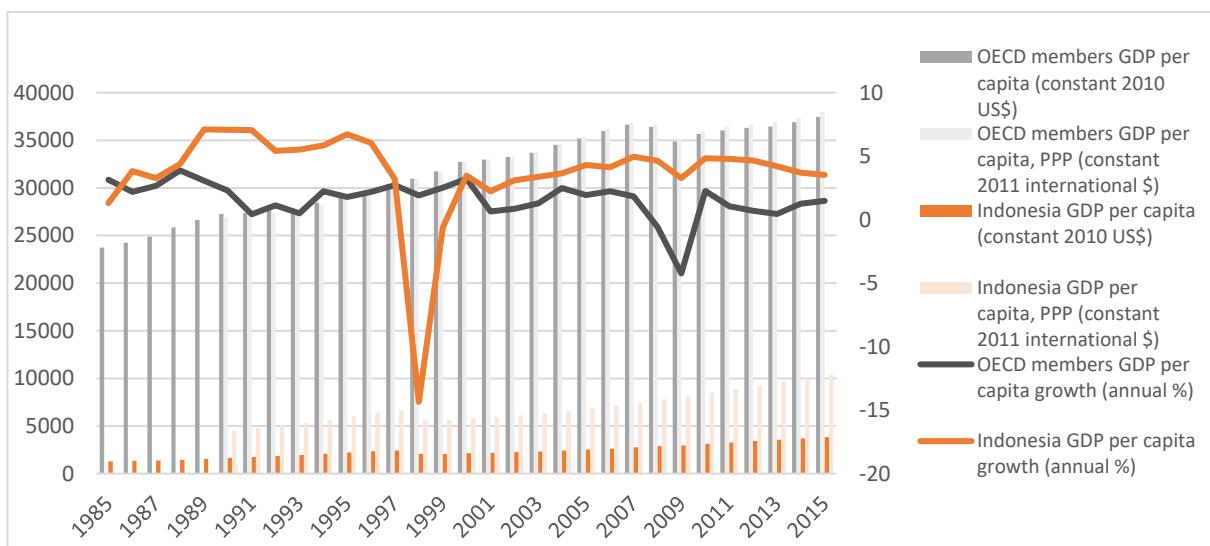


Figure 20: GDP growth in Indonesia vs. OECD (World Bank data, 2016)

After the communist government was replaced in the late 60s, Indonesia has been experiencing constantly high levels of economic growth. This was marked by a shift from agricultural dependence to a focus on services and knowledge-intensive manufacturing (Amuzegar, 1999). Its **GDP growth**

rate was very high during the 90s until the sharp fall of oil prices caused by the Asian Financial Crisis, which hit Indonesia hard. Nevertheless, it rapidly recovered and has had stable moderate growth ever since. The World Bank classifies Indonesia as a Lower-Middle-Income economy.

In-line with its GDP, Indonesia's **Human development** classification is Medium (United Nations Development Programme, 2016). It has been however increasing at a steady rate, faster than OECD countries. What is more, its amount of population living under poverty has been decreasing very fast. From a value of 70% in 1984 to 8% in 2014, it represents an important improvement for the poorest. Regarding **inequality**, its GINI index was 39 in 2013, a value also ranked as Medium (World Bank data, 2016).

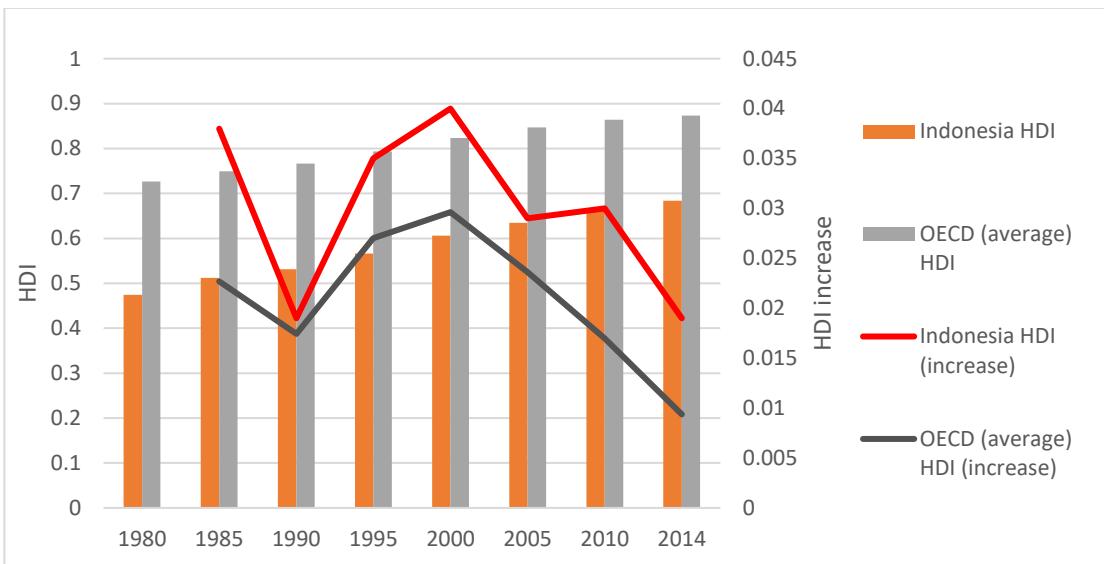


Figure 21: Evolution of HDI in Indonesia vs. OECD (United Nations Development Programme, 2016)

Regarding **unemployment** in the labour force, while values were very low in the 80s (averaging 2.8%) they rapidly increased in the 90s and early 2000s (reaching 11% in 2005), and have been steadily decreasing ever since (6% in 2014). As for the labour force with tertiary education, their employment rate has historically been higher than the rest of the population (World Bank data, 2016).

As for **educational measurements**, values have historically been low. Indonesia's expenditure on education was only 0.8% of GDP in 1989, and although it has been slowly increasing it remained below 3% until 2007 (The OECD has been more or less steady in the range of 5%). As a result of this, the quality of the primary education is relatively low, even though since the 70s a policy to foster it has been in place (Tordo & Anouti, 2013). Also, the duration of compulsory education used to be 6 years, although it increased to 9 in 2003 (OECD 10 years). The percentage of the population with tertiary education was also at the low 3% in 1996, and it has slowly increased to 8.5% in 2013, a little amount when compared to the OECD's 32%. In general, educational levels remained low for many years, and effective measures have only been starting to take form since the mid-2000s (World Bank data, 2016).

Also, **R&D expenditure** has chronically been very low in the Indonesia. Its average value since 2000 is only 0.07% of GDP, whereas the OECD's average is 2.2% for the same period (World Bank data, 2016).

Concerning measurements related to **fostering local business activity** in the country, the values are nowadays quite positive. However, the situation has improved considerably since the days of the president Suharto rule (1968 to 1998), where business was done in a centralized way. This time was characterized by high levels of bureaucracy, corruption and weak governance (Tordo & Anouti, 2013).

Nevertheless, it can be seen in the following table that bureaucracy remains still a significant impediment to business development.

Country	Measurement	2005	2010	2015
Indonesia	Cost of business start-up procedures (% of GNI per capita)	101.7	25.8	19.8
	Start-up procedures to register a business (number)	13	11	12
	Time required to start a business (days)	164	49	47.8
OECD avg.	Cost of business start-up procedures (% of GNI per capita)	9.10	5.95	3.99
	Start-up procedures to register a business (number)	6.97	5.85	5
	Time required to start a business (days)	23.69	13.55	8.52

Table 8: Selected Ease of doing business measurements in Indonesia vs. OECD (World Bank data, 2016)

Regarding local companies' **access to credit**, a similar pattern can be seen. The current values of depth of credit information index is 6 (out of a maximum value of 6), and its strength of credit legal rights index is also 6 (out of a maximum value of 10). This further indicated that the business environment is, nowadays, improving (World Bank data, 2016).

Overall, the World Bank ranks Angola in the position 91st in the Ease of Doing Business index, around the middle of the list.

As for **monitoring procedures**, the World Bank's Time Required to Enforce a Contract measurement value has averaged 490 days since 2003, a duration slightly below the OECD average of 519 days for the same period (World Bank data, 2016). Monitoring capabilities are strong today.

Indonesia's **infrastructure quality** is – and has historically been – poor, serving as an important limitation for business development. Studies show that this factor is particularly a strong deterrent to improving local capabilities (Schwab, 2011).

Finally, **corruption** represents a major problem for Indonesia. Its Corruption Perception index score's average value since 1998 has been of 25 (out of 100, which means zero corruption), this value is notoriously obscured by an OECD average of 69.3 in the same time period (Transparency International, 2015). A study estimated that in 1997 GDP was 63% lower than it could have been

because of corruption (Idris, 2012). Although improvements have been made, they have been small and corruption remains a major issue.

2. Local Content Policies applied

Since 2001 a rounded set of legislative requirements have been in place. These include employment, procurement and training regulations. No policy addresses research and development. Overall, the policies focus mainly on fostering domestic firms' competitiveness in the upstream sector.

Regarding the **hire of nationals**, regulations were implemented in 2005 aiming at increasing the share of domestic workforce. Foreign personnel can only be hires when no locals can be found with the relevant skills. Moreover, priority always has to be given to Indonesian nationals (Tordo & Anouti, 2013).

Furthermore, operators' recruitment processes have to be carried out in coordination with the local regional authorities, meaning priority has to be given to the people in the corresponding area of operation (Tordo & Anouti, 2013).

Finally, employment targets are negotiated by the regulating authority according to the skill level requirement and the phase of the project (development or production) (Tordo & Anouti, 2013).

Concerning the **sourcing of goods and services to local providers**, targets are set according to the percentage of local content employed in the upstream service and goods providers. The holistic method uses an extensive series of differentiator rules weighting the value of the contract, the number of domestic providers available, the percentage of local content achieves by the upstream companies, and the category of the goods.

In general – and since the scope of this work is not to go into the deeper details of the legislation's formulae –, the following main point will be exposed:

- There is a contract tender price normalization, giving advantage to bids from companies with a higher percentage of local content.
- For services, if the contract value is over US\$100,000, a providers need to have a minimum of 35% local content.
- For goods, categories are used to determine the provider's local content requirements according to the current state of the local capabilities in the production of that specific good. The following table summarized these constraints (Tordo, Warner, Menzano, & Anouti, 2013).

Good category	Description of the category	Requirements for providers to participate in bidding				
Mandatory goods	At least one local provider has ≥40% local content	Minimum	15%	local content		
Maximized goods	The domestic provider with the most local content is between 25% and 40%	Minimum	10%	local content		
Empowered goods	The domestic provider with the most local content is ≤25%	Minimum	5%	local content		

Table 9: Local content requirements in the provision of goods in Indonesia (Tordo, Warner, Menzano, & Anouti, 2013)

Note: Percentage of local content is calculated in Indonesia as the ratio of the domestic cost of the finished good/service over the total cost of the finished good/service.

In general – and when compared to other countries' regulation – the requirements are quite moderate, although they make involvement and coordination with domestic entities an obligation.

As to **training requirements**, regulation requires operators to deliver training and educational programs to the local workforce (in Indonesia and abroad), as well as other skill transfer methods, such as mentoring programs. The costs of such initiatives are cost recoverable. No specific monetary commitments are in place (Tordo & Anouti, 2013).

3. Outcome

After independence, the government dedicated most of the oil resources to achieve food security and reduce poverty, two matters that have been positively improved over the years (Tordo & Anouti, 2013). Other objectives such as improvement in education and infrastructure managed to be enhanced to a lesser degree.

Later, measures to leverage on this industry to foster development beyond the resources generated by oil revenues were implemented, yet with mixed results.

Regarding the local employment measures, successful results have been achieved. In the exploration activities, 88% of the workforce were Indonesians in 2011 which represents roughly 1,300 employees. For production activities the value was 96%, which adds up to more than 26,000 jobs (BPMIGAS, 2011).

Concerning the domestic sourcing of goods and services, even though the policy implemented was comprehensive, reasonable and the regulatory framework has been relatively effective, a positive spillover effect has not been achieved. Likewise – and considering Indonesia's long history of oil extraction –, local content targets have not managed to be achieved (Heum P. , Quale, Karlsen, Kragha, & Osahon, 2003).

The majority of the local goods and services providers are small companies that lack the technological knowledge and the capacity to compete even at the national level. Moreover, as for

the Indonesian classification of goods, currently 70% of the companies are considered as “Empowered”, meaning their costs come from less than 25% local content sources (Directorate General of Oil and Gas, 2011).

Regarding the tender price normalization, only very few local companies have managed to take advantage of this benefit (less than 19% in 2011) (Tordo & Anouti, 2013).

It has been mentioned that the complicated regulatory atmosphere has served as a deterrent to a market-oriented provision of services (Tordo, Warner, Menzano, & Anouti, 2013). Adding to this, the historically low expenditures in R&D, high corruption, and poor infrastructure probably further operated as restraints for local business development.

Finally, the domestic training efforts have given small but positive results. Between 2008 and 2011 the amount of personnel engaging in any sort of skill-development opportunity raised from 212 to 396 (BPMIGAS, 2011).

5. Kazakhstan

1. Context



Figure 22: Geographical location of Kazakhstan

Before Kazakhstan's independence from the Soviet Union in 1991 its oil resources were managed by the USSR's centralized government and were not of vital importance to the union. However, after independence – and even more so with the passing of the years – oil became a critical resource for Kazakhstan's economy (Johnston & Johnston, 2001). In 2010 it accounted to 46.5% of the government's revenues (Coronel, Rozhkov, & Al-Eyd, 2011).

Between 1991 and 2000 the industry was characterized by the strong presence of international oil companies. Reliance was put on these firms to develop the local capacities, but since no clear legislation was in place, most employment, goods and services were sourced from abroad (Kalyuzhnova & Kaser, 2005). It's important to note that during this period the government's focus was on increasing extraction and maximizing tax revenue from oil (Luong, 2010).

Between 2000 and 2010 important changes were seen. The discovery of massive reserves led to a government interest in securing control of oil as a key vehicle for development. The state-owned company KazMunayGas was founded in 2002 to serve as a monitoring entity for the industry and contracts were renegotiated with international firms (Tordo & Anouti, 2013). Some local content requirements were also introduced during this period (MENAS, 2009).

The global financial crisis and the fall of oil prices hit Kazakhstan particularly hard (earns and young 2011). This led to a national sentiment to better take advantage of national oil resources by using local capabilities and thus foster local business development. In 2010 a series of local content requirements were put in place, including dedicated monitoring procedures (Tordo & Anouti, 2013).

The rapid increase in **oil production** in the early 2000s because of the new reserves discoveries can be observed in the following figure.

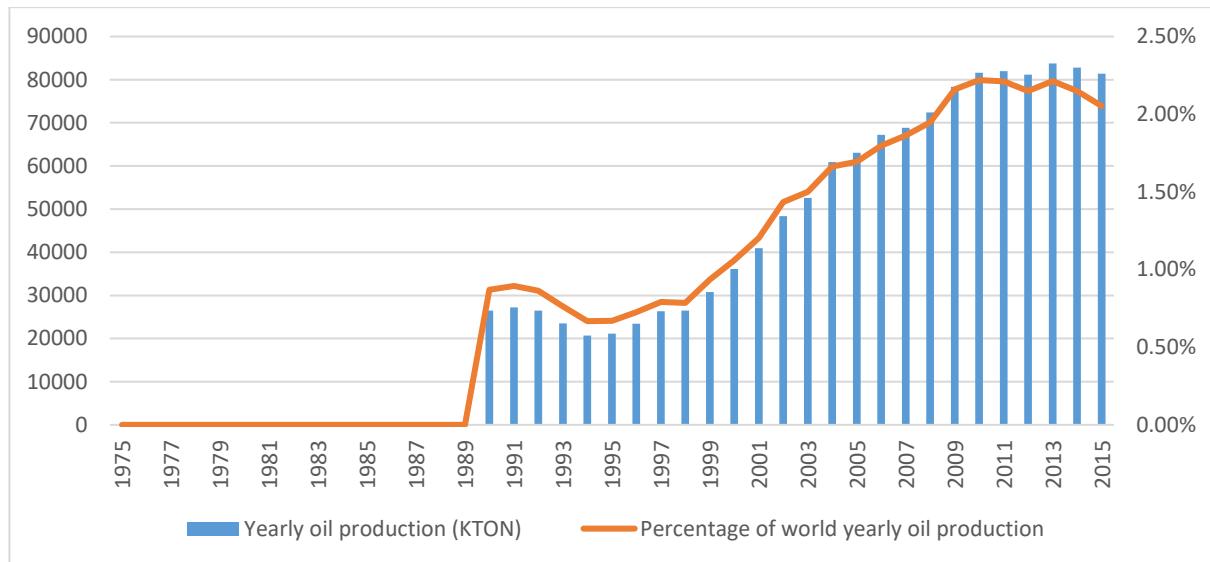


Figure 23: Oil production in Kazakhstan (OECD data, 2016)

The following are selected measurement to assess development in Angola over the years.

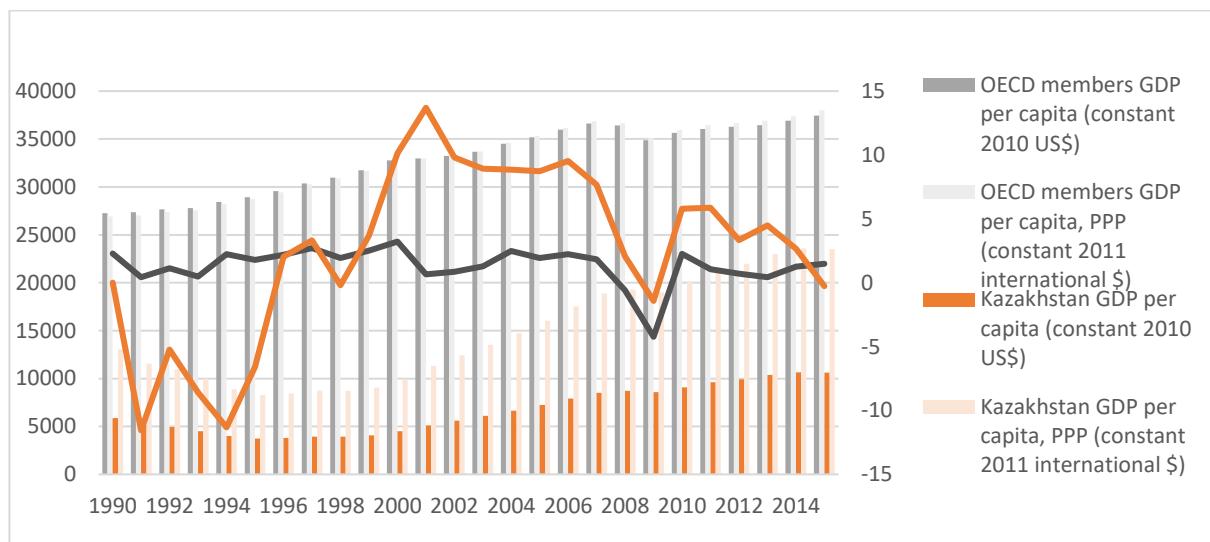


Figure 24: GDP growth in Kazakhstan vs. OECD (World Bank data, 2016)

The World Bank classifies Kazakhstan as an Upper-Middle-Income economy. Its **GDP growth rate** was negative the years after independence partly because of a period of hyperinflation. In 1998 its economy was hit by the Russian financial crisis. During the 2000s Kazakhstan saw major increases

in GDP due to high oil prices, its currency devaluation, privatization measures and increased macroeconomic stability (Tordo & Anouti, 2013).

Because of Kazakhstan's high dependence on oil revenues – which account to roughly 70% of its exports since 2005 – the fall of oil prices during the financial crisis hit the county's GDP severely (Tordo & Anouti, 2013). Similarly, current falls help explain the latest sluggish growth.

Though its GDP is not so high, Kazakhstan's **Human development** classification is High (United Nations Development Programme, 2016). What is more, its amount of population living under poverty has dramatically decreased within two decades, from 10.5% of the population in 2001 to only 0.04% in 2013. Regarding **inequality**, its GINI index has been Low since the country's independence. From an already low value of 32.6 in 1993, inequality has been steadily decreasing, reaching a coefficient of 26.3 in 2013. This is among the lowest values in the world (World Bank data, 2016).

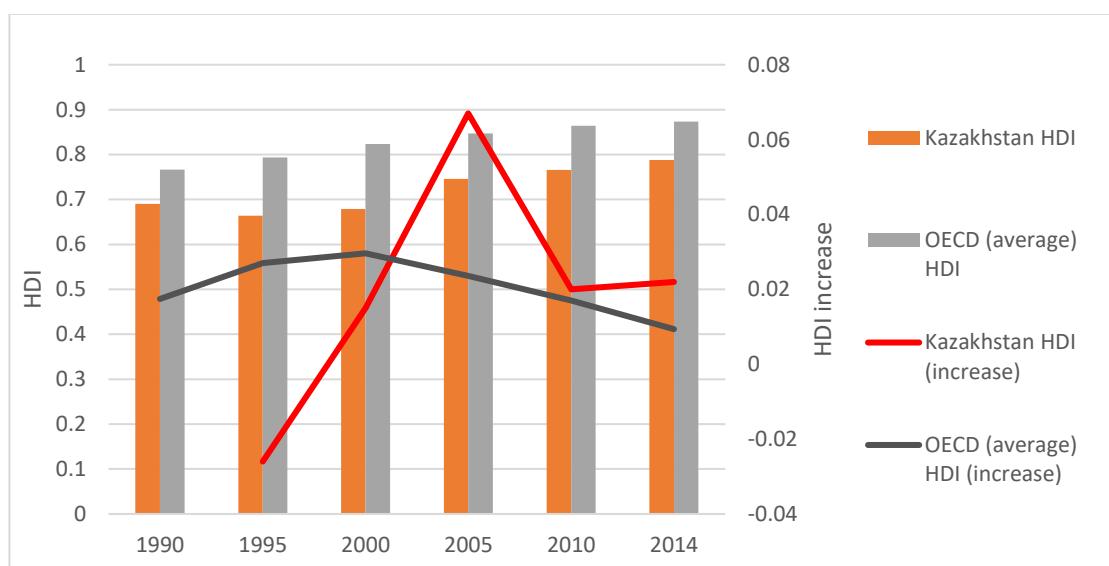


Figure 25: Evolution of HDI in Kazakhstan vs. OECD (United Nations Development Programme, 2016)

Regarding **unemployment** in the labour force, its values have steadily decreased since 1995 from 11% to 5.1% in 2014 (World Bank data, 2016).

As for **educational measurements**, Kazakhstan was left with a robust system of primary and secondary education from the Soviet Union. After independence however, expenditure on education began to decrease as percentage of GDP, from 4% in 1995 to 2.6% in 2008 (OECD expenditure has remained steady at around 5% since 2002). Nevertheless, literacy rates, primary, secondary and even tertiary educational attainments are almost in the range of OECD's average (World Bank data, 2016). It's worth noting though, that research suggests that the Soviet heritage has left the educational system providing student with a lack of creativity, initiative and independent thinking (Burkhalter & Shegebayev, 2012). This can be corroborated by a survey to international oil companies in the country where it has been shown that the lack of proactivity in the local workforce is considered to be an issue, among others (Kalyuzhnova, 2008).

Regarding **Research and Development** expenditure, the values have been steady over time, and historically low. Between 1997 and 2013 Kazakhstan's average expenditure was of 0.21% of GDP, whereas the OECD's average was 2.3% during the same period (World Bank data, 2016).

Concerning measurements related to **fostering local business activity** in the country, the results are mixed.

On one side, measurements regarding starting new businesses are quite positive compared to OECD standards, as can be seen in the following table.

Country	Measurement	2005	2010	2015
Kazakhstan	Cost of business start-up procedures (% of GNI per capita)	9.9	1	0.5
	Start-up procedures to register a business (number)	9	7	6
	Time required to start a business (days)	31	25	11
OECD avg.	Cost of business start-up procedures (% of GNI per capita)	9.10	5.95	3.99
	Start-up procedures to register a business (number)	6.97	5.85	5
	Time required to start a business (days)	23.69	13.55	8.52

Table 10: Selected Ease of doing business measurements in Angola vs. OECD (World Bank data, 2016)

Moreover, local companies' **access to credit** seems to be rather favourable. Kazakhstan depth of credit information index is very positive. Nevertheless, its strength of credit legal rights index is just 4 (out of a maximum value of 10) (World Bank data, 2016).

On the other side, studies suggest that bureaucracy is a major impediment to business development in the country. It has been argued that the centralization of the public sector – a scheme inherited from the Soviet Union – have resulted in insufficient transparency and accountability (Arkhipov, Brennan, Elfond, Lv, & Omarova, 2010).

Moreover, a survey carried out by the World Bank in 2011 showed that cross-border trading and working around construction permits are two major issues for business in Kazakhstan (World Bank, 2011).

Overall, the World Bank ranked Kazakhstan in the position 35th in the Ease of Doing Business index in 2016, a major advance from the position 51st in 2015.

As for **monitoring procedures**, the World Bank's Time Required to Enforce a Contract measurement has been stable in the country and averaged 384 days since 2003. This value is lower than the OECD average of 519 days for the same period. Kazakhstan's contract enforcement capabilities are robust (World Bank data, 2016).

Kazakhstan's **infrastructure quality** used to be considered good in terms of roads and railroads. Nevertheless, it has been deteriorating at a fast pace (United Nations, 2006). In 2016 the value for

the Quality of Trade and Transport-related Infrastructure was 2.8 (out of a maximum value of 5). To compare, the OECD's average in 2016 was of 3.7 (World Bank data, 2016).

Finally, **corruption** perception has historically been very high in Kazakhstan, with nearly no improvement over the years. Since 1999 its Corruption Perception index score has averaged 25.7 (out of 100, which means zero corruption), this value contrasts notoriously with the OECD average of 69.2 for the same time period (Transparency International, 2015).

2. Local Content Policies applied

Since 1995 a series of local content legislations have been put in place as separate requirements. However, it was not until 2010 that a complete policy was implemented regarding this topic. These policies follow a holistic approach aiming at increasing local employment, the use of locally produced goods and services, and the training of local personnel. No policies directly aim at increasing R&D expenditure.

Early regulation changes over the years will be briefly displayed:

- In 1995 and 1996 requirements were very broad and unspecific, requiring subcontractors to have a “large” local ownership, and operators to develop local content commitments (MENAS, 2009). They were seen more as Corporate Social Responsibility (Kalyuzhnova, 2008).
- In 2005 and 2007 local content was made mandatory and more specific. KazMunayGas was to own 50% of all new production sharing agreements and determine specific requirements. Furthermore, a positive discrimination was to be applied to local employees during the hiring process, and to local goods and services during the procurement phase (MENAS, 2009).

Since 2010 a new policy has been in place which aim more strongly to foster the development of local enterprises, capitalizing on the links with the oil industry. The idea is to reduce economic dependency on this sector (Tordo & Anouti, 2013). These new regulations established clear targets, rules and monitoring measures, which will be exposed hereafter.

Regarding the **hire of nationals**, the minimum levels for Kazakhstani employees are presented in the following table. Additionally, pay and reward conditions for employees cannot be differentiated by nationality.

Employee Category	2011	2012 and after
Workers	70%	90%
Specialists	70%	90%
Senior Staff/Engineers	50%	70%

Table 11: Local employment requirements in Kazakhstan since 2010 (Republic of Kazakhstan, 2011) (Baker and McKenzie, 2011)

Concerning the **sourcing of goods and services to local providers**, operators have to follow detailed and transparent procurement procedures.

Additionally, preferential treatment is given to upstream domestic companies, entitling them to a 20% price premium in the bidding for contracts (Meaning they will win a contract even if their price is less or equal to 20% more of the lowest foreign company's bid) (Tordo & Anouti, 2013).

Strict penalties are in place if the previous rules are not complied (Ministry of Oil and Gas, 2011).

Government self-imposed targets were also put in place – however without penalties –, as shown in the following table. It's important to note that non-locally owned firms (less than 50% local ownership) cannot participate in public procurement bids.

Type of procurement	Minimum local content requirement for goods	Minimum local content requirement for services
Public procurement	20%	15%
Private procurement	11%	82.5%

Table 12: Kazakhstan self-imposed procurement targets (Tordo, Warner, Menzana, & Anouti, 2013)

Note: The formula for calculating local content is relatively extensive and won't be explained here. It should be noted however, that it's roughly based on the costs of the goods/services required for the execution of the contract, and the precedence (foreign or local) of those goods/services. What is more, all operators are required to quantify local content using the same measurement system (Tordo & Anouti, 2013).

As to **training requirements**, regulations are less specific and require operators to allocate a minimum budget for training and education purposes (Republic of Kazakhstan, 2010).

Accompanying local content policies implemented include

- Interest-free loans and advance payments for upstream subcontractors.
- Fostering online procurement mechanisms.
- Charting industry required goods and services to potential local businesses.
- Aiding local companies to obtain certifications (Kazakhstan Ministry of Oil and Gas, 2011).

Finally, KazMunayGas has been carrying out an agenda for local business development since 2009 (Tordo & Anouti, 2013).

3. Outcome

The first wave of local content policies applied in the 90s were mostly unsuccessful in the objectives of increasing local employment and procurement. The fact that requirements were wide-ranging and not specific resulted in operators mostly eluding them (Tordo & Anouti, 2013).

As for the initiatives implemented since 2010, the results have been more favourable. In general, local content levels have been increasing when quantified under the now unified measurement protocol. This being said, non-compliance by some operators has been an issue, as it has been argued that different sorts of capacity gaps remain in the economy.

First, it's key to note that the introduction of the unified mandatory mechanism for measuring local content progress to be used by all operators has been successful in increasing the filed reports (to 99% in 2011 from just 50% in 2008) and in reducing ambiguities in the information published by companies, thus effectively allowing to measure improvement (Ministry of Oil and Gas, 2012) (Tordo & Anouti, 2013).

Regarding employment, in 2012 96.6% of personnel were Kazakh nationals, well above the required targets (Kazakhstan Contract Agency, 2012).

Concerning local sourcing of goods and services, the percentage of local content according to the unified mechanism has shown increases over the years. For instance, the values for 2010 and 2011 can be seen in the following table.

Type of procurement	Percentage of local content achieved in 2010	Percentage of local content achieved in 2011
Goods	10.3%	12.2%
Services	60.6%	69.1%

Table 13: Local content achievement in Kazakhstan in 2010 and 2011 (Ministry of Oil and Gas, 2012)

Though local content in goods is still low, the values show an increase. Higher percentages of local content can be appreciated in goods that require lower investment and technological know-how (Tordo, Warner, Menzano, & Anouti, 2013).

For services the numbers are more positive and reflect a greater increase. Higher percentages of local content can be appreciated in services that require local knowledge, such as legal services, transportation, insurance and customs clearance services (Tordo, Warner, Menzano, & Anouti, 2013).

Again, a greater percentage of local content can be seen in onshore operations than offshore ones (Kazakhstan Contract Agency, 2012). This can also be explained by the difference in investment costs and expertise required.

As for training measures, over US\$10 million were assigned to this purpose in 2011, benefiting just over 1,000 people. This is a relevant figure when bearing in mind that in the same year all operators had a total of around 70,000 employees (Kazakhstan Contract Agency, 2012).

Finally, it's important to mention that although local content levels have increased, possible supply bottlenecks have aroused due to the stricter regulations. This can be reflected by an increasing number of non-compliance with the rules immediately after implementation in 2010 (Ospanova,

2010). For instance, in 2011 54 companies violated procurement rules (Kazakhstan Contract Agency, 2012).

It has been argued that targets are too ambitious and operators are facing the following problems:

- Not enough local providers of goods and services for offshore developments.
- Low technological capacity growth in local suppliers.
- Deficiency in availability of qualified local personnel for skilled positions.
- Not enough investment for local businesses to grow (Tordo, Warner, Menzano, & Anouti, 2013).
- Too strong government sanctions for non-compliance, which have a deterrent effect in investment when coupled with adequate local business capacity development.
- High state bureaucracy (Ospanova, 2010).
- Goods and services quality assurance as to international standards (Kalyuzhnova, Nygaard, Omarov, & Saparbayev, Local Content Policies in Resource-Rich Countries, 2016).

In general, and although local content levels have increased, operators don't seem to be satisfied with the latest requirements, claiming they bring negative welfare effects (Kalyuzhnova, Nygaard, Omarov, & Saparbayev, Local Content Policies in Resource-Rich Countries, 2016)

6. Malaysia

1. Context



Malaysia has been an oil producer since 1910, yet it wasn't until the 1980s that it became relevant in the international scene. Before this, the industry was mostly dominated by big international firms (Tordo & Anouti, 2013).

In 1974 the national oil company Petronas was founded in a political context of nationalization of the economy, with the objective of gaining control over the sector (Bank Pembangunan, 2011).

Figure 26: Geographical location of Malaysia
negotiating all further extraction agreements with foreign oil companies (Heum P., Quale, Karlsen, Kragha, & Osahon, 2003).

Therefore, it was given total ownership and exclusive right to mine the country's oil resources. Additionally, it had the duty of

Even though it has faced fierce competition, Petronas has managed to become a big international player in the oil industry, with operations in many countries. Also, it has grown operations in other

unrelated industries, such as banking and car manufacturing, serving as a national company that “saves” stressed local enterprises of national strategic interest (Heum P., Quale, Karlsen, Kragha, & Osahon, 2003).

Nowadays, oil remains a key source of government income, accounting to almost half of total tax revenues in 2009 (PetroMin, 2011). What is more, it adds to about 16% to 20% of Malaysia’s GDP (Tordo & Anouti, 2013).

As mentioned, **oil production** increased rapidly in the decade of the 80s. However, the last 20 years have seen a moderate but steady depletion of the reserves. If current production remains steady, oil reserves are expected to last around 25 more years (Energy Information Administration, 2011).

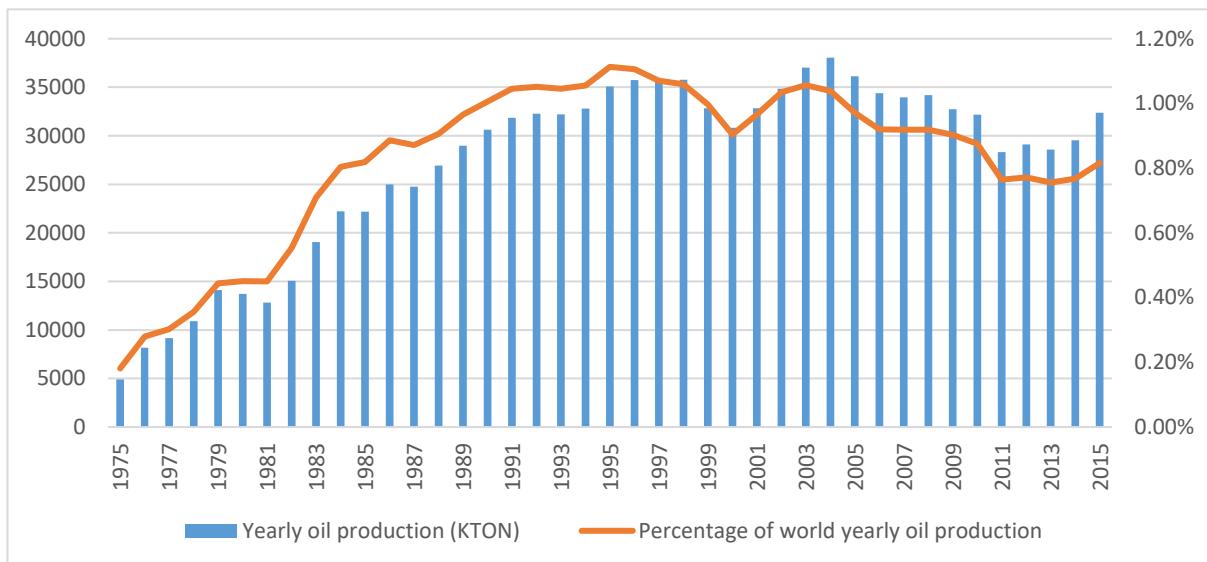


Figure 27: Oil production in Malaysia (OECD data, 2016)

The following are selected measurement to assess development in Malaysia over the years.

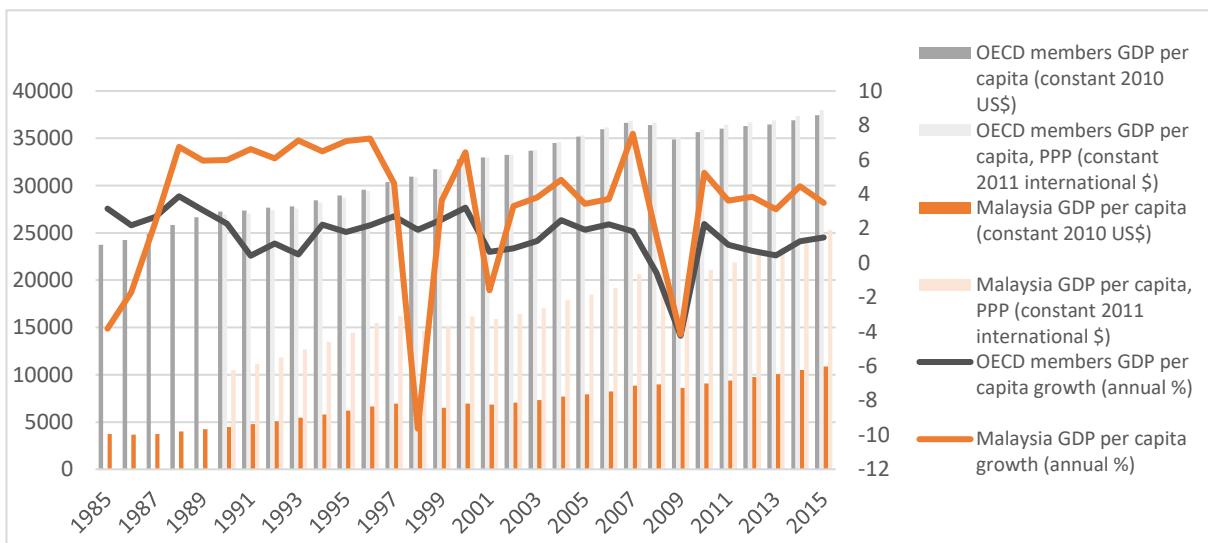


Figure 28: GDP growth in Malaysia vs. OECD (World Bank data, 2016)

The World Bank classifies Malaysia as an Upper-Middle-Income economy. However, when comparing at purchasing power quantities, the levels are quite higher and closer to OECD average

ranges. As for **GDP growth**, the important decrease in the late 90s was in-line with the Asian Financial Crisis at that time, as well with a sharp decrease in international oil prices between 1997 and 1998. The economy managed, however, to recover quite fast (and quicker than neighbouring countries). A similar scenario and result can be seen during the world crisis in 2009. Overall, economic resilience can be observed (Tordo & Anouti, 2013).

In-line with GDP growth, Malaysia's **Human Development Index** has also been increasing over time, with periods of slower increase matching those of financial shocks. Its HDI is currently classified as High (United Nations Development Programme, 2016). Poverty levels are low and have steadily been decreasing over the years. Values have declined from 2.88% in 1984 to only 0.29% in 2009. Regarding **inequality**, its GINI index is regarded as High. Values for measurement have been steady over the years (averaging 47 between 1984 and 2009) and no significant improvement can be concluded (World Bank data, 2016).

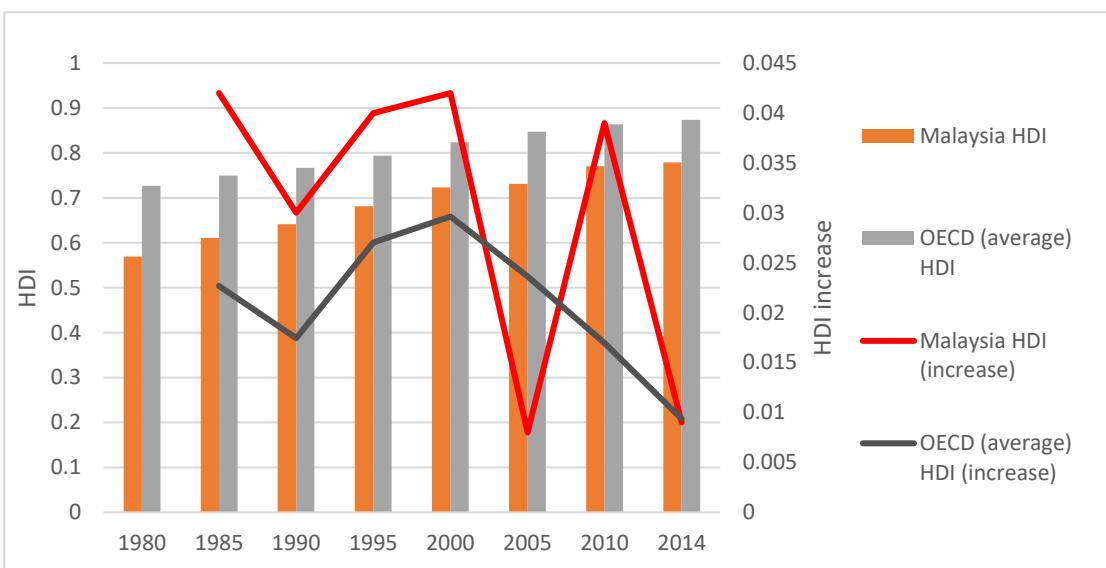


Figure 29: Evolution of HDI in Malaysia vs. OECD (United Nations Development Programme, 2016)

Regarding **unemployment** in the labour force, its values have remained very low and constant over the years, averaging 3.3% since 1995 (World Bank data, 2016).

As for **educational measurements**, values are fairly good. Government expenditure on education was higher than OECD average between 1980 and 2005 (average 5.9% versus average 4.9% of GDP), and has been on par ever since. What is more, this represented outflows of over 20% of the total Malaysian government expenditure during those years (compared to OECD's averages of 12%), implying a substantial promotion of this area. As for results, labour force with tertiary education sits nowadays at around 23%, a high value compared to countries with similar GDP levels (OECD 32%) (World Bank data, 2016).

Malaysia's R&D expenditure was at a very low 0.2% of GDP in 1996 (compared to OECD's 2.1%). However, it has rapidly increased over the years. Nowadays, it's 1.3% of GDP (OECD 2.4%) (UNESCO Institute of Statistics, 2016).

Concerning measurements related to **fostering local business activity** in the country, the values used to be moderate, yet now are very favourable.

Although a relatively inauspicious business environment was faced by Malaysia in past years (Tordo & Anouti, 2013), the country has managed to increase the standards and reduce bureaucracy noticeably.

Country	Measurement	2005	2010	2015
Malaysia	Cost of business start-up procedures (% of GNI per capita)	26.6	17.5	6.7
	Start-up procedures to register a business (number)	10	9	6
	Time required to start a business (days)	37.5	17.5	7.5
OECD avg.	Cost of business start-up procedures (% of GNI per capita)	9.10	5.95	3.99
	Start-up procedures to register a business (number)	6.97	5.85	5
	Time required to start a business (days)	23.69	13.55	8.52

Table 14: Selected Ease of doing business measurements in Malaysia vs. OECD (World Bank data, 2016)

Similarly, local companies' **access to credit** used to be a relatively problematic issue (Tordo & Anouti, 2013), but important improvements have been made. Malaysian's high current values in depth of credit information index and credit legal rights index are a proof of this (World Bank data, 2016).

Overall, the World Bank ranks Malaysia in the position 23rd in the Ease of Doing Business index, demonstrating a very favourable business environment in general. This position is even above OECD's average of 27th.

As for **monitoring procedures**, the World Bank's Time Required to Enforce a Contract measurement value is 425 days in 2016 (up from 600 in 2003). This value is slightly lower than the OECD average of 545 days. The already-positive value has manged to improve over the years, while in the rest of the world it has been increasing, on average (World Bank data, 2016).

Malaysia's **infrastructure quality** is – and has historically been – very good, serving as an important competitive factor for business development. Its Quality of Trade and Transport-related Infrastructure averaged 3.5 between 2007 and 2016 (out of a maximum value of 5) and its Quality of Port Infrastructure 5.6 in the same period (out of a maximum value of 7). These values are akin to OECDs', which averaged 3.6 and 5.1 respectively, for the same time intervals. (World Bank data, 2016).

Finally, **corruption** perception has persisted in moderate values since 1998. From this year until 2015 its value has been an average of 49 (out of 100, which means zero corruption), this measurement is outshined by an OECD average of 69.2 in the same time period, evidencing a clear obstacle for development (Transparency International, 2015). Measurements have been taken by the government to address this issue, however with very little effects (Tordo & Anouti, 2013).

2. Local Content Policies applied

A series of legislations have been put in place in 1966, 1974, 1996 and 2010 which configure Malaysia's local content regulations (Tordo, Warner, Menzano, & Anouti, 2013). These measurements cover a variety of areas, including local sourcing of goods and services, training programs and technology transfer. While no policies address local employment quotas, Petronas' approval is required to hire foreigners (Tordo & Anouti, 2013).

Regarding the **sourcing of goods and services to local providers**, regulations are quite strict, requiring the following

- Oil operators are required to purchase all goods and services from local companies. If not available locally, they can only buy directly from the manufacturer abroad.
- Any such case requiring procurement from foreigners needs the prior approval of Petronas (Tordo & Anouti, 2013).

This being said, foreign entities can participate if they partner with locals. For this, they are limited to a 30% equity stake. All these measures are enforced directly by Petronas (Department of State, 2011).

Since 2010 it is part of the government's objectives to foster the provision of services and equipment by foreign and local companies established in the country. The aim of these measures is to increase GDP, generate technology spillovers and create new local jobs (Tordo & Anouti, 2013).

Concerning **training and R&D requirements**, since 1996 operators are mandated to provide local employees with training programs. This specification was directly aimed at replacing foreign personnel, and included variable minimum monetary commissions. However, the costs are later tax deductible (Tordo, Warner, Menzano, & Anouti, 2013).

It's important to note that many educational measures were directly taken by Petronas without legislation requirements. Such initiatives include the creation of educational institutions, training facilities, and sponsoring students for university programmes (Tordo & Anouti, 2013).

Furthermore, operators have to pay 0.5% of oil operations profits to a research fund every year (Tordo & Anouti, 2013).

Finally, the Malaysian government encourages investment to develop the local capacity building. These incentives come in the form of tax breaks, allowances and R&D incentives (Malaysian Investment Development Authority, 2011). In turn, these incentives are tied to local content and technology transfer requirements, among other factors. It has been noted by the authorities however, that they intend to phase-out these incentives over the long run (Department of State, 2011).

3. Outcome

Since the creation of Petronas in 1974 and the government control of the sector, local content has gained momentum in Malaysia. Stability in government objectives to foster industrialization have managed to achieve relative positive results in this matter, allowing to improve education, infrastructure, and to a lesser degree business development.

Since 2010 a more business-oriented approach has been taken by the authorities, changing the focus from maximizing local content levels to a value-creation, sustainable growth approach.

As data suggests, Malaysia has effectively managed to increase the level of education of the workforce, specially achieving high levels of tertiary education among its people. Yet these efforts have mainly been championed by Petronas, by the development of specialized training programs. Heavy investments were made by the government as well, as data shows. It's worth noting that Malaysia has historically faced a skill-shortage, meaning that measures have not been enough, or have not yet borne fruits. About 90% of Malaysia's workforce is below 30 years old and there is a severe brain drain to other countries, two arguments that could answer the previous issue (Tordo, Warner, Menzano, & Anouti, 2013).

Therefore, it could be argued that the establishment of hiring quotas could have created a severe employment bottleneck, thus making it more logical to give more flexibility to the market.

Regarding the local sourcing of goods and services, it has been argued that nowadays the local providers are still less competitive than foreign companies. Nevertheless, a few local firms have managed to grow and become relevant, although facing lower profits. More specifically, local capacity has been low in installation, procurement and engineering (Tordo & Anouti, 2013).

However, measures were taken by the government, by fostering joint ventures with foreign firms.

Since the time of its implementation, the objective to foster the provision of services and equipment by foreign and local companies established in Malaysia has been successful. For instance, the year after implementation, the amount of investment made by international service providers was RM 454 million, 42% higher than the targeted RM 320 million. Moreover, it has successfully been able to accomplish joint ventures between multinational and local service and equipment providers (CIMB, 2012).

Furthermore, employment opportunities have been achieved through the establishment of these joint ventures. This has been attained specially because of the tax incentives given by the Malaysian government to international companies establishing joint ventures in the country to serve as a hub for provision of service and equipment in the region (Tordo & Anouti, 2013).

Overall, Petronas has been key to the development of local content in Malaysia. While an employment gap still exists, measures have been taken and the coming generation of workers are highly educated. As for local business development, the government has realized that with a more

market-based approach aiming at forming joint ventures with local firms a better result can be achieved, so as not to distort their incentives to be competitive (Heum P. , Quale, Karlsen, Kragha, & Osahon, 2003).

7. Nigeria

1. Context



Figure 30: Geographical location of Nigeria

The oil industry in the most populous country in Africa – with over 182 million inhabitants as of 2015 – commenced in the 1930s when international oil companies began onshore exploration in the Niger river delta. However, commercial production didn't start until the late 50s (Heum P. , Quale, Karlsen, Kragha, & Osahon, 2003).

From this time until the 70s Nigeria experienced important political changes. It achieved independence from the United Kingdom in 1960, and underwent a civil war between 1967 and 1970 in which control of the oil resources was of strategic importance. During all this time, the oil sector was mainly dominated by foreign operators (Ovadia, 2016).

In 1969 the Petroleum Act was signed, a law that regulated the upstream supply industry for the first time and conferred the state the exclusive right to exploit the oil resources.

The oil price boom in the second half of the 70s had strong political and economic impact in Nigeria. The government became more and more dependent on its revenues, which led to no other relevant economic activity being developed. In turn, this piloted a series of military coups and conflicts over political control by economic elites (Watts, 1987).

In 1977 the national oil company Nigerian National Petroleum Corporation (NNPC) was established with the objective of managing concession bidding rounds, establishing joint ventures or production sharing agreements with international operators, and fostering local participation in the industry (Heum P. , Quale, Karlsen, Kragha, & Osahon, 2003). These policies were a source of conflict both from foreign companies as well as from local institutions, such as the Chamber of Commerce (Ovadia, 2016).

Over the following years however, these policies failed to give absolute state control of the resources and served mostly as a political method for the elites' rent-seekers to cut a share of the profits, while international players did most of the activities (Ovadia, 2016).

After enormous offshore reserves were discovered in 1995, local content policies began to gain momentum in the late 90s (Heum P. , Quale, Karlsen, Kragha, & Osahon, 2003). Simultaneously,

since 1999 Nigeria finally managed to attain a more stable political rule. Further regulations aiming at increasing local participation in the industry were enacted in the 2000s (Ngoasong, 2014).

Oil production has remained rather stable in volume over the years. Nigeria's participation in the Organization of the Petroleum Exporting Countries (OPEC) since 1971 has meant that the country has been subject to production quotas for extended periods of time (OPEC, 2016).

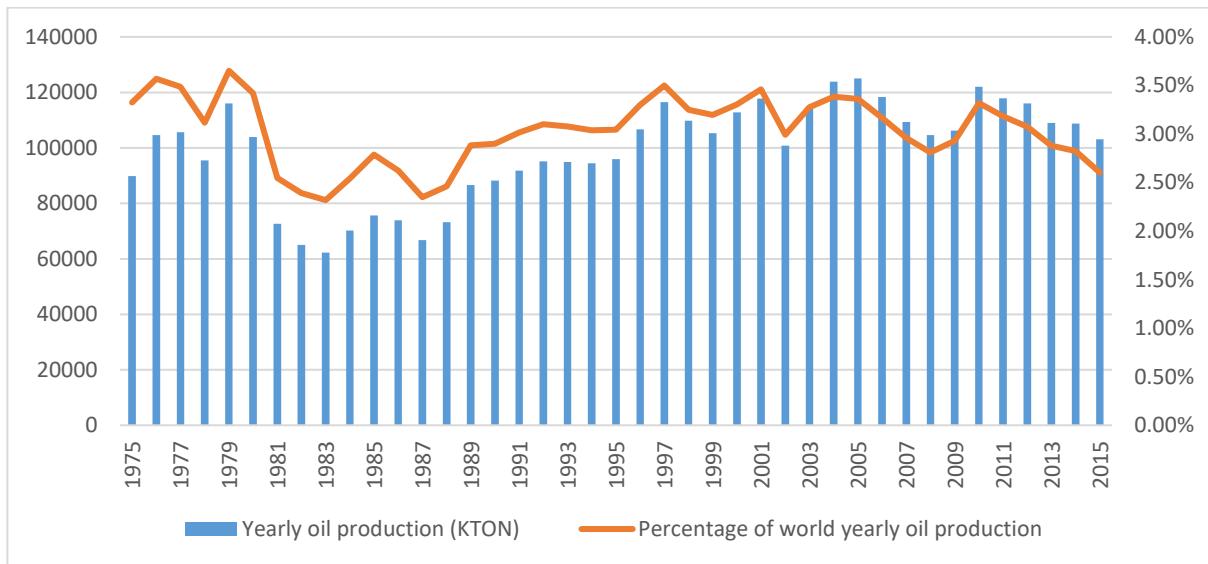


Figure 31: Oil production in Nigeria (OECD data, 2016)

The following are selected measurement to assess development in Nigeria over the years.

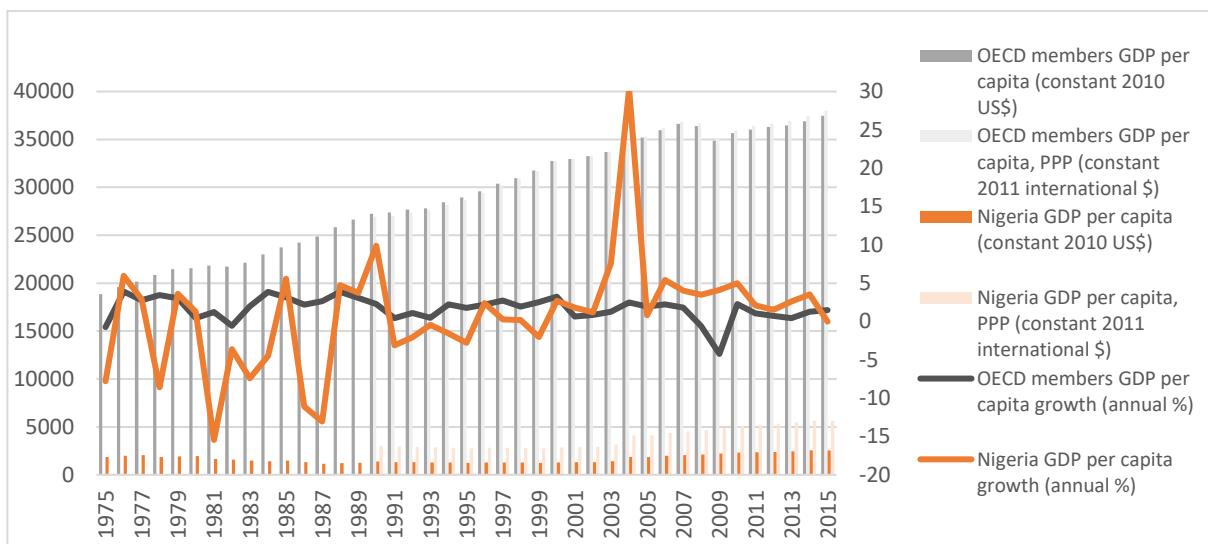


Figure 32: GDP growth in Nigeria vs. OECD (World Bank data, 2016)

The World Bank classifies Nigeria as a Lower-Middle-Income economy. Despite high oil prices during the 70s and 80s, its **GDP growth rate** was volatile with periods of severe recession. This was partly caused by political instability, unstable military dictatorships and mismanagement. Also, Nigerian acquired significant debt during the oil boom in the late 70s to develop infrastructure, which it defaulted upon after the sharp fall of the prices in the 80s. Since the early 2000s and its achievement

of a stable democracy the country has managed to sustain a strong economic growth (Obikili, 2015). Even so, it still remains very far from OECD standards.

In-line with its low GDP, Nigeria's **Human development** classification is currently Low (United Nations Development Programme, 2016). The scarce availability of historical data doesn't allow to draw many conclusions about its change over time, other than that it has been greater than the OECD's average since 2010. Nevertheless, the improvement is rather poor considering the substantial difference in HDI value. What is more, its amount of population living under poverty remains extremely high at 53% in 2009, with virtually zero improvements over the years (for instance, 45% in 1985, 63% in 1996). Regarding **inequality**, its GINI index was 43 in 2009, a value ranked as Medium. Value were around the same levels in the 80s and early 90s, then saw important increases in the late 90s (52 in 1996 for instance), followed by decreases in the 2000s (World Bank data, 2016).

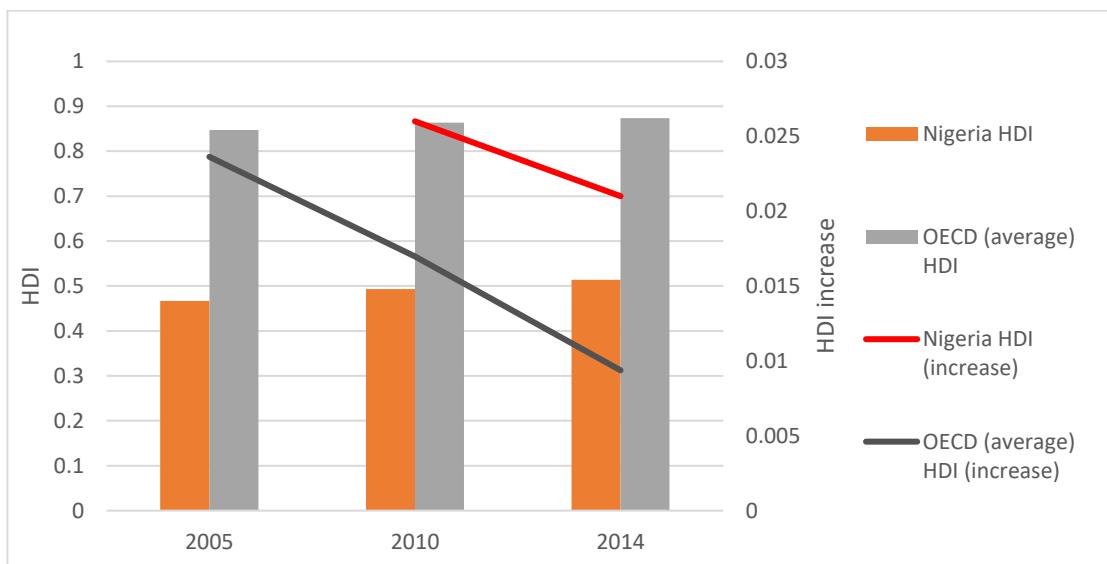


Figure 33: Evolution of HDI in Nigeria vs. OECD (United Nations Development Programme, 2016)

Regarding **unemployment** in the labour force, its values have remained moderate over the years, averaging 7.5% since 1991 (World Bank data, 2016).

As for **educational measurements**, the World Bank has very low quantity of data available. It can be seen, however, that primary education enrolment ratios increased dramatically during the second half of the 70s (from 49% to almost 100%) (World Bank data, 2016). Nevertheless, current studies suggest that the quality of education in the country is very low, and there is a severe skill-gap in the labour force (Antoninis, 2014). Furthermore, UNESCO data shows the literacy rates are low and with slow improvement, with 72% of the population aged between 15 and 24 in 2015 (up from 69% in 2003). These numbers are even worse for the working-age population, with 55% in 2015 (up from 50% in 2003). The large percentage difference between the age groups reveals that a significant improvement in this field has been achieved over time (UNESCO Institute of Statistics, 2016).

Regarding **Research and Development** expenditure, the value was of 0.2% of GDP in 2007 (Compared to an average 2.2% for OECD countries). While there is no more information for other years, it suggests that R&D is not a central focus for the Nigerian state (UNESCO Institute of Statistics, 2016).

Concerning measurements related to **fostering local business activity** in the country, the values mostly negative.

Although Nigeria has managed to decrease the difficulties of starting a new business, the values today remain problematic.

Country	Measurement	2005	2010	2015
Nigeria	Cost of business start-up procedures (% of GNI per capita)	159.3	75.9	31.7
	Start-up procedures to register a business (number)	9	8	9
	Time required to start a business (days)	36	25	30.5
OECD avg.	Cost of business start-up procedures (% of GNI per capita)	9.10	5.95	3.99
	Start-up procedures to register a business (number)	6.97	5.85	5
	Time required to start a business (days)	23.69	13.55	8.52

Table 15: Selected Ease of doing business measurements in Nigeria vs. OECD (World Bank data, 2016)

On the other hand, while local companies' **access to credit** used to be deficient, it has seen important improvements lately. Nigeria's depth of credit information index is 6 (out of a maximum value of 6), but was 0 before 2014. Its strength of credit legal rights index is 7 (out of a maximum value of 10). These values seem quite positive in recent years (World Bank data, 2016).

Overall, the World Bank ranks Nigeria in the position 169th in the Ease of Doing Business index, at the very end of the list.

As for **monitoring procedures**, the World Bank's Time Required to Enforce a Contract measurement value is 510 days in 2016 (down from 730 in 2003). This value nowadays is lower than the OECD average of 545 days (up from 528 in 2003). While it was higher in the past, Contract Enforcement appears to have been only a moderate issue (World Bank data, 2016).

Nigeria's **infrastructure quality** is – and has historically been – poor, serving as a further limitation for business development. Its Quality of Trade and Transport-related Infrastructure was 2.4 in 2016 (out of a maximum value of 5) and has remained rather stable over the years. To compare, the OECD's average in 2016 was of 3.7 (with a slow and steady progress over the years) (World Bank data, 2016).

Finally, **corruption** perception has historically been very high in Nigeria, though with some improvement in recent years. In 1998 its Corruption Perception index score was 19 (out of 100, which means zero corruption). This value has been becoming a little better since the late 2000s, reaching 26 in 2015. Still, Nigeria remains among the countries where corruption is perceived to

be the highest in the world. To compare, the OECD average since 1998 has been of 69.2, with a persistent – yet slight – improvement over the years (Transparency International, 2015).

2. Local Content Policies applied

Since the stability brought by in 1999, the emphasis has switched from local ownership to making operators use as much local capacity as possible. Important instructions were set by the authorities in 2003 and 2005 to increase local content levels. These and some other initiatives were later made law in the Nigerian Oil and Gas Industry Development Act, which came into effect in 2010. It has a holistic focus, bringing together employment, procurement, training and technology transfer requirements.

Regarding the **hire of nationals**, requirements are very strong. Junior and intermediate staff have to be 100% local. For management staff, the obligation is of 95% local. Furthermore, all foreign hires require an application and direct approval of the government (Columbia Center of Sustainable Investment, 2014).

Concerning the **sourcing of goods and services to local providers**, minimum targets vary according to each activity, with values between 45% and 100% (Sejpal, Wagacha, & Nyayieka, 2015). Additionally, preferential treatment will be given to local suppliers, mandating that – provided that their offer is acceptable in quality and time – they will win any bid in which their price quotation is less or equal than 10% higher than the lowest bidder. Moreover, when bids' prices are within 1% of each other, the bid with highest local content shall be selected (Columbia Center of Sustainable Investment, 2014).

Furthermore, some industries will be reserved for local providers. All fabrication and welding activities should be done in the country. Legal services and financial services are also included. Operators are required to keep a minimum of 10% of revenues in Nigerian bank accounts (Columbia Center of Sustainable Investment, 2014).

As to **training requirements**, they are less specific and mandate that operators provide a training plan with the objective of making it possible to increase local employment. These plans should anticipate the skill needs, precise project-specific training initiatives and provide cost estimates of implementation (Columbia Center of Sustainable Investment, 2014).

Similarly, **R&D policies** require the operators to submit periodic plans that outline research and technology transfer initiatives to be carried out in Nigeria. These submissions should include expected costs, methodologies, and results achieved so far. They should also focus on fostering joint ventures and partnerships between local and foreign suppliers (Columbia Center of Sustainable Investment, 2014).

It's important to note that during licencing rounds, local content promotion is considered as an important factor for the concession awarding. Therefore, detailed plans need to be submitted

including at least the previously mentioned requirements (Columbia Center of Sustainable Investment, 2014).

Finally, regarding monitoring procedures, a dedicated board was established to carry out investigations, review mandatory progress reports to be submitted by operators, monitor the qualification system, and operate a local content development fund. Additionally, strong penalties were ratified for non-compliance (Columbia Center of Sustainable Investment, 2014).

3. Outcome

The majority of measures taken before the return to a stable democracy in Nigeria had little impact in achieving higher involvement of local entities in the oil industry. What is more, the country's oil revenues were severely mismanaged, through corruption and inefficiencies. Even though tremendous oil operations were carried out in Nigeria, the country was – in general – not able to capitalize on them to increase wealth and well-being (African Center for Economic Transformation, 2014).

Several reasons have been pointed as possible causes of this failure, such as the following:

- There was a skill gap in the local workforce for oil-related activities. Those that went through formal training in tertiary education institutions acquired inadequate skills. It has been argued that standards in Nigerian universities were not high enough, they were under-funded and didn't have suitable equipment for teaching purposes (Ihua, 2010).
- For a variety of reasons, the local finance industry had a clear preference towards doing business with foreign rather than local companies. This, added to high local interest rates, led to a harder access to credit for local firms, hindering their development (Ihua, 2010).
- The early requirements in the 70s for foreign firms to partner with local ones led to corrupt schemes where political elites formed (inefficient) companies with the sole objective of profiting from the law (Natural Resource Governance Institute, 2015). It was found that this problem had its roots in the country's high levels of corruption, which caused conflicts of interest, unrestricted political power and an overall absence of transparency when awarding procurement contracts (Nwapi, 2010).
- High levels of bureaucracy led to the constructions of a cumbersome contract-awarding mechanism, where bad practices such as arbitrary fees, deliberately cutting firms off the list of bidders and the required provision of hard to acquire documentation for smaller firms served as a deterrent for local business development (Ihua, 2010).
- Very poor infrastructure severely increased the cost of manufacturing supplies in the country (Heum P. , Quale, Karlsen, Kragha, & Osahon, 2003).
- The political instability and hostility from local communities in the Niger delta represented not only a high cost for local businesses, but also compromised security, thus obstructing their development (Heum P. , Quale, Karlsen, Kragha, & Osahon, 2003).

For these reasons, and possibly more, it was significantly easier – and cheaper – for operators to bring technology, personnel and supplies from abroad. This meant that even though several companies were actually able to provide the services and goods required, they could do so at higher costs, lower quality, and in longer time. Their capacity remained largely underutilized (Ihua, 2010).

The increased stability and implementation of several regulations – among them the fostering of local content – during the 2000s brought some improvement to the previously discussed issues. By this time local content – measured in value-added by local firms – was estimated to be roughly 5% (Heum P., Quale, Karlsen, Kragha, & Osahon, 2003). Another study suggests 90% of the goods and services used by operators were sourced from abroad (Atsegbua, 2012).

Since the implementation of the Nigerian Oil and Gas Industry Development Act in 2010 results have been, however, more favourable.

The introduction of the Monitoring Board has been argued to be a major factor in these policies' success. The supervising and fining capabilities of the board have so far allowed for a proper enforcement of the newly introduced local content requirements (Ovadia, 2016).

Moreover, in an interview with one of the board members, it was acknowledged that the objective of the policies is to create a win-win situation in which operators will benefit from the availability of a local, competitive and reliable supply chain (Kentebe, 2015).

According to data from the board, local content levels reached 40% in 2015. A significant increase from the 5% pointed above. What is more, it claims that more than 30,000 new jobs were created since the put in place of the Act. An estimate of 70% of purchase orders was affirmed to be sourced to local suppliers, though the corresponding contract values were not shown (Ovadia, 2016).

While Nigeria's last wave of policies were significantly more successful than the previous five decades' initiatives, the values nowadays still remain low for a country with such a long history of oil production. It has been argued that, overall, local content policies have not been a source of economic development for Nigeria (Kalyuzhnova, Nygaard, Omarov, & Saparbayev, Local Content Policies in Resource-Rich Countries, 2016).

8. Norway

1. Context



Figure 34: Geographical location of Norway

Through oil exploration in the North Sea began to show important discoveries in the 1960s, Norway started to produce oil commercially in 1971. Since the 80s, it has been a major player in the world oil industry (Heum, 2008).

It's key to note that oil discoveries in Norway were offshore, and that by then the country had no experience in oil production – not even onshore –, no related research, and no related businesses. Thus, this industry was completely new to the economy (Kalyuzhnova, Nygaard, Omarov, & Saparbayev, Local Content Policies in Resource-Rich Countries, 2016).

Accordingly, at that time there were no local capabilities for the extraction nor the supply of goods and services, so almost everything was performed by experienced international companies (Heum, 2008). This was, however, considered crucial for the transfer of knowledge and skills to local companies (Kalyuzhnova, Nygaard, Omarov, & Saparbayev, Local Content Policies in Resource-Rich Countries, 2016).

Nevertheless, Norway was already a developed country by international standards at that time. It had an advanced engineering skillset (specially in ship building), strong institutions, and a developed commercial and industrial sector (Kalyuzhnova, Nygaard, Omarov, & Saparbayev, Local Content Policies in Resource-Rich Countries, 2016).

In 1972 the national oil company Statoil was created. Its objective was twofold. First, to manage oil resourced on behalf of the government, and second, to foster local capacity development in the upstream industry. To achieve this, it was set to be a financial and operator partner of major international operators in Norwegian fields. This would allow it to both gain operational expertise in the field and also to foster local businesses to develop their technical capacity through “forced” partnerships with experienced international suppliers (Heum P., Quale, Karlsen, Kragha, & Osahon, 2003).

Thanks to Statoil’s promotion of local capacity and a series of state regulations, progressively Statoil began increasing operations and local providers winning contracts, until a high degree of competitiveness was achieved (Heum P., Quale, Karlsen, Kragha, & Osahon, 2003).

When Norway entered the European Economic Area in 1995 structural changes has to be carried in out. Local content policies were not in-line with EU trade policies and thus had to be modified. Furthermore, local suppliers had to face an increased number of international competitors (Heum P., Quale, Karlsen, Kragha, & Osahon, 2003).

Even so, by that time Statoil and many Norwegian suppliers had already achieved competitiveness in international standards, and thus were in the process of expanding operations abroad, hence becoming international firms themselves (Heum P., Quale, Karlsen, Kragha, & Osahon, 2003).

Since its discovery, **oil production** grew very fast. During the late 90s and early 2000s Norway was producing roughly 5% of the world's total oil. Because of no new oil fields discovered in recent years, production has been falling.

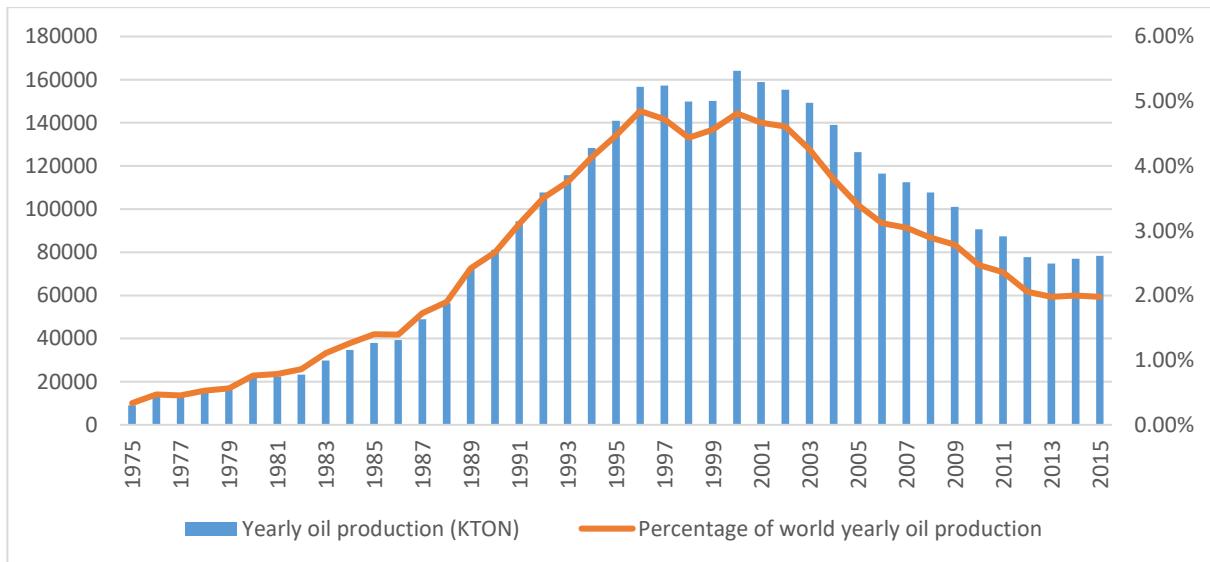


Figure 35: Oil production in Norway (OECD data, 2016)

The following are selected measurement to assess development in Norway over the years.

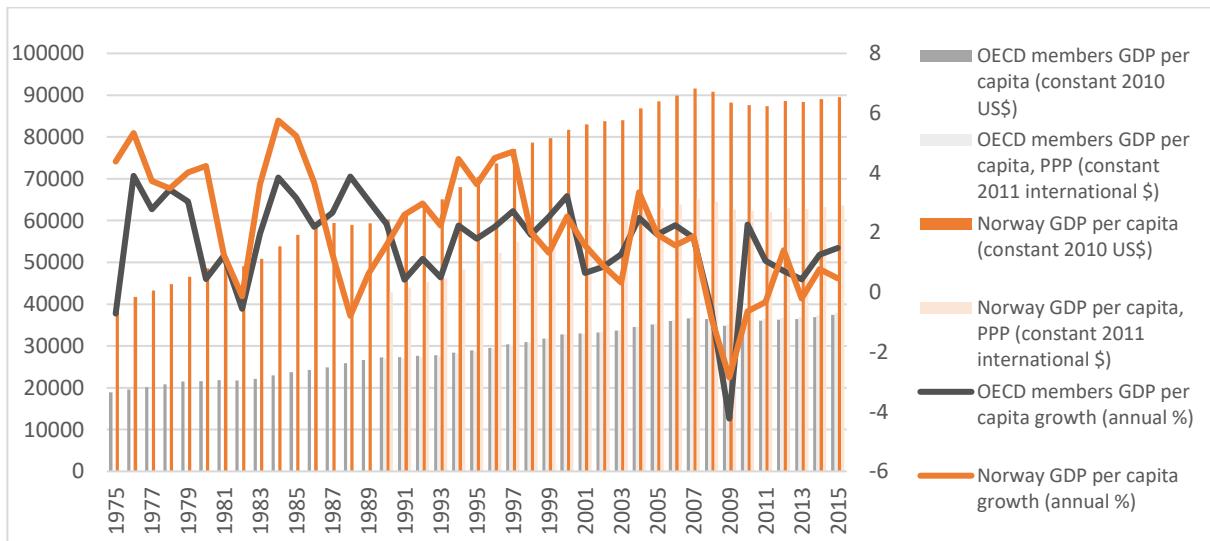


Figure 36: GDP growth in Norway vs. OECD (World Bank data, 2016)

The World Bank classifies Norway as a High-Income economy. In fact, its GDP has more than doubled that of the OECD's average since the 70s (Although the difference shortens considerably when comparing PPP values). Its **GDP growth rate** has been more or less in line with the OECD,

except between 1985 and 1987, when international oil prices fell dramatically, thus clarifying the economy's reliance on this resource.

In-line with its very high GDP, Norway's **Human development** classification is Very High. In fact, it has been the highest in the world since the year 2000 (United Nations Development Programme, 2016). Its evolution has been more or less in line with the OECD's. Regarding population living under poverty, data shows values are negligible. As for **inequality**, its GINI index was 26 in 2012, a value ranked as Low. Although this value has been in the decrease, it has remained low over previous years in comparative terms (World Bank data, 2016).

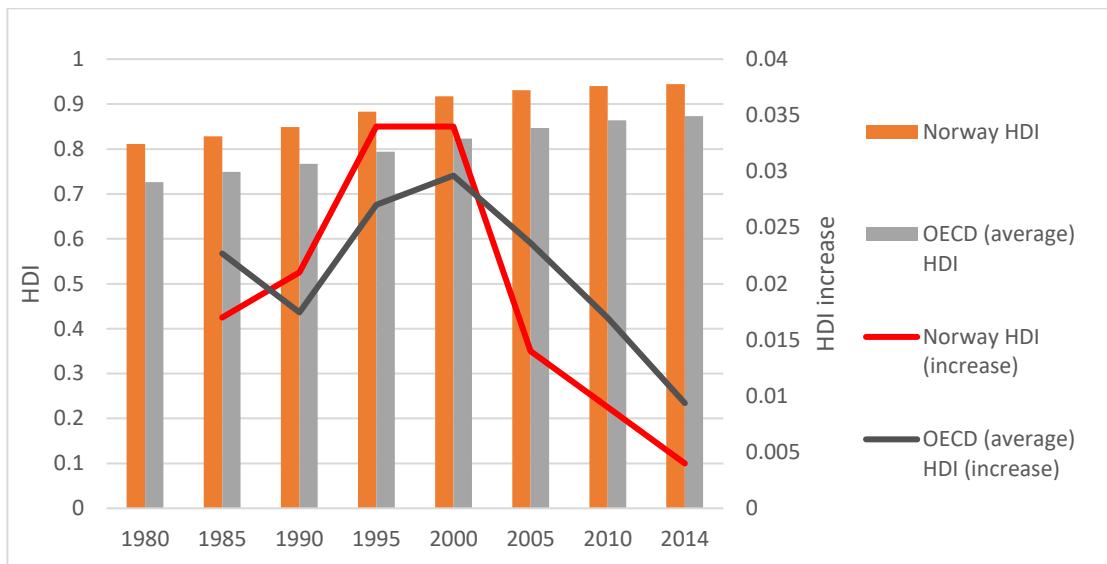


Figure 37: Evolution of HDI in Norway vs. OECD (United Nations Development Programme, 2016)

Regarding **unemployment** in the labour force, its values have remained consistently low. Since 1980 they have averaged 3.5%, with no marked increases other than a moderate rise in the first half of the 90s (reaching a maximum of 6.3% in 1995) (World Bank data, 2016).

As for **educational measurements**, values are very positive. Norway's monetary commitment to education has been very high and persistent over the years. Between 1975 and 1990 Norway's expenditure on education as percentage of GDP averaged 5.8% (compared to an OECD average expenditure of 5% for the same period). Since 1990 Norway's average expenditure increased to 7%, while the OECD average remained at 5%. (World Bank data, 2016). Norway's labour force is – and has been – very highly educated.

The country's expenditure on R&D is however moderate. The values since 1997 have remained steady and have an average of 1.6% of GDP (UNESCO Institute of Statistics, 2016).

Concerning measurements related to **fostering local business activity** in the country, the values are positive.

Relatively current data, such as the one showed in the following table, displays that the current business environment is very favourable. It has also been pointed out that this premise also applied

during the times of oil discovery and increasing production in Norway, thus implying business development had this advantage also at that time (Kalyuzhnova, Nygaard, Omarov, & Saparbayev, Local Content Policies in Resource-Rich Countries, 2016).

Country	Measurement	2005	2010	2015
Norway	Cost of business start-up procedures (% of GNI per capita)	2.7	1.8	0.9
	Start-up procedures to register a business (number)	5	5	4
	Time required to start a business (days)	8	6	4
OECD avg.	Cost of business start-up procedures (% of GNI per capita)	9.10	5.95	3.99
	Start-up procedures to register a business (number)	6.97	5.85	5
	Time required to start a business (days)	23.69	13.55	8.52

Table 16: Selected Ease of doing business measurements in Norway vs. OECD (World Bank data, 2016)

Local companies' **access to credit** values are mixed. While Norway's depth of credit information index is 6 (out of a maximum value of 6), its strength of credit legal rights index is 5 (out of a maximum value of 10). Still, when compared to the rest of the world, these values are quite positive (World Bank data, 2016).

Overall, the World Bank ranked Norway in the position 6th in the Ease of Doing Business index in 2016, considering among the most business-friendly environments in the planet.

As for **monitoring procedures**, the World Bank's Time Required to Enforce a Contract measurement value was 280 days in 2016 (down from 310 in 2003). This value is considerably lower than the OECD average of 545 days. What is more, it's among the lowest in the world (World Bank data, 2016).

Norway's **infrastructure quality** is – and has historically been – very good, serving as a strong incentive for business development. Its Quality of Trade and Transport-related Infrastructure was 4 in 2016 (out of a maximum value of 5), and its Quality of Port Infrastructure was 5.5 (out of a maximum value of 7) for the same year. These values have remained relatively steady since 2007. To compare, the OECD's average values were 3.6 and 5 respectively in 2016 (with a slow and steady progress over the years) (World Bank data, 2016).

Finally, **corruption** perception has historically been very low in Norway, with almost no change over the years. Since 1998 its Corruption Perception index score has averaged 87.05 (out of 100, which means zero corruption), this value is well above the OECD average of 69.2 in the same time period. What is more, for this time period average comparison, Norway positions itself among the 9 least corrupt countries in the world (Transparency International, 2015).

2. Local Content Policies applied

Norway's approach to local content was one strictly focused on local businesses acquiring managerial, technological and industrial know-how so that they could build capacity and become competitive in the long term. In this line, no local employment nor local sourcing targets were set, although these were addressed indirectly.

The overall focus was on **technology transfer**, aiming to make local firms partner with international oil operators and suppliers so that they could assimilate their knowledge and expertise. In turn, this would slowly allow them to be able to perform the operations themselves, thus creating local capacity. With time, these local firms would become as competitive in terms of quality, costs and time as their international counterparts.

Since the first concession round in 1965 international operators were mandated to establish local subsidiaries to carry out a series of activities, including exploration (Gjerde, 2013). The objective of this measure was twofold. First, it aimed at transferring skills and know-how to the local industry and personnel. And second, it would ensure big international operators became familiar with the local business networks (Heum, 2008).

Later, in 1972 a more strict policy was put in place addressing the goods and services procurement bidding processes. It had two main requirements:

- First, preference should be given to bids involving goods and services sourced in Norway, provided that they are competitive in terms of quality, delivery time, and price.
- Second, operators had to inform the authorities about the companies included in the bidding process before it was triggered. The ministry could then add local companies to the list as they saw fit (Heum, 2008) (Kalyuzhnova, Nygaard, Omarov, & Saparbayev, Local Content Policies in Resource-Rich Countries, 2016).

Lastly, in 1979 a Technology Agreements requirement was put in place. In the context of difficulties for the local industry to carry out exploration and development activities in the North Sea, international operators were forced to cooperate with the state in providing capital and R&D to develop specific oil-industry-related projects in the country. While the challenges were faced not only by the local industry but also by foreign firm, this would allow the R&D – that these companies would probably have had to do anyway – to be done in Norway rather than abroad (Kalyuzhnova, Nygaard, Omarov, & Saparbayev, Local Content Policies in Resource-Rich Countries, 2016).

It's key, however, to understand the context this last policy was made on. During this time oil prices were extremely high. Moreover, tax on profits for the industry in Norway were around 85%. Considering that it was allowed to deduct these investment costs, it mean *most* of the price of these ventures was ultimately financed though otherwise inevitable taxes to be paid (Heum, 2008).

It was precisely this, added to the high oil prices, that made companies to have an obvious objective of increasing production, rather than reducing costs. Therefore, the added costs of R&D

expenditure were not so relevant for international operators, as it was mostly the Norwegian state itself that was financing them, though its accordingly reduced tax revenue. Moreover, the great prices meant operators welcomed any initiative that would facilitate faster access to oil fields, and would avoid any risk of delays coming from deteriorating relations with the authorities (Heum, 2008).

Finally, during the late 80s all the before mentioned protectionist policies stopped being required (Heum, 2008).

3. Outcome

Norway has been pointed by multiple sources as an example of success in the implementation of local content policies. In fact, it is the usual comparison countries have used when implementing such plans (Heum P. , Quale, Karlsen, Kragha, & Osahon, 2003) (Senoo & Armah, 2015) (Ngoasong, 2014).

By the time local content requirements were lifted, Statoil was an important player in the international oil scene. Nowadays, it has the majority of the operations in the country, and also important ventures in 12 other countries. Similarly, Norwegian suppliers managed to become competitive and also expanded operation abroad (Kalyuzhnova, Nygaard, Omarov, & Saparbayev, Local Content Policies in Resource-Rich Countries, 2016). In 2012, approximately 40% their revenues came from overseas sales (Ministry of Petroleum and Energy, 2014).

This fact is key to show that the main objective of implementing local content policies was achieved; that is, to provide local businesses with temporary protection from competition – thus sacrificing short term competitiveness –, to achieve a competitive local industry in the long term, enough that it doesn't require protection anymore, thus ensuring market prices, profits, and ultimately government revenues by taxes.

There are five main reasons that have been pointed out as critical to allowed Norway to achieve this success.

- First, although Norway exercised strong state involvement and intervention in the oil industry, it did so while putting emphasis on safeguarding competition at all levels of the value chain. That is, to ensure the development of local businesses would not be at the expense of profits for operators (Kalyuzhnova, Nygaard, Omarov, & Saparbayev, Local Content Policies in Resource-Rich Countries, 2016). In fact, local suppliers always had to compete with international ones, as they never had contracts “guaranteed”.
- Second, while it had the power to reject contracts or suit them as it would, Norway's authorities barely used these faculties. Its low levels of corruption and high focus on achieving the real objectives of the policies made sure that commercial and technical factor directed investment decision, and not political objectives (Heum, 2008).

- Third, by the time of the policies' implementations Norway already had industrial capacity. This made it easier for already established local businesses to acquire know-how and provide oil-related goods and services, a very different story than countries which had to build capacity from zero. What is more, it might have made it easier for foreign operators to be interested in cooperating with the authorities' plans, considering the advantages of having a local supply base and the lower costs and time this would require to be built (Kalyuzhnova, Nygaard, Omarov, & Saparbayev, Local Content Policies in Resource-Rich Countries, 2016).
- Fourth, the high R&D requirements put in place allowed to generate globally leading technical knowledge, which served as a foundation for the local suppliers' global competitiveness (Kalyuzhnova, Nygaard, Omarov, & Saparbayev, Local Content Policies in Resource-Rich Countries, 2016).
- Fifth, the very favourable oil prices during the time were certainly a source of motivation for all companies in the industry to increase operations, acquire knowledge and build larger capacity.

9. Trinidad and Tobago

1. Context



Figure 38: Geographical location of Trinidad and Tobago

With only 1.3 million inhabitants, the small island-nations of Trinidad and Tobago economically relies heavily on oil revenues. In fact, in 2008 it contributed to around 40% of the country's GDP (World Bank data, 2016).

With a long history of petroleum extraction, this reliance dates to the colonial period in 1908. After its independence from the British Empire in 1962, oil continued to be critical for the economy, yet production peaked in 1978 and has been decreasing ever since (Tordo & Anouti, 2013).

Historically, import substitution has been implemented to protect strategic sectors – such as the oil industry – from foreign competition. However, the results achieved were not very positive (Tordo & Anouti, 2013). Recent modifications have aimed at implementing more market-aimed methods since the year 2000. While mostly pushed by the private sector, government initiatives have been in place since 2004 with the implementation of a local content policy framework, which officially started in 2006 (MENAS, 2008). These modifications took place in the context of Trinidad and Tobago's government intention of becoming a developed country by the year 2020 by increasing its GDP.

For the previous, it was seen as vital to increase the local involvement in the country's key sector, aiming to increase the approximately 10% local participation in oil-related activities at that time (Ministry of Energy and Energy Affairs, 2011).

As can be seen in the following graph, and considering the heavy reliance on the oil sector for the national economy, the distressing situations of reduction of oil production becomes evident. The reason for this, however, is mainly due to depleting oil reserves (Tordo & Anouti, 2013).

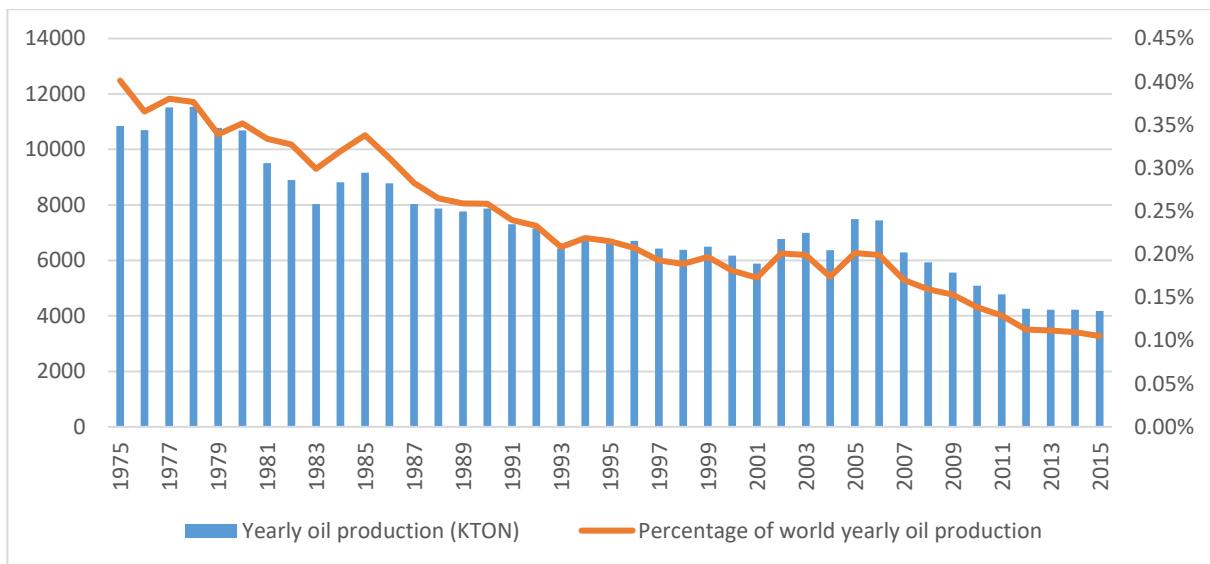


Figure 39: Oil production in Trinidad and Tobago (OECD data, 2016)

The following are selected measurement to assess development in Trinidad and Tobago over the years.

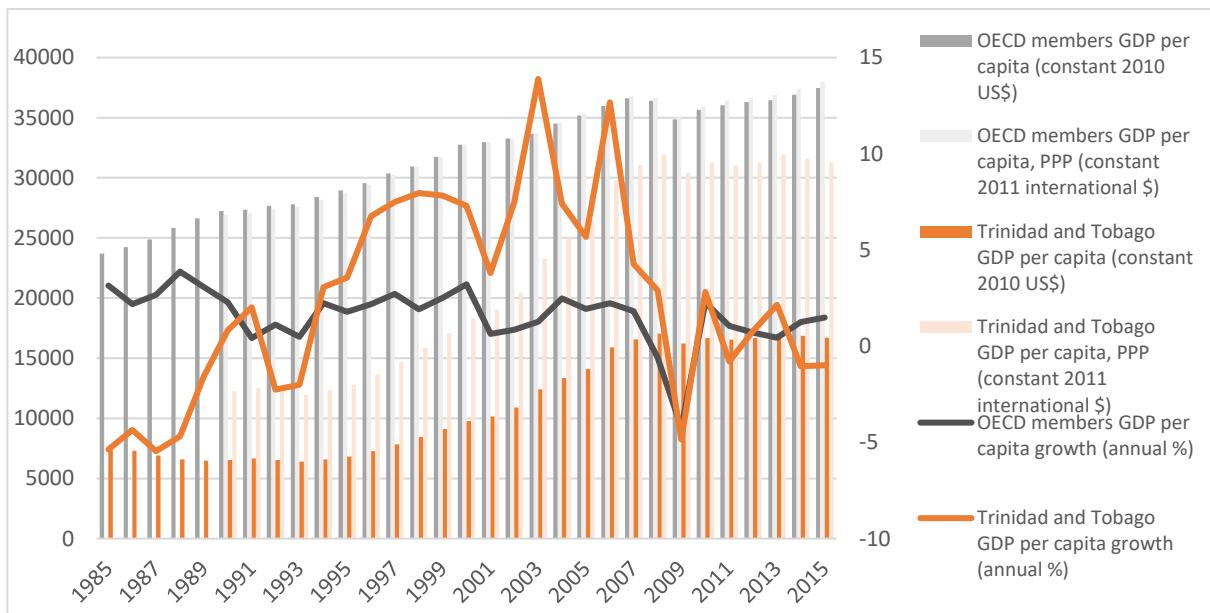


Figure 40: GDP growth in Trinidad and Tobago vs. OECD (World Bank data, 2016)

The World Bank classifies Angola as a High-Income economy. Its **GDP growth rate** has been high in the period ranging from the late 90s until the world economic crisis in 2009. This was partly due to

economic reforms in the early 90s to ensure stability (Tordo & Anouti, 2013). The later decline was in-line with a depressed oil demand due to the financial crisis, which was amplified in the country because of its high dependence on the oil sector. Especially when considering purchasing power parity levels, Trinidad and Tobago has managed to achieve very high levels of GDP, not very far from OECD standards.

Though its GDP growth has been higher than OECD averages since the mid-90s to an important degree, Trinidad and Tobago's **Human development** increase has only been slightly better, and in recent years even worse. The periods of most rapid increase are aligned with high oil market prices. Its current HDI classification is High (United Nations Development Programme, 2016). Regarding **inequality**, its GINI index was 39 in 2012, a value ranked as Medium. It's important to note that this value has not managed to change over the years, with a denomination of 40 in 1992, implying almost no change in inequality over this time frame (World Bank data, 2016) (Trinidad Express, 2013).

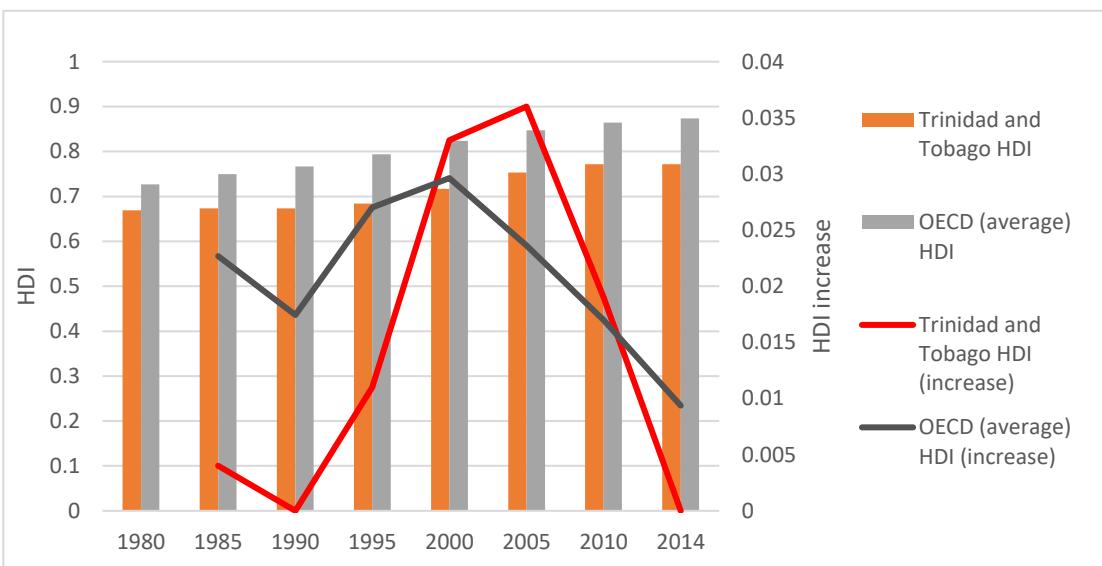


Figure 41: Evolution of HDI in Trinidad and Tobago vs. OECD (United Nations Development Programme, 2016)

Regarding **unemployment** in the labour force, its values have constantly decreased since the early-90s from 20% in 1990 to 3.6% in 2013, a very positive current value. Although it has slightly increased in the early-2000s, the unemployed portion of the workforce with tertiary education is very low, at 5.2% (of a total of 4.6%) in 2008 compared to 1% (of a total of 17.2%) in 1995, exposing a constantly high level of employment for this education bracket (World Bank data, 2016).

As for **educational measurements**, values in the last 20 years have rapidly increased, allowing for more and more comparable standards with OECD averages nowadays. Government expenditure increased from 8% to 13% (of total government expenditure) from 1998 to 2003, a value higher than OECD's average of 12% in the same period. Among other factors, this allowed to increase the percentage of the labour force with secondary education from 55% to 63% from 1998 to 2008 and tertiary education from 6.5% to 11% in the same period. Nevertheless, the values for tertiary education still fall short of the OECD's average of 28.5% in 2008. Moreover, the years of compulsory

education have historically remained at 6, a low value compared to OECD's 10 years (World Bank data, 2016).

Observing **R&D expenditure levels**, values are historically very low, and constantly decreasing. In 2000 Trinidad and Tobago spent 0.1% of GDP in R&D, in 2013 thus value was only 0.05%. Comparably, the OECD spent on average 2.3% of GDP during the same period, with increasing values (UNESCO Institute of Statistics, 2016).

Concerning measurements related to **fostering local business activity** in the country, mixed results have been attained in the country.

A fundamental advantage are the low costs of starting business activities. This being said, issues become visible when regarding the time required for this matter. Bureaucracy in registering property (162 days) and construction permits (297 days) are two critical problematics (World Bank data, 2016).

Country	Measurement	2005	2010	2015
Trinidad and Tobago	Cost of business start-up procedures (% of GNI per capita)	1.3	0.8	0.7
	Start-up procedures to register a business (number)	12	8	8
	Time required to start a business (days)	74	40	11.5
OECD avg.	Cost of business start-up procedures (% of GNI per capita)	9.10	5.95	3.99
	Start-up procedures to register a business (number)	6.97	5.85	5
	Time required to start a business (days)	23.69	13.55	8.52

Table 17: Selected Ease of doing business measurements in Trinidad and Tobago vs. OECD (World Bank data, 2016)

As for local companies' **access to credit**, Trinidad and Tobago has been relatively efficient. Its depth of credit information index is 6 (out of a maximum value of 6), and its strength of credit legal rights index is 6 (out of a maximum value of 10) (World Bank data, 2016). These values show competency. Nevertheless, bureaucratic delays have proven cumbersome for investors (Department of State, 2011).

Overall, the World Bank ranks Trinidad and Tobago in the position 96th in the Ease of Doing Business index, around the middle of the list.

As for **monitoring procedures**, the World Bank's Time Required to Enforce a Contract measurement value is 1340 days in 2016. This value is more than double the OECD average of 545 days. This measurement has non-changing over the years, evidencing a persistent obstacle (World Bank data, 2016).

Trinidad and Tobago's **infrastructure quality** is relatively decent. The small island-nation's Quality of Port Infrastructure is 4 in 2016 (out of a maximum value of 7) and has remained steady over the

last decade. To compare, the OECD's average in 2016 was of 5.07 (also steady over the over the decade) (World Bank data, 2016).

Finally, **corruption** perception has historically been mediocre in Angola, with virtually no improvement over the years. Since 2003 its Corruption Perception index score has averaged 37 (out of 100, which means zero corruption), this value can be compared to an OECD average of 69.3 in the same time period, denoting that this is still a non-improving issue in the country (Transparency International, 2015).

2. Local Content Policies applied

In the context of Trinidad and Tobago's development objectives for the year 2020, the country's oil industry has been subject to local content policies since 2006. While the requirements have a wide-reaching focus – regarding local employment, sourcing of goods and services, and training programs – they are rather vague, lacking clear scope, objectives and definitions.

Regarding the **hire of nationals**, it is required that

- Priority be given to the employment of local workers.
- Foreign hires should not prevent local employment (Tordo, Warner, Menzano, & Anouti, 2013).

To ensure this, operators are required to file work permit procedures and to submit a succession plans for each of them (to hire a national when employment is required) (Tordo, Warner, Menzano, & Anouti, 2013).

Concerning the **sourcing of goods and services to local providers**, it is compulsory that operators maximize the use of goods and services provided by national companies. However, no specific target is set.

Also, other requirements are in place, including

- Requirements of unbundling contracts as much as possible, so as to allow local businesses to provide them.
- Local announcement of contracts, to increase awareness and transparency.
- “Reasonable” local preference should be given when awarding contracts (Tordo & Anouti, 2013).

As for **training requirements**, operators have to submit plans to develop the skills of prospect employees. Furthermore, current local employees have to be provided with training, which should be financed according to the firms' financial performance (Tordo, Warner, Menzano, & Anouti, 2013).

While there are no specific measurement procedures, all programs are required to be submitted and approved by the Ministry of Energy and Energy Industry. Additionally, it is asked of operators to report their local content activity (Tordo, Warner, Menzano, & Anouti, 2013).

Finally, it's important to add that there are no stipulated penalties for the non-compliance with the above-mentioned policies (Tordo, Warner, Menzano, & Anouti, 2013).

It is clear that Trinidad and Tobago's approach to local content is rather relaxed and unspecific, basically requesting operators to comply by achieving – in their own capacity – the best linkage possible to local entities.

3. Outcome

Given the laxity of the measures adopted, most of the local content was left entirely up to the private operators.

A survey was carried out in 2009 which showed that more than half the local service and goods providers in the country were satisfied with local content measures. What is more, it also specifies that even a greater percentage is content with the measures taken by the foreign multinational operators. The lower results for the government measures were tied to a perception that it was not putting enough effort into promoting, monitoring and enforcing the requirements (Energy Chamber, 2009).

Non-monitoring of the policies was to be expected due to discussed low levels of government monitoring capabilities. Moreover, moderate levels of corruption might have not helped if stronger attempts would have been taken.

An example of a success case regards the construction of a fabrication yard done by British Petroleum in 2004. This was done through joint ventures with local and foreign companies, and achieved the training of 124 local employees. What is more, though BP estimated it would be US\$10 million cheaper to import, it ended up achieving a US\$9 million cost premium (Arthur Lok Jack Graduate School of Business, 2005).

Subsequent investments in platform fabrication by different operators have had significant shares of local content (between 20% and 55% for seven projects that had a total expenditure over US\$8 billion dollars) (Ministry of Energy and Energy Affairs, 2011).

Overall, progress in local employment, domestic sourcing and training has been achieved, but in a very slow manner (Tordo, Warner, Menzano, & Anouti, 2013). Decent infrastructure and education levels have not been enough to significantly boost local business development, although progress has been made. Legal bureaucracy causing delays in the forming of new companies probably served as a disincentive for this matter. Ultimately, the lack of government commitment with the policies (illustrated by the absence of a clear policy and strategy, not including monitoring nor measuring means) could have created credibility issues for foreign operators, leaving them to act in their own will.

8. Discussion

1. Key Findings

The following sub-sections will compare the results achieved with local content measures in the nine analysed countries. As explained in the methodology section, local content policies were broken down to four types: Local employment, local sourcing of goods and services, training requirements and technology transfer requirements. For each type, similar policies will be compared taking into consideration each country's contextual factors, and then inspecting the outcomes obtained. The aim of this method will be to study which policies seem to be more successful in general, and which ones appear to work better under certain social, political or economic conditions.

1. Local employment

The analysis carried out shows that indeed employment quotas for foreign hires do lead to an increase in the percentage of local workers. However, the key measurement of these policies' success relies on the fact that they manage to do so while not creating skill-gaps. In other words, a policy will be effective if local employees can successfully replace foreign ones, without weakening performance.

In this sense, when comparing the studied countries' experiences, a series of issues can be appreciated.

First, **very high minimum local employment targets** seem to have created skill gaps in all cases, while actually increasing local employment only to a variety of degrees. Such is the case for Angola and Nigeria. In Ghana, for instance, where targets are still not so high for skilled positions (although they are set to increase in the coming years), but require very high percentages in unskilled hires, the outcome appears to be more positive. As for Kazakhstan, where targets are high but employment outcome has been also high, the skill-gap is evident for the more skilled positions, as was discussed in the literature. In short, employment targets seem to work better for low-skilled labour, but appear less useful for skilled-labour.

Second, regardless of the type of policy, they seem to have been more successful when they set requirements in **coordination with the operators**. Such is the case of Indonesia, where the regulating authorities set different targets in agreement with operators, given the skill requirement intensity of the operation's phase. It makes sense to require more local labour in production than in exploration, as the skill requirements are relatively lower.

Third, when **policies were weak**, lax or unmonitored in this matter, the hiring of nationals increased at a slower pace, such as in Trinidad and Tobago. Nevertheless, this assured the availability of the required labour, as it could be hired from abroad. In these cases, the country's quality of education appears to be connected with the pace of hiring. Malaysia's workforce's relatively high skill allowed

them to fill positions requiring more expertise (although the country suffers from skill shortage – and not gap – because of other issues) and so did Brazil's.

Regarding **unemployment**, no clear relationship appears between its percentage level and the quality of local content policies' outcomes. In fact, high unemployment countries such as Brazil and Indonesia have had relatively good results in this field. Again, it appears that the skill-gap issue rests mostly in the more complex employment positions, thus making the general country-level unemployment measurement inappropriate.

Finally, it can be grasped that measurements not aiming at restricting the employment of foreign workers, but rather **fostering the hiring of local ones** have been more successful. Brazil's PROMINP business initiative to connect stakeholders is a clear example. Additionally, national oil company's fostering of local content initiatives – in parallel or separately from legislative measures – had in general a large positive impact on local employment, such as Malaysia's Petronas, Brazil's Petrobras and to a lesser degree Indonesia's Pertamina.

The following table provides a graphical summary of contextual factors, policies applied and outcomes achieved for each of the studied countries.

	Context		Local content policies applied	Outcome
	Unemployment	Education		
Angola 2002-	M	VL	Very strong quotas	Skill gap
Brazil 1999-	H	M	Strong fiscal incentives	Local employment increase
Ghana 2013-	VL	L	Strong quotas	Local employment increase
Indonesia 2001-	H	L	Approval to hire foreigners, coordinated	Strong local employment increase
Kazakhstan 2010-	M	H	Very strong quotas	Strong local employment increase, but skill gap
Malaysia 1970-	VL	H	Approval to hire foreign	Employment shortage
Nigeria 2010-	H	VL	Very strong quotas	Mild local employment increase, but skill gap
Norway 60s-80s	VL	VH	-	-
T&T 2006-	M	M	Approval to hire foreigners, not monitored	Positive but very slow local employment improvements

Table 18: Summary table of local employment policies

Notes:

1. Values are based on research done in section 7, qualitative comparisons were used.
2. VL = Very low, L = Low, M = Medium, H = High, VH = Very High. T&T = Trinidad and Tobago.
3. “-“ denotes no such policies were implemented, or were not particularly relevant.
4. Colours in the context and outcome columns represent how positive a contextual factor is categorized. Red represents undesirable values, green denotes helpful values.
5. Colours in the local content columns represent the degree of intensity policies have, relative to the other countries’. Red represents very restrictive policies, green denotes more relaxed ones.
6. All categorizations were done using values calculated as the average from 10 years after policies were enacted, or until the most recent available data.

2. Local sourcing of goods and services

Due to the discussed high **capital intensity** of the oil industry, policymakers should acknowledge that the largest outcomes from fostering the usage of local capabilities will come from initiatives that aim at developing competitive local businesses able to provide the required goods and services to the oil operators. In fact, the analysis shows that in many cases these new local businesses will hire more people than the jobs created by the operators with foreign employment quotas. Therefore, the effective implementation of local business development policies can be argued as the most crucial among local content initiatives.

Examining and comparing the obtained results several things can be realised. Particularly, it will be shown that for this category of policies the context in which they are applied does, indeed, play an important role in their degree of success.

First, it can be appreciated that when there was a **national oil company** vigorously taking the lead in fostering the local content policies they generally achieved better results, regardless of the type of policy. Norway, Brazil, Malaysia and to a lesser degree Kazakhstan achieved generally positive outcomes in the local sourcing category, all of which had strong national oil companies committed to foster the applied regulations. On the other hand, Trinidad and Tobago, Ghana, and – mostly – Nigeria and Angola had a lower degree of championing by national oil companies, and achieved worse results. The only different result was in Indonesia, where Pertamina did align itself strongly with the regulatory framework, yet the general outcome was negative. When adding the different country contexts to the equation, it can be appreciated that Indonesia had lower levels of R&D expenditure, worse quality of infrastructure and education, and higher levels of bureaucracy than the relatively more successful countries.

Second, another measure that the analysis shows to be in-line with successful results in this area is the **safeguarding of competition**. That is, the objective of ensuring that in the long-term local suppliers will be comparable to international ones in terms of costs, time and quality. Norway, Malaysia, and Brazil guaranteed competition through different mechanisms. The first two with strong cooperation requirements with international companies such as mandatory joint ventures and subsidiaries, and Brazil through the “best bidder wins” mechanism.

Particular, however, are the cases of Angola and Trinidad and Tobago. While Angola did require joint ventures for the provision of specialized goods and services – and so aimed to safeguard competition –, this outcome was mostly negative. The reason for this was that the high corruption levels led *rent-seekers* to exploit the system to their advantage without developing local firms. The same situation was seen in Nigeria during the 70s and 80s when joint ventures were initially required, also failing due to corruption schemes. Norway and Malaysia – where cooperation requirements were in place –, on the contrary, are the two countries with the lowest levels of corruption in this analysis. It can be argued then, that **cooperation mechanisms** for fostering technology transfer and thus competitiveness are more effective when corruption is low.

In fact, high levels of corruption were found to be hindrances to successful local content implementation by multiple authors (The Natural Resource Governance Institute, 2015) (Ovadia, The Making of Oil-Backed Indigenous Capitalism in Nigeria, 2013), in-line with these results.

As for Trinidad and Tobago, since local content regulations in sourcing had a very “soft” approach, competition was also safeguarded. However, local businesses didn’t thrive and the provision of goods and services comes mostly from abroad. Nevertheless, contextual reasons can clearly explain this phenomenon. When compared to the successful countries, the areas that contrast the most in the country because of the marked negative values are: R&D expenditure, bureaucracy and monitoring capabilities. The first two are critical for local business and technological development, thus leaving local firm at a disadvantage compared to foreign suppliers. What is more, low monitoring prevented them from successfully being able to take advantage of what little the local content law mandated.

Overall, this thesis’ argument of the importance of safeguarding competitions is in-line with relevant authors’ conclusions, which argue that this topic is particularly important for the development of a competitive local supply base (Kalyuzhnova, Nygaard, Omarov, & Saparbayev, Local Content Policies in Resource-Rich Countries, 2016) (The International Petroleum Industry Environmental Conservation Association (IPIECA), 2011).

Third, for the previously discussed issue, when drawing a parallel between **monitoring capabilities** and policy outcomes in all the countries, there is a clear negative relationship between the World Bank’s Time Required to Enforce a Contract measurement value and successful local suppliers’ development. Individual country studies, as analysed, point to a similar direction. Nigeria’s post 2010 relative success was claimed to account greatly to the newly implemented Monitoring Board. Trinidad and Tobago’s policies disappointing results are associated with not adequate enforcement, and so are Angola’s. In summary, it can be argued that stronger monitoring procedures, allowing to properly enforce legislations, are a crucial requirement for policy success, regardless of the degree or type of local content policy implemented.

Linking this result with previous research, many papers address the issue of strong monitoring capabilities being key for successful policy implementations, arguing that local content is more complicated than just “passing the laws”. Moreover, they state that lax monitoring is a source of non-compliance by operators, and that a third party scrutinising institution should be available to allow successful implementation if a country’s monitoring capabilities are low (The International Petroleum Industry Environmental Conservation Association (IPIECA), 2011) (Heum P. , Quale, Karlsen, Kragha, & Osahon, 2003) (Macatangay, 2016). Therefore, results in this thesis are in-line with previous conclusions.

Fourth, when analysing goods and services **supply capacity gaps** (irrespective of the degree of increase in local content levels), it was found – as expected – that they only arise when foreign

sourcing quotas are in place. What is more interesting however, are the contextual issues that contribute to their emergence.

Due to the availability of information, Angola's, Brazil's, Ghana's, Indonesia's, Kazakhstan's, and Malaysia's targets were compared. All of these countries implemented foreign sourcing quotas, and considerable capacity gaps were seen in all of them but Indonesia and Malaysia. Indonesia's case can be easily explained by the fact that their local sourcing targets were very low to begin with, it was unlikely they would not be achieved. For the rest, context-outcome connections shows that low quality of infrastructure and high level of corruption are the main contextual factors determining the occurrence of these gaps. Also, high bureaucracy and low education can be pointed as influential factors, but to a lesser degree. This result makes sense as these aspects are important for local business development, and their efficient operation in the local economy.

Fifth, when looking now at increases in local content levels (i.e. rises in the number of local businesses providing goods and services to the oil industry), irrespective of the emergence of capacity gaps, the following conclusions can be drawn. The implementation of **minimum sourcing targets** from local companies are not a determinant of an increase in local business activity. In fact, Angola and Ghana implemented target with negative results in this area, while Norway didn't and had a positive outcome. What seems to be more relevant in this topic are monitoring capabilities, oil prices, and oil production variations.

Parallel to these results, it was pointed by relevant authors that the application of minimum targets in the local sourcing of goods and services created economic distortions, as they serve as disincentives for local businesses to invest in acquiring better technology, since contract will be assured (Heum P. , Quale, Karlsen, Kragha, & Osahon, 2003), thus corroborating this thesis' findings.

Monitoring, as previously mentioned, appears to be important for all kind of local content initiatives. However, it is increasingly more relevant for local business development when the policies include minimum targets. As for oil prices, when looking at the years the policies were implemented – and the following medium-term period – it was found that local firms usually thrived when prices were on the rise or stable, and were more likely to develop slowly when prices were on the decline, irrespective of the type of policy. Similarly, when national oil production levels were growing or stable, local businesses developed better than when they were on the decline. In summary, it appears that local business development accounts significantly to external factors such as oil prices and production, and not only to policy implementation or contextual factors.

Sixth, **fiscal incentives** such as tax breaks, facilitating loans, giving allowances, and R&D contributions were found to be generally beneficial for the achievement of positive outcomes regarding both increasing local content levels and avoiding capacity gaps. Particularly, these measures were strongly used in Brazil, Malaysia, and Kazakhstan, all countries that achieved relative good results compared to the others in the list. Exceptional however, is the case of Norway.

While Norway didn't rely greatly on fiscal incentives, it did achieve very good results in developing local businesses and avoiding capacity gaps. This being said, it is key to note that, as discussed, by the time of the commencement of oil activities in the country – and accordingly local content measures –, there was a strong industrial capacity in Norway, as it was already a developed country. Moreover, international operators were keen on making business in the country, as the trend of oil upstream industry nationalization was happening precisely at that time, making many other countries' business environments hostile. Since Norway was seen as a safe and reliable country for doing business – ranking high on all the contextual factors analysed –, operators were more eager to spend in local capacity development. Furthermore, oil prices were high at the time and so were local taxes, leading operators to focus on output maximization rather than on cost reduction. All these factors contributed to make it for already existent Norwegian businesses considerably easier to adapt to the new oil industry requirements. Therefore, it can be argued that fiscal incentives were not as necessary as they were in other less developed nations.

Seventh, when comparing the countries that implemented **preferential treatment measures** (i.e. giving a price benefit to local suppliers in contract bidding processes) the following can be pointed. Angola, Ghana, Kazakhstan and Nigeria implemented such measures, yet only Kazakhstan achieved a relatively successful outcome. When linking this type of policy with the contextual factors, it can be observed that Kazakhstan had markedly better values in quality of infrastructure, monitoring capabilities, access to credit and in the Ease of Doing Business ranking compared to the other three countries. Also, it had lower poverty, higher levels of education and HDI.

For the first set of factors, they make sense since preferential treatment measures aim directly at making local companies more competitive, yet having a good business environment should be a prerequisite for them to start doing businesses in the first place. Hence, it can be argued that preferential treatment measures work better if a country has an adequate business environment that allows local companies to prosper, and so be actually able to use the given advantages.

Particularly, complicated or non-available access to finance for small and medium companies was mentioned by Cerbusca as a constraint for local business development (Cerbusca, 2015), allowing for this finding to be in-line with previous research.

Finally, regarding **poverty, education and HDI**, it can be seen that local content measures appear to work better in more developed countries. In fact, regardless of the type or degree of policies implemented, better outcomes are connected with these three measurements when comparing all the nine analysed countries. As it was discussed in the methodology section, this was to be expected as social and economic development are directly linked with these factors, and so they serve indirectly as a proxy for commercial capacity expansion. This argument, implying that more developed countries are more likely to benefit from local content policies regardless of their type, also seems to be in-line with previous analyses. In fact, Heum argues that for underdeveloped economies it's very hard to quickly supply specialized goods and services to the oil industry (Heum, 2008).

All in all, studies from the World Bank and other authors found that high quality of infrastructure, better access to finance for local firms, ease of doing business in general, lower bureaucracy, better contract enforcement capabilities and adequate R&D investments are all factors associated with sound business development and economic growth (Doing Business, 2016) (Klueh, Pastor, & Segura, 2008). This thesis has concluded that, furthermore, they are also connected with better results of local content implementations, yet to different degrees in different contextual situations and under different policies.

The following table provides a graphical summary of contextual factors, policies applied and outcomes achieved for each of the studied countries.

	Context																		Local content policies applied						Outcome
	Education	R&D	HDI	GINI	Poverty	Bureau.	Acc. cred.	EODB rank	Monitoring	Infrastr.	Corruption	Oil prod.	Oil price	Strong NOC	Pref. treatment	Non-specialized	Specialized	Others	Minimum sourcing targets						
Angola 2002-	VL	N/A	L	M	VH	H	VL	VL	VL	VL	VH	Rise	Rise	M	10%	100%	Joint venture mandatory	-	-	Low improvements. Supply bottlenecks, low efficiency.					
Brazil 1999	M	M	H	VH	L	H	H	L	M	M	M	Rise	Rise	VH	-	Low minimums (in-line with complexity)			Licence granted to best bidder (determined partly by local content proposal)			High improvements. Moderate delivery delays			
Ghana 2013-	L	L	M	M	H	M	L	L	M	H	M	Rise	Fall	VL	10%	Increasing. Now mild. Very high after 10 yrs.			-	-	Low improvements. Set to fail in future because of high targets				
Indonesia 2001-	L	VL	M	M	M	VH	H	M	H	VL	VH	Fall	Rise	H	Tender price normalization	Moderate minimums (in-line with complexity)			-	-	Low improvements. Locals not able to use benefit				
Kazakhstan 2010-	H	L	H	VL	VL	H	H	H	H	M	VH	Stable	Stable	H	20% (strict penalties)	Self-imposed low targets			Loans and aid to local businesses championed by NOC			High improvements. Moderate capacity gaps			
Malaysia 1970-	H	M	H	VH	VL	M	H	VH	H	VH	M	Stable	Volatile	VH	-	100% unless not available or from joint venture (minimum 70% local owned).			-	-	Very high improvements.				
Nigeria 2010-	VL	L	L	M	VH	H	M	VL	M	VL	VH	Stable	Stable	M	10%	Very high (in-line with complexity)			-	-	Mixed arguments				
Norway 60s-80s	VH	H	VH	VL	VL	VL	VH	VH	VH	VH	VL	Rise	Rise	VH	If competitive	-	-	Local subsidiaries mandatory + local firms included by force in bids			Very high improvements.				
T&T 2006-	M	VL	H	M	N/A	VH	H	M	VL	H	M	Fall	Volatile	VL	"Reasonable" preference	-	-	Unbundling contracts + public announcement of bids			Low improvements.				

Table 19: Summary table of local sourcing policies

Notes:

1. Values are based on research done in section 7, qualitative comparisons were used.
2. VL = Very low, L = Low, M = Medium, H = High, VH = Very High. NOC = National Oil Company. T&T = Trinidad and Tobago.
3. "N/A" denotes information not available. "-" denotes no such policies were implemented, or were not particularly relevant.
4. Colours in the context and outcome columns represent how positive a contextual factor is categorized. Red represents undesirable values, green denotes helpful values.
5. Colours in the local content columns represent the degree of intensity policies have, relative to the other countries'. Red represents very restrictive policies, green denotes more relaxed ones.
6. All categorizations were done using values calculated as the average from 10 years after policies were enacted, or until the most recent available data.
7. Outcomes' "improvements" are in terms of increases in local business activities, and their share of the awarded oil-related sourcing contracts.

3. Training requirements

Comprehensive mechanism to measure the effectiveness of training programs to foster local employment and develop the skills of personnel have not been widely present in analyses carried out by relevant authors. Moreover, it can be argued that keeping track of the degree to which specific training programs accrue to increased workforce skill and employment levels is hard, because of the difficulty in assessing the quality and scope of each different training initiative.

Nevertheless, some general conclusions can be drawn. It appears safe to say that in all cases where training schemes were conducted, the results have been positive. Out of the countries analysed that implemented such policies, none of them saw negative effects brought by training obligations.

However, it's important to note that all training obligations applied required a relative **lower commitment** (in terms of money and effort) compared to employment and sourcing requirements. Moreover, their enactment doesn't carry any risk of capacity gaps, and at worst it would translate into time or monetary losses. Therefore, significant damages due to the type and the way in which these policies were implemented were lowly probable in the first place.

Regarding the degree of success, it seems like in this case the stricter the policy, the more successful the result. Angola's rigorous training plan submission prerequisite plus considerable monetary requirements resulted in international operators implementing beneficial courses reaching a considerable number of employees. Similarly, Kazakhstan's monetary obligation led to many being benefited. On the other hand, Trinidad and Tobago's and Indonesia's less strict mechanisms only led to smaller – yet still positive – results.

Although it can be argued the measures analysed indeed helped develop the workforce's skills, and thus were generally successful in reducing skill gaps, they did so only to a small degree. In Nigeria and Kazakhstan, for instance, where initiatives had positive effects, they were not able to significantly reduce the skill gap caused by foreign employment quotas.

In short, training requirements **efforts have been too small** in scope compared to the extensive economic and production implications of employment quotas, therefore not being able to serve as an effective counter-measure to make up for the loss of skill-capacity brought by the exiting of qualified foreign personnel.

Additionally, it was found that the presence of a national oil company strongly fostering the implementation of these policies was connected with a higher degree of success in the outcome. Particularly, Angola's Sonangol and Kazakhstan's KazMunayGas were relevant for this issue.

Finally, it's important to mention that in many of the analysed countries training obligations have been in place for a relatively short number of years. The long-term nature of educational initiatives' outcomes is a relevant factor for the lack of more detailed analyses, and should most probably further enhance the accomplishment of already modestly-successful initiatives.

The following table provides a graphical summary of contextual factors, policies applied and outcomes achieved for each of the studied countries.

	Context		Local content policies applied	Outcome	
	Education	Strong NOC		Training	Employment
Angola 2002-	VL	M	Mandatory plans. Minimum monetary contribution	Good programs, but not enough to cover skill-gap	Skill gap
Brazil 1999-	M	VH	-	-	Local employment increase
Ghana 2013-	L	VL	Mandatory plans	N/A	Local employment increase
Indonesia 2001-	L	H	Mandatory plans	Small but positive	Strong local employment increase
Kazakhstan 2010-	H	H	Minimum monetary contribution	Very positive	Strong local employment increase, but skill gap
Malaysia 1970-	H	VH	Mandatory plans. Minimum monetary contribution	N/A	Employment shortage
Nigeria 2010-	VL	M	Mandatory plans	Not enough to cover skill-gap	Mild local employment increase, but skill gap
Norway 60s-80s	VH	VH	-	-	-
T&T 2006-	M	VL	Mandatory plans	Small but positive	Positive but very slow local employment improvements

Table 20: Summary table of training requirements

Notes:

1. Values are based on research done in section 7, qualitative comparisons were used.
2. VL = Very low, L = Low, M = Medium, H = High, VH = Very High. NOC = National Oil Company. T&T = Trinidad and Tobago.
3. "N/A" denotes information not available. "-" denotes no such policies were implemented, or were not particularly relevant.
4. Colours in the context and outcome columns represent how positive a contextual factor is categorized. Red represents undesirable values, green denotes helpful values.
5. Colours in the local content columns represent the degree of intensity policies have, relative to the other countries'. Red represents very restrictive policies, green denotes more relaxed ones.
6. All categorizations were done using values calculated as the average from 10 years after policies were enacted, or until the most recent available data.
7. Training outcomes' "positivity" are in terms of qualitative appreciations discussed in the literature.

4. Technology transfer requirements

This category encompasses all legislative requirements that focus on transferring technological know-how to local businesses supplying goods and services to the oil operators. The objective of such policies is to increase the opportunities of local firms to be competitive when compared to international ones, so as to increase their share of supply contracts in the local market. As discussed in previous sections, industrial capabilities and skills are key to achieve these results.

For this very reason, since technology transfer policies' outcomes are directly linked to local sourcing results, the majority of the country analyses don't evaluate the specific accrual of these obligations to the increases or decreases in local sourcing of goods and services. Instead, they usually address all policies with this objective as a whole.

One reason to explain the previous finding is that most technology transfer requirements are rather small in when measured in necessary commitment by operators when compared to other policies aimed at increasing local sourcing, such as foreign procurement quotas, preferential treatments and some fiscal incentives. Hence, their relevance to the achieved result is probably less significant, and therefore harder to trace.

Nevertheless, the following analysis will aim at connecting specific countries' contextual factors to the technology transfer policies adopted, and then compare them to the achieved results.

An interesting case is the one focusing on **mandatory cooperation mechanisms**. These types of policies, such as requiring joint ventures or partnerships between international and local suppliers, aim at having the international party spill over its technological knowledge and the local one assimilating it, as part of their day to day required cooperation. Angola, Nigeria, Indonesia, Malaysia and Norway implemented this method, yet with markedly diverse outcomes. Although in different times, Angola's joint venture requirement in the 2000s, Nigeria's one in the 1970s and 80s, and Indonesia's one in the 70s had an important analogous contextual factor: high levels of corruption. Consequently, they led to arrangements in which the obligation was taken advantage of by local elites, benefiting their companies without focusing on acquiring the technological knowledge. On the other hand, Malaysia and Norway had considerably lower levels of corruption, and so their achieved results were substantially better.

When studying **R&D expenditures**, it can be seen that – coincidentally – those countries that implemented mandatory minimum R&D monetary contributions also had higher government-level expenditures in R&D compared to the others. Particularly, this was the case for Norway, Brazil and Malaysia. These three countries achieved high increases in the local supply of specialized and non-specialized goods and services. On the other hand, the analysed countries with low R&D expenditure – which also didn't implement mandatory monetary contributions for this purpose –, achieved lower increases in local supply.

There was one exception however, to the previous case. While Kazakhstan didn't implement compulsory R&D expenditure – in fact, it didn't implement any important technology transfer requirements whatsoever –, and had very low levels of R&D spending, it did achieve relatively high increases in local supply levels. Then again, this can be explained by the fact its local supply increases were mainly in non-specialized goods and services, accordingly now requiring such high levels of technological knowledge. In summary, it can be argued then that R&D expenditure – come it from mandatory obligations to operators or directly from the government budget – is directly linked with an increase in the provision of specialized goods and services by local businesses.

A final factor that appears to be linked with better results in R&D expenditure mechanisms is the quality of education. Countries with a better score in this measurement seemed to achieve better results in increasing local supply while needing less strict policy obligations. Such result can be clearly depicted when comparing Malaysia with Brazil. While both countries had relatively similar government R&D expenditure levels, Brazil's monetary requirements to operators were quite higher than Malaysia's. Inversely, Malaysia's education was quite better than Brazil's. In the end, Malaysia's local sourcing results appears superior to Brazil's, thus displaying that education plays a key role. It appears that better results can be achieved with a less strict policy, if scholastic levels are better.

The following table provides a graphical summary of contextual factors, policies applied and outcomes achieved for each of the studied countries.

	Context					Local content policies applied			Outcome	
	Education	R&D	Corruption	Strong NOC	Joint venture/Partnership	Monetary contribution	Joint venture/Partnership	Sourcing		
Angola 2002-	VL	N/A	VH	M	Mandatory	US\$0.03 per barrel to local universities	Corruptive behaviour	Low improvements. Supply bottlenecks, low efficiency.		
Brazil 1999-	M	M	M	VH	-	1% of revenues. Half to local universities, half to firms' own research centres but in Brazil	N/A	High improvements. Moderate delivery delays		
Ghana 2013-	L	L	M	VL	Mandatory, but only 10% local ownership required	Mandatory plans	N/A	Low improvements. Set to fail in future because of high targets		
Indonesia 2001-	L	VL	VH	H	-	-	-	Low improvements. Locals not able to use benefit		
Kazakhstan 2010-	H	L	VH	H	-	-	-	High improvements. Moderate capacity gaps		
Malaysia 1970-	H	M	M	VH	Mandatory	0.5% of revenue to research fund. Government R&D incentives.	Very successful	Very high improvements.		
Nigeria 2010-	VL	L	VH	M	Operators should foster partnerships between local and foreign suppliers	Submit plans	N/A	Mixed arguments		
Norway 60s-80s	VH	H	VL	VH	Mandatory	Mandatory contributions	Very successful	Very high improvements.		
T&T 2006-	M	VL	M	VL	-	-	-	Low improvements.		

Table 21: Summary table of technology transfer requirements

Notes:

1. Values are based on research done in section 7, qualitative comparisons were used.
2. VL = Very low, L = Low, M = Medium, H = High, VH = Very High. NOC = National Oil Company. T&T = Trinidad and Tobago.
3. "N/A" denotes information not available. "-" denotes no such policies were implemented, or were not particularly relevant.
4. Colours in the context and outcome columns represent how positive a contextual factor is categorized. Red represents undesirable values, green denotes helpful values.
5. Colours in the local content columns represent the degree of intensity policies have, relative to the other countries'. Red represents very restrictive policies, green denotes more relaxed ones.
6. All categorizations were done using values calculated as the average from 10 years after policies were enacted, or until the most recent available data.
7. Sourcing outcomes' "improvements" are in terms of increases in local business activities, and their share of the awarded oil-related sourcing contracts.

5. Other relevant findings

A further fiscal policy that appears to have had positive results for both local sourcing and technology transfer is the use of **tax incentives**. These came in the form of tax breaks or tax deductible costs related to R&D. Such initiatives were used in Norway, Malaysia and Brazil, achieving positive outcomes.

Regarding **older, unsuccessful policies** applied in many of the studied countries, it has been found that a common issue for all of them was that they were wide-ranging and not specific in focus. Particularly, they lacked detail in method, and effort in supervision. While the objectives were actually similar to the more recent policies, they were not properly addressed and so lacked the appropriate implementation efforts, leading them to be used in corruption schemes, or simply ignored by international operators.

Such cases can be seen in Indonesia's and Nigeria's policies during the 1970s, and also in Kazakhstan's during the 90s. On the other hand, Norway's regulations from the 60s to the 80s and Malaysia's ones since the 70s – achieving successful results in building an effective local supply capacity – were backed by strong monitoring, government command, and dedicated national oil companies championing the initiatives. Consequently, it can be argued that for local content policies to be successful, they need to be clearly established, effectively implemented and adequately monitored. This result is in-line with the previously discussed importance of a country's relevant authorities' monitoring capabilities.

An additional topic relates to countries which have a history of intense **political instability** – such as periods of civil war or armed conflicts in general – while they were undergoing oil production, such as Angola and Nigeria. This factor seems to relate not only to fights over the control of the resource, but also to a weakening of the development of other national industries, as the focus is put on the first. In turn, this leads to an increased difficulty in developing a local supply base – even after stability has been achieved – because of the low industrialization and diversification in the economy, that obstruct developments in business enablers, such as infrastructure growth.

Finally, the only contextual factor that doesn't seem to be connected with any of the above discussed topics is the **GINI index**. While it was initially thought that inequality could have an effect in the relative success of local content initiatives, the study carried out was not able to find any clear connections.

This being said, inequality does play a relevant role – and probably an even more significant one – when assessing the management of the wealth created by the oil production in each country. In other words, high levels of inequality in countries where oil production has an important share of overall business activity could mean that the prosperity is only captured by a small minority, and not by the general population. While this issue escapes the scope of this thesis – which focus strictly on the outcomes achieved through local content policies – a short discussion will be made in the following paragraphs.

Interesting cases are the ones of Brazil, Malaysia and Norway. These three were, overall, more successful in achieving local content objectives than the other countries analysed. However, the first two are also the ones with the highest values of the GINI index, which could mean that they have an important part of the population that didn't capture any of the gains obtained by the prosperous policies. Norway, on the other hand, was not only able to achieve positive local content results, but also did so while keeping inequality to very low levels, thus allowing a larger share of the population to benefit from those results.

The previous issue is very important when reviewing the ultimate goal of local content policies. Authorities should go back to the discusses strategic development options, and holistically consider when the focus and effort should be put in developing and fostering these policies, and when it should be put in correctly and meticulously investing the tax and royalty revenues, so that the general population – the people they represent and work for – can really attain a share of the development brought by the oil industry.

6. Distinctions with previous literature

Although there were no marked discrepancies with previous findings, there were some important conclusions mentioned in relevant literature that were not able to be resolved using the method carried out in this thesis. They will be briefly explained.

First, it has been mentioned that very prescriptive local content measures serve as deterrents to future oil developments in a country. In time, this is very harmful to a country as not only will tax revenues be affected, but also local businesses themselves (Kalyuzhnova, Nygaard, Omarov, & Saparbayev, Local Content Policies in Resource-Rich Countries, 2016). This thesis could not address this topic, since information of international oil companies' business expansion plans – and criteria for decision process – are not publicly available. Furthermore, it seems evident that such decision won't be made based on local content policies alone, but grounded on a series of other factors.

Second, it has been concluded by many authors that the scope and extent of local content regulations should be in-line with their current oil-related supply capacity and workforce skills, so as to avoid capacity and employment gaps. These number should only increase with time if available capacity and skills are also growing. In this thesis, an issue regarding this topic was pointed when analysing the case of Ghana in section 7. This country had no previous relevant experience with oil production and so their minimum local supply requirement targets were not met, clearly exemplifying this problem. While it seems to apply in that case, no other example could be studied where local capacity was sure to be not sufficient, as all other countries studied produced oil before their policies were enacted.

Third, the latest trends in local content studies is to resolve that prescriptive solutions are not the best option. They argue that strong measurements aiming at rapid capacity development are less

successful, and that more flexible, market-oriented approaches should achieve better results (Marcel, Tissot, Paul, & Omonbude, 2016) (Ovadia, 2016). In this thesis, however, while it was concluded that safeguarding competition and that avoiding capacity gaps are critical measures, it could not be settled that strong measurements are worse than more relaxed one. In fact, examples were given when the opposite was true, and others were it indeed seemed to be the case. In sum, no potential relationship could be found, and other factors were found to be more relevant.

9. Conclusion

A recurring theme in this study is that development is not an easy task. In fact, countries must overcome a wide range of social, economic, and political challenges. When doing so, history has shown that there is no single way of achieving successful or failed results, as an endless number of factors – internal and external – are present in this path.

There are, however, issues more relevant than others. A country's ability to identify and exploit them to their benefit could be argued as a critical strategy for success. Among them, the production of key resources is vital for economic growth, a matter deeply linked with prosperity. For the last two centuries, oil has proven to be such an asset, and the access to it has been vital for development.

It is in this context that local content policies gain relevance, since they deeply influence an industry of such tremendous importance. It has been shown in this thesis that measures of this kind have had mixed outcomes in the past, with most of them failing to achieve positive results, thus hurting a central vehicle for development in many deprived nations.

In recent years, a new wave of local content policies have been implemented in numerous low and middle-income countries, some of them new to these methods and some trying to revitalize them. For this reason, the comprehensive study of their methods, objectives, and success factors has become relevant again. This thesis aims at contributing to this goal by serving as a way of understanding how these kinds of policies have worked in the past, what outcomes they achieved, what led them to reach those results, and ultimately, to serve as an aid for countries to recognise what they can reasonably expect from the employment of different kinds of local content policies, under their specific contextual situation.

Generally speaking, the analysis carried out in this thesis allowed to reach a series of conclusions regarding different kinds of policies and contextual situations.

First, some measures were found to be linked with successful outcomes, irrespective of the country-specific contextual factors under which they were applied. These included policies such as the obligation for operators to provide training schemes, and the use of foreign employment quotas to increase local hires (although this last one mostly led to increases in unskilled labour only, and created adequately-skilled workforce shortfalls when values were set too high).

Further overall successful mechanisms involved having the legislators develop the policies in coordination with the oil operators, providing fiscal incentives to local businesses, and empowering the national oil companies to foster training and employment development themselves, a scheme that actually proved more determinant of rises in local hires than mandating quotas by law.

Second, certain contextual situations were concluded critical for the achievement of positive outcomes, regardless of the kind or degree of policies applied. These included the countries enjoying relative political stability, having a more qualified workforce in terms of education, and spending a

sufficient amount of resources in R&D, a measure found key to achieve increases in the local sourcing of specialized goods and services (although it could be relieved with mandatory R&D contributions from operators).

Additionally, external factors such as the rise of oil prices and the growth of local oil production levels were concluded to be determinants of increases in local sourcing, even more so that the enactment of foreign sourcing quotas.

Third, as initially hypothesised, various local content policies were concluded to work differently under diverse country-specific contexts. Particularly, a suitable business environment that allows local firms to grow and develop – including an adequate infrastructure quality, access to finance for local firms, low bureaucracy, and low corruption levels – was found an important prerequisite for the successful implementations of various policies. These include the use of preferential treatment in contract awarding for local firms, foreign sourcing quotas that otherwise would create supply bottlenecks, and the fostering of national oil companies to take the lead championing local content initiatives themselves.

Furthermore, adequate monitoring capabilities were found essential for the implementation of any kind of policy, yet increasingly so for minimum sourcing targets, a mechanism that appeared to be highly reliant on such competences.

Finally, measures targeting the safeguarding of competition in the procurement process – an issue continuously discussed for its high relevance throughout this thesis – were determined critical to ensure it. Mandatory joint ventures and local-content-based competition in bidding were found useful mechanisms, however only if corruption was low, to avoid rent-seeking behaviour.

All in all, the most important finding in this study is that, indeed, a well implemented local content policy, that take into account the country's contextual factors to determine its kind and intensity, can achieve positive results. What is more, this means that In-Country-Value development options are valid and thus should be considered by governments when assessing oil exploitation mechanisms.

Nevertheless, experience shows that local content regulations also carry a high degree of risk. Various cases have been discussed throughout this thesis in which not only their outcome was not attained, but they created harmful results, such as hindering production or leading to corruption schemes.

This becomes a relevant issue when considering that local content is an attractive target for political manipulation, particularly in oil-abundant nations and where new oil discoveries were made. Therefore, there is a high risk for irresponsible policies to be enacted to satisfy the masses.

For this reason, it becomes pertinent that policymakers are aware of relevant studies on this topic. Holistic analyses should be carried out, different strategic development options should be compared, and realistic objectives must be set for achieving positive results. Particularly, legislators should understand that temporarily protecting local entities from foreign competition should be done to encourage local capacity growth, and that the long-term objective is to attain high performance,

productivity, and ultimately competitiveness. If not done this way, there is a high risk of long-term failure, due to local suppliers being worse in terms of costs, time, and quality compared to foreign ones. In turn, this will hurt operators' profits, and so government's tax revenues. If the losses are higher than the gains brought by local content, then the outcome is undesirable.

What is more, this thesis has shown that policy alone is not sufficient. In fact, it has been verified that country-specific contextual factors play an important role in determining success, as even similar policies can greatly differ in outcome when implemented in different nations.

As for recommendations, it has been found that the capital intensive nature of the oil industry plays an important role when weighting the benefit of different types of local content policies. That is, while employment and training requirements can certainly bring positive outcomes, their reach is far lower than that of local sourcing policies. For this reason, legislators' focus should be put on implementing well thought, clearly established, and adequately monitored local sourcing enhancing obligations. They should explicitly aim at empowering local businesses, making them grow, and facilitating their access to technology. Local jobs will accordingly be created – through indirectly – in these newly developed local firms.

Finally, while this research concludes that in many cases healthier contextual factors are a prerequisite for successful local content implementations, it did not address how can oil-abundant, yet underdeveloped countries achieve this in the first place. If this is the case, should these nations implement local content requirements even if they might attain worse results? Or should they focus on maximizing tax revenues, so as to invest in improving these contextual factors? This last issue remains open, as strategic development options have a countless number of variables. They should be profoundly studied in a country-by-country fashion, to ultimately understand what is the best possible route to follow.

As a general takeaway from this thesis, it's important to go back to the very beginning. The main implication of adopting an In-Country-Value development approach – such as applying local content policies – is to sacrifice tax revenue in the short-term in exchange for business development. The local content principle states that this strategy can maximize welfare in the long-term because of the leveraging on positive externalities in the extractive value chain. However, if local content policies fail to achieve business development and competitiveness, then the opportunity will be lost, and the country might be better off going back to a simpler Revenue-focused development approach.

1. Limitations of the analysis

This sections will be used to acknowledge the boundaries and restrictions faced during the development this thesis. Particularly, it will address issues with the data collection, analyses of previous reviews and the method used for comparing context, policies and outcomes.

It's critical to mention these issues, as limitations might have a relevant impact on results. For this reason, each limitation will be discussed examining its relative importance, possible impact in results, what was this thesis' approach in dealing with this fact, and how it could be overcome in future research.

First, there was an issue of **availability and reliability of data**. While contextual and policy data were relatively more easily available, when studying the outcomes of different policies, much of the information was not available in trustable sources. In fact, a larger amount of policy outcome information was often found in newspaper articles than in research papers. Furthermore, since many of the countries analysed don't use English as their official language, it's possible that useful sources of information were missed in the development of this thesis due to the author not being able to understand nor carry out efficient data gathering in those languages.

Though not-trustable sources were not used for the analysis, their conclusion were mostly in-line with research papers outcomes. This leads to believe that their impact would not drastically change the conclusion reached in this thesis. As for non-English research, since they were not studied, it's hard to measure how big an impact they could have had. Still, it was found that many of the cited authors used research in other languages themselves. When relevant, this sources were checked and translated using online tools. Future research on local content policy could benefit from including local language proficient researchers.

Second, this research was limited to the comparison of local content implementations of **only nine different countries**. Since the deductive method of this thesis is based on comparison of context, policies, and outcomes in different scenarios, the more countries assessed, the more conclusive the results are.

Availability of reliable information on the outcomes of policy implementations was a major factor in the determination of countries to study, and the author was not able to find sufficient amount of publicly available information or researches on this topic for other countries. An important reason for this is that local content has not been addressed as a separate issue by authorities nor researchers until relatively recently, and policies addressing local content topics were usually just minor parts of other legislations, thus explaining why no dedicated research to their outcomes are available. To overcome this issue in future researches, scholars should contact country-experts that have thoughtfully studied the evolution of the oil industry in their countries.

Third, in this same line of thought, this thesis did not compare the cases of **countries in which local content initiatives were implemented by oil companies**, but were not required to do so by legislations. While outcome information was available in these cases – particularly since they were promoted by international oil companies which later showed their results publicly –, the fact that they were not part of a mandatory requirements made them unfit to be compared with the local content initiatives that were. Since this research focused specifically on the impact of legislations, those cases were decided to be left out.

Nevertheless, their study could have also been positive for the comparison of contextual factors and results achieved. However, it would have been necessary to gather trustable information or contact these oil companies to acknowledge the degree of “protection” they voluntarily forced on the local market, so as to accurately compare them with this thesis’ studied cases. In the future, such situations could be added to enrich this study.

Fourth, while it was possible to distinguish policy success from failure in most cases, it was found hard to accurately recognize the **degree of success or failure**. The reason for this, again, is the lack and difficulty in finding available information on issues such as precise business capacity levels at different periods of time, precise level of skill of oil-industry employees, technological knowledge of companies, etc., as they are hard topics to accurately measure.

This was an important reason why this thesis focused on the comparison of several country’s outcomes, since this would allow to find potential relationships between them and contextual factors, without the need of very specific outcome information. Still, more certainty could be achieved in the results if more precise information was available, an issue that could be addressed in the future.

Fifth, for the **potential relationship method** used in this thesis to link contextual factors influencing the outcome in a specific policy-situation, it was found in many cases two or more factors show a link with a type of outcome. In these settings, it is hard to determine which factor or factors are the ones truly influencing the results, and if some of them are merely showing a connection but not necessarily implying causation.

This issue is relevant in the fact that the analysis came up with several factors influencing results, yet it’s probable that some of them have a higher accountability to the results than other. In fact, some of them might not be expressively important. To address this issue, it can be seen that the study found same contextual factors to be relevant in different policy scenarios, thus increasing the likeliness of their relevance for local content in general. As for future research, this result can be improved by thoughtfully studying each factor separately, so as to understand what specific social, economic, and political aspects of the country they influence. In this sense, this thesis could be considered as a pre-research in which the factors to be deeply studied have been stumbled on.

Sixth, a profound **monetary examination** was not carried out in this thesis. It has been discussed and shown that local content policies can lead to supply bottlenecks, thus hurting oil operators’ production capacity, therefore revenues, profits, and finally government revenue through taxes. This study did not, however, measure how much “otherwise extra taxes” were lost by the emergence of capacity gaps. In fact, in many cases gaps were created but local supply also increased, thus serving as an alternative source of tax revenue.

In sum, this issue is important because some degree of capacity gap might be acceptable, and if it is unavoidable to achieve long-term local competitiveness and capacity gains, then it might even be positive. A more detailed analysis addressing tax rates and tax revenues, government burden of the

monetary costs of initiatives such as fiscal incentives, monitoring implementations (prosecuting, investigating), and understanding the real magnitude of capacity gaps could have a positive result in this study, giving rise to a different understanding of what positive outcomes are, and should definitely be included in further researches.

2. Further research areas

While the issues discussed in the previous limitations section represent interesting and meaningful topics to further increase the accuracy of the results obtained in this study, there are other areas that are certainly important to research to further develop the field of local content policies.

One such topic is the analysis of local **content measures taken in other capital intensive, resource extractive industries**, such as the mining industry, where relevant local content initiatives were taken in Zambia, Australia, the Philippines, Tanzania, Kazakhstan, Indonesia and Botswana. While the oil sector doesn't strictly work the same way as others – as there are other economic, political and social issues related to the importance of oil in the world economy –, certainly some significant comparisons could be made. What is more, adding more cases to the analysis can positively increase the accuracy of the obtained results, as it was previously mentioned.

Furthermore, another interesting subject is the influence of **equity ownership requirements** in the oil upstream industry. As it was discussed in section 4 of this thesis, the surge of national oil companies completely changed the landscape of the sector in the 1970s, notably with the creation of OPEC. While equity ownership is an expressively different approach compared to local content, its study is important to address a series of other countries, such as the ones surrounding the Persian Gulf in the Middle East, or Venezuela. Such measures and outcomes could then be compared to local content instruments, so as to assess which have brought better results. Again, this analysis should consider specific contextual factors to understand under which circumstances similar policies work better or worse.

Finally, it's important to mention that in recent years, due to new important oil discoveries, some **additional countries have implemented local content legislations** for the industry, including Mozambique and Liberia in 2014, and Tanzania and Kenya in 2015 (Ovadia, The Role of Local Content Policies in Natural Resource-Based Development, 2015). During the time this thesis was being written – in 2016 and 2017 – there was still not enough information on the policies' outcomes to include them in this study, so they were not analysed. However, once some years have passed and their individual cases are more deeply studied, this research should be revised to include them. They will serve as important additions to the study of local content policies.

10. Bibliography

- African Center for Economic Transformation. (2014). *African transformation report: growth with depth*. ACET.
- Agência Nacional de Petróleo. (2014). *Anuário Estatístico Brasileiro do Petróleo, Gás Natural e Biocombustíveis: 2014*. ANP.
- Agência Nacional de Petróleo. (2015). *Regulamento Técnico ANP No. 3/2015*. ANP.
- Amoako-Tuffour, J., Aubynn, T., & Atta-Quayson, A. (2015). *Local Content and Value Addition in Ghana's Mineral, Oil, and Gas Sectors: Is Ghana Getting It Right?* African Center for Economic Transformation.
- Amuzegar, J. (1999). *Managing the Oil Wealth: OPEC's Windfalls and Pitfalls*. I. B. Tauris.
- Andre, G. (2010). *The management of the Angolan oil revenues: Are there any chances to change course of the "Resource curse"?* University of Dundee.
- Anghelache, C. (2011). *Analysis of the correlation between GDP and final consumption*. Theoretical and Applied Economics.
- Anne O. Krueger, H. M. (2011, March 25). *Economic development*. Retrieved from Encyclopædia Britannica: <https://global.britannica.com/topic/economic-development>
- Antoninis, M. (2014). *Tackling the Largest Global Education Challenge? Secular and Religious Education in Northern Nigeria*. Elsevier.
- Arkhipov, S., Brennan, W., Elfond, G., Lv, N., & Omarova, A. (2010). *Kazakhstan Oil and Gas Sector*. Harvard Business School.
- Armah, S., & Torku, D. (2014). *Are Ghana's Current Policies Sufficient to Avoid the Occurrence of the Resource Curse?* IFRA Publishers.
- Arthur Lok Jack Graduate School of Business. (2005). *BP Trinidad and Tobago Ltd*. The University of West Indies.
- Atsegbua, L. A. (2012). *The Nigerian Oil and Gas Industry Content Development Act 2010: An Examination of its Regulatory Framework*. OPEC Energy Review.
- Ayoub, A. (1994). *Oil: Economics and Political*. DeGroote School of Business, McMaster University.
- Bagley, R. O. (2012, May 15). *Small Businesses = Big Impact*. Retrieved from Forbes: <http://www.forbes.com/sites/rebeccabagley/2012/05/15/small-businesses-big-impact/#7fd104b7c0d9>
- Baker and McKenzie. (2011). *Changes to Kazakhstan's Legislation on Foreign Employees*. Baker and McKenzie.
- Bank Pembangunan. (2011). *Report on Malaysia Oil and Gas Exploration and production*. Bank Pembangunan.
- Bénassy-Quéré, A., Coupet, M., & Mayer, T. (2007). *Institutional Determinants of Foreign Direct Investment*. World Economy.

- Bird, A., & Brown, M. (2005). *The History and Social Consequences of a Nationalized Oil Industry*. Stanford University.
- Bloch, R., & Owusu, G. (2012). *Linkages in Ghana's gold mining industry: challenging the enclave thesis*. Resour.
- Bondarenko, P. (2016, February 5). *Gross domestic product (GDP)*. Retrieved from Encyclopædia Britannica: <https://www.britannica.com/topic/gross-domestic-product>
- BPMIGAS. (2011). *Annual Report 2011*. BPMIGAS.
- Brandao, F. (1998). *The Petrobras Monopoly and the Regulation of the Oil Price in Brazil*. Oxford Institute for Energy Studies.
- British Petroleum. (2012). *BP Statistical Review 2012*. British Petroleum (BP).
- British Petroleum. (2015). *Sustainability Report*.
- Brown, J. M. (n.d.). *How Important Are Small Businesses to Local Economies?* Retrieved from Chron: <http://smallbusiness.chron.com/important-small-businesses-local-economies-5251.html>
- Brunnschweiler, C. N., & Bulte, E. H. (2008). *Linking Natural Resources to Slow Growth and More Conflict*. Science.
- Bureau of Labor Statistics. (2017). *Employees on nonfarm payrolls by industry sector and selected industry detail*. Retrieved from Bureau of Labor Statistics: <https://www.bls.gov/news.release/empsit.t17.htm>
- Burkhalter, N., & Shegebayev, M. (2012). *Critical Thinking as Culture: Teaching Post-Soviet Teachers in Kazakhstan*. Springer Science and Business Media.
- Cerbusca, V. (2015). Financing SME future development. *Economy and Sociology*, 139-142.
- Chen, Y., Yu, J., & Kelly, P. (2016). *Does the China factor matter: What drives the surge of world crude oil prices?* . Elsevier.
- CIMB. (2012). *ETP 2011 Annual Report - A for Transformation*. CIMB.
- Columbia Center of Sustainable Investment. (2014). *Local Content: Ghana - Petroleum*. Columbia University.
- Columbia Center of Sustainable Investment. (2014). *Local Content: Nigeria - Petroleum*. Columbia University.
- Cooke, E., Hague, S., & McKay, A. (2016). *The Ghana Poverty and Inequality Report*. UNICEF.
- Coronel, A. L., Rozhkov, D., & Al-Eyd, A. (2011). *Country Report*. International Monetary Fund.
- Council of Ministers. (1982). *mandatory training and hire of Angolans by foreign companies operating in the Angolan oil industry*. Official Gazette (Diario Da Republica).
- Council of Ministers. (2009). *Rules and procedures to observe in recruitment, integrations, training and development of Angolan personnel in the oil industry and hiring foreign personnel for the execution of oil operations*. Council of Ministers.
- Deneulin, S., & Shahani, L. (2009). *An Introduction to the Human Development and Capability Approach*. Earthscan.

- Department of State. (2011). *2011 Investment Climate Statement - Malaysia*. US Department of State.
- Department of State. (2011). *2011 Investment Climate Statement - Trinidad and Tobago*. Department of State (DoS).
- Direktorat General of Oil and Gas. (2011). *Buku Apresiasi Produksi Dalam Negeri*. Ministry of Energy and Mineral Resources.
- Doing Business. (2016). *Doing Business 2017: Equal Opportunity for All*. The World Bank.
- El-Katiri, L., Fattouh, B., & Segal, P. (2011). Anatomy of an oil-based welfare state: Rent distribution in Kuwait. *LSE Global Governance*, 7.
- Energy Chamber. (2009). *Assessment of the Energy Services Sector in the Caribbean*. The Energy Chamber of Trinidad and Tobago.
- Energy Information Administration. (2011). *Country Analysis Brief*. EIA.
- Eni S.p.A. (2015). *Integrated Annual Report*.
- ExxonMobil. (2015). *Summary Annual Report*.
- Filho, I. S. (2000). *Concession Agreements*. ANP.
- Fortune. (2017). *Global 500*. Fortune.
- Gabrielli, J. S. (2015). Former CEO of Petrobras. (Y. Kalyuzhnova, Interviewer)
- Ghana Statistical Service. (2016). *Gross Domestic Product (2015)*. Ghana Statistical Service.
- Gjerde, K. (2013). *Oljelandet og ny Næring Langs Kysten*. Norsk Oljemuseum.
- Gomes, E., & Weimer, M. (2011). *Education in Angola: Partnership opportunities for the UK*. Chatham House.
- Grace, R. (2007). *Oil: An Overview of the Petroleum Industry*. Guld Publishing Company.
- Gronwald, M. (2016). *Explosive oil prices*. Elsevier.
- Guriev, S., Kolotilin, A., & Sonin, K. (2011). *Determinants of Nationalization in the Oil Sector: A Theory and Evidence from Panel Data*. Oxford University Press .
- Harvard Atlas of Economic Complexity. (2016). *What did Ghana export in 2014?* Harvard Atlas of Economic Complexity.
- Heum, P. (2008). *Local Content Development: Experiences from Oil and Gas Activities in Norway*. Institute for Research in Economics and Business Administration.
- Heum, P., Quale, C., Karlsen, J. E., Kragha, M., & Osahon, G. (2003). *Enhancement of local content in the upstream oil and gas industry in Nigeria*. SNF - Institute for Research in Economics and Business Administration.
- Idris, A. (2012). *Doing Business in Indonesia: Challenges and Opportunities in the Oil and Gas industry*. INTSOK.
- Ihua, U. (2010). *Local content policy and SMEs sector promotion: the Nigerian oil industry experience*. International Journal of Business Management.

- International Energy Agency. (2006). *Angola: Towards and energy strategy*. IEA.
- Jiao, J., Wang, J., Jin, F., & Du, C. (2016). *Understanding relationship between accessibility and economic growth: a case study from China (1990–2010)*. Chinese Geographical Science, Vol.26(6), pp.803-816.
- Johnston, D., & Johnston, D. (2001). *Kashagan and Tengiz*. PetroMin Magazine.
- Kalyuzhnova, Y. (2008). *Economics of the Caspian Oil and Gas Wealth*. Palgrave MacMillan.
- Kalyuzhnova, Y., & Kaser, M. (2005). *Prudential Management of Hydrocarbon Revenues in Resource-Rich Economies*. United Nations Economic Commission for Europe.
- Kalyuzhnova, Y., Nygaard, C. A., Omarov, Y., & Saparbayev, A. (2016). *Local Content Policies in Resource-Rich Countries*. Palgrave Macmillan.
- Kazakhstan Contract Agency. (2012). *Kazakhstani Content in the Oil and Gas industry*. Ministry of Oil and Gas.
- Kazakhstan Ministry of Oil and Gas. (2011). *Oil and Gas: Kazakhstan Content*. KMOG.
- Kentebe, D. A. (2015, October 15). (Y. Kalyuzhnova, Interviewer)
- Kirk, R. (2011). *2011 National Trade Estimate Report on Foreign Trade Barriers*. Office of the United States trade representative.
- Kisswani, K. (2014). *OPEC and political considerations when deciding on oil extraction*. Springer Science & Business Media .
- Klueh, U. H., Pastor, G., & Segura, A. (2008). Policies to improve the local impact from hydrocarbon extraction: Observations on West Africa and possible lessons for Central Asia. *Energy Policy*.
- Kobrin, S. J. (1985). *Diffusion as an Explanation of Oil Nationalization: Or the Domino Effect Rides Again*. Sage Publications.
- Lima de Oliveira, R. (2015). *Local content requirements in the oil and gas industry in developing countries: the return of ISI?* Massachusetts Institute of Technology.
- Luong, P. (2010). *Beyond "Resource Nationalism" Implications of State Ownership in Kazakhstan's Petroleum Sector*. Brown University.
- Macatangay, R. E. (2016). *Optimal local content requirement policies for extractive industries*. Centre for Energy, Petroleum and Mineral Law and Policy, School of Social Sciences, University of Dundee.
- Macrotrends. (2017). *Crude Oil Prices - 70 Year Historical Chart*. Retrieved from Macrotrends: <http://www.macrotrends.net/1369/crude-oil-price-history-chart>
- Malaysian Investment Development Authority. (2011).
- Marcel, V., Tissot, R., Paul, A., & Omonbude, E. (2016). A Local Content Decision Tree for Emerging Producers. *Chatham House: The royal institute of international affairs*.
- Mazumdar, K. (1999). Measuring the Well-Beings of the Developing Countries: Achievement and Improvement Indices. *Social Indicators Research Vol.47*, 1-60.
- MENAS. (2008). *Trinidad*. MENAS Associates.

- MENAS. (2009). *Kazakhstan*. MENAS.
- Ministry of Energy and Energy Affairs. (2011). *Sustainable Development Issues: Local content and participation*. MEEA.
- Ministry of Oil and Gas. (2011). *Oil and Gas: Kazakhstan Content*. Ministry of Oil and Gas.
- Ministry of Oil and Gas. (2012). *Report on the Development of the Kazakhstan Content in Oil and Gas Industry in Year 2011*. MOG.
- Ministry of Petroleum and Energy. (2014). *Facts 2014: The Norwegian Petroleum Sector*. Ministry of Petroleum and Energy.
- Moen, H. (2013). *Local Content, ANP 1% and Other Relevant Policies*. Innovation Norway.
- National Assembly. (2003). *Law on the promotion of the Angolan private business community*. Angolan National Assembly.
- Natural Resource Governance Institute. (2015). *Local Content, Strengthening the Local Economy and Workforce*. NRGRI Reader.
- Ngoasong, M. Z. (2014). *How international oil and gas companies respond to local content policies in petroleum-producing developing countries: A narrative enquiry*. Elsevier.
- Nordas, H. K., Vante, E., & Heum, P. (2003). *The Upstream Petroleum Industry and Local Industrial Development - A Comparative Study*. Institute for Research in Economics and Business Administration.
- Norwegian Petroleum Directorate. (2017). *Production licences*. Retrieved from Norwegian Petroleum Directorate: <http://www.npd.no/en/topics/production-licences/>
- Nwapi, C. (2010). *Corruption vulnerabilities in local content policies in the extractive sector: an examination of the Nigerian Oil and Gas Industry Content Development Act*. Resour.
- Obikili, N. (2015). *An Examination of Subnational Growth in Nigeria: 1999-2012*. South African Journal of Economics.
- OECD data. (2016). *Oil production over the years (in KTON)*. Organisation for Economic Co-operation and Development.
- Oliveira, R. S. (2007). *Business Success, Angola-Style: Postcolonial Politics and the Rise of Sonangol*. Cambridge University Press.
- O'Neil, P. (2004). *Essentials of Comparative Politics*. Norton.
- OPEC. (2016). *OPEC Annual Statistical Bulletin*. Organization of the Petroleum Exporting Countries .
- OPEC. (2017). *Member Countries*. OPEC.
- Ospanova, S. (2010). *Local Content Policy: Kazakhstan Review*. British Embassy in Astana.
- Ovadia, J. S. (2013). The Making of Oil-Backed Indigenous Capitalism in Nigeria. *New Political Economy*, 258-283.
- Ovadia, J. S. (2015). *The Petro-Developmental State in Africa: Making Oil Work in Angola, Nigeria and the Gulf of Guinea*.

- Ovadia, J. S. (2015). *The Role of Local Content Policies in Natural Resource-Based Development*. Österreichische Entwicklungspolitik 2015. Rohstoffe Und Entwicklung.
- Ovadia, J. S. (2016). *Local content policies and petro-development in Sub-Saharan Africa: A comparative analysis*. Elsevier.
- Paliashvili, I. (1998). *The Concept of Production Sharing*. Seminar on the Legislation on Production Sharing Agreements.
- PetroMin. (2011). *Deepwater sector leads Malaysia upstream growth*. Country Report (PetroMin).
- PROMINP. (2011). *PROMINP: O&G Brazilian Industry Mobilization Program*. Program for the Movilization of the Oil and Gas Industry (PROMINP).
- Ratti, R. A., & Vespignani, J. L. (2016). *Oil prices and global factor macroeconomic variables*. Elsevier.
- Republic of Kazakhstan. (2010). *Law of the Republic of Kazakhstan on Subsurface and Subsurface Use*. Republic of Kazakhstan.
- Republic of Kazakhstan. (2011). *Resolution No. 71 of the Governement of the Republic of Kazakhstan on Changes and Amendements to the 19 June 2001 Resolution No. 836*. Republic of Kazakhstan.
- Ross, M. (2012). *The Oil Curse*. Princeton University Press.
- Ross, M. L. (1999). *The Political Economy of the Resource Curse*. World Politics.
- Ross, M. L. (2011). *Does Oil Hinder Democracy?* World Politics.
- Royal Dutch Shell. (2015). *Sustainability Report*.
- Sakyi, D., & Adams, S. (2012). *Democracy, Government Spending and Economic Growth: The Case of Ghana, 1960–2008*. Sage Publications.
- Sarpong, G. A. (2015). *Local Content in the Oil and Gas Sector in Ghana*. Association of Environmental Law Lecturers in African Universities.
- Schwab, K. (2011). *The Global Competitiveness Report*. World Economic Forum.
- Sejpal, S., Wagacha, N., & Nyayieka, S. (2015). *A Review of Local Content Regulations in the Upstream Oil & Gas Sector in Africa*. King & Wood Mallesons.
- Senoo, J. E., & Armah, S. E. (2015). *Assessing the Effectiveness of Ghana's Local Content Policy in the Oil and Gas Industry*. Department of Business Administration, Ashesi University College, Ghana.
- Speight, J. G. (2015). *Handbook of Offshore Oil and Gas Operations*. Elsevier.
- Stewart, F. (2013). *Capabilities and Human Development: Beyond the individual—the critical role of social institutions and social competencies*. United Nations Development Programme, Human Development Report Office.
- The American Petroleum Institute. (2016). *Oil and Natural Gas*. Retrieved from The American Petroleum Institute: <http://www.api.org/oil-and-natural-gas/wells-to-consumer>
- The Economist. (1977). *The Dutch Disease*. The Economist.

- The International Petroleum Industry Environmental Conservation Association (IPIECA). (2011). *Local content strategy: A guidance document for the oil and gas industry*.
- The Natural Resource Governance Institute. (2015). Local Content, Strengthening the Local Economy and Workforce. *NRGI Reader*, 1-4.
- Tordo, S., & Anouti, Y. (2013). *Local Content in the Oil and Gas sector: Case Studies*. World Bank.
- Tordo, S., Warner, M., Menzano, O. E., & Anouti, Y. (2013). *Local Content Policies in the Oil and Gas Sector*. The World Bank.
- Total S.A. (2015). *Registration document*.
- Transparency International. (2015). *Corruption Perception Index*. Transparency International e.V.
- Trinidad Express. (2013, March 12). *Allowing govt to manage better*. Retrieved from Trinidad Express: http://www.trinidadexpress.com/business-magazine/Allowing__govt_to_manage_better-197710671.html
- U.S. Energy Information Administration. (2017). *International Energy Statistics*. U.S. Department of Energy.
- UNESCO Institute of Statistics. (2016). *Education: Literacy Rates*. UNESCO.
- UNESCO Institute of Statistics. (2016). *Gross Domestic Expenditure on R&D*. UNESCO Institute of Statistics.
- United Nations. (2006). *National Plan of Actions Presentation Project*. UN ESCAP.
- United Nations. (2010). *Selected measurements*. United Nations, Department of Economics and Social Affairs.
- United Nations. (2010). *The 2010 International Trade Statistics Yearbook*. United Nations Comtrade.
- United Nations Development Programme. (2016). *Human Development Index*. United Nations.
- Venables, A. J. (2016). *Using Natural Resources for Development: Why Has It Proven So Difficult?* Journal of Economic Perspectives.
- Watts, M. (1987). *State, Oil and Agriculture in Nigeria*. Institute of International Studies, University of California.
- World Bank. (2011). *Doing Business Survey*. World Bank.
- World Bank data. (2016). *Selected measurements*. The World Bank.
- WorldBank. (2013). *Local Content Policies in the Oil, Gas, and Mining Sectors – Conference Report*. The World Bank.