Chapter 2. Resource Curse

2.1 Natural Resource in Africa

The definition of natural resources can vary dependent on how one perceives it. When defining the term natural resources in the context of the resource curse, great consideration should be taken. In this thesis, natural resources will be defined as "stocks of materials that exist in the natural environment that are both scarce and economically useful in production or consumption, either in their raw state or after a minimal amount of processing." (WTO 2010, p. 46). Furthermore, goods must be scarce in the economic sense to qualify as natural resources; otherwise one can consume as much as they wanted at no cost to themselves or to others. For example, air would not be considered as natural resource because one is able to obtain it freely with no cost. Natural resources can be considered as natural capital assets distinct from physical and human capital in that they are not created by human activity.

A distinctive feature of many natural resource endowments is that they are not widely dispersed among countries but rather geographically concentrated in a few fixed locations. This helps to explain why natural resources often represent a disproportionate share of economic production and exports in certain countries. Many African countries possess various types of natural resources as can be seen from table 1. From table 1, one can see that there are many natural resource-rich countries in Africa, and the endowments of these natural resources may play a great role in their economies. Especially, when considering oil and natural gas which are considered as important energy resources, one can suspect that oil and natural gas exporters rely heavily on exporting these resources. Therefore, it is important to pay attention to what kind of effects are brought by the heavy reliance on natural resources exports in African natural resource-rich countries. Accordingly, this chapter will focus on identifying the 'curse' of natural resource in African countries which often appears to have similar effects as the 'curse' of aid.

Table 1: Natural Resources in African Countries

Country	Natural Resources
Algeria	Petroleum, natural gas, iron ore, phosphates, uranium, lead, zinc
Angola	Petroleum, diamonds, iron ore, phosphates, copper, feldspar, gold, bauxite, uranium
Benin	Small offshore oil deposits, limestone, marble, timber
Botswana	Diamonds, copper, nickel, salt, soda ash, potash, coal, iron ore, silver
Burkina Faso	Manganese, limestone, marble, small deposits of god, phosphates, pumice, salt
Burundi	Nickel, uranium, rare earth oxides, peat, cobalt, copper, platinum, vanadium, arable land, hydropower, niobium, tantalum, gold, tin, tungsten, kaolin, limestone
Cameroon	Petroleum, bauxite, iron ore, timber, hydropower
Cape Verde	Salt, basalt rock, limestone, kaolin, fish, clay, gypsum
Central African Republic	Diamonds, uranium, timber, gold, oil, hydropower
Chad	Petroleum, uranium, natron, kaolin, fish (Lake Chad), gold, limestone, sand and gravel, salt
Comoros	NEGL
Republic of the Congo (Brazzaville)	Petroleum, timber, potash, lead, zinc, uranium, copper, phosphates, gold, magnesium, natural gas, hydropower
Democratic Republic of Congo (Kinshasa)	Cobalt, copper, niobium, tantalum, petroleum, industrial and gem diamonds, gold, silver, zinc, manganese, tin, uranium, coal, hydropower, timber
Cote D'Ivoire	Petroleum, natural gas, diamonds, manganese, iron ore, cobalt, bauxite, copper, gold, nickel, tantalum, silica sand, clay, cocoa beans, coffee, palm oil, hydropower
Djibouti	Potential geothermal power, gold, clay, granite, limestone, ,marble, salt, diatomite, gypsum, pumice, petroleum
Egypt	Petroleum, natural gas, iron ore, phosphates, manganese, limestone, gypsum, talc, asbestos, lead, rare earth elements, zinc
Equatorial Guinea	Petroleum, natural gas, timber, gold, bauxite, diamonds, tantalum, sand and gravel, clay
Eritrea	Gold, potash, zinc, copper, salt, possibly oil and natural gas, fish
Ethiopia	Small reserves of gold, platinum, copper, potash, natural gas, hydropower
Gabon	Petroleum, natural gas, diamond, niobium, manganese, uranium, gold, timber, iron ore, hydropower
Gambia	Fish, clay, silica sand, titanium (rutile and ilmenite), tin, zircon
Ghana	Gold, timber, industrial diamonds, bauxite, manganese, fish, rubber, hydropower, petroleum, silver, salt, limestone

Guinea	Bauxite, iron ore, diamonds, gold, uranium, hydropower, fish, salt
Guinea-Bissau	Fish, timber, phosphates, bauxite, clay, granite, limestone, unexploited deposits of petroleum
Kenya	Limestone, soda ash, salt, gemstones, fluorspar, zinc, diatomite, gypsum, wildlife, hydropower
Lesotho	Water, agricultural and grazing land, diamonds, sand, clay, building stone
Liberia	Iron ore, timber, diamonds, gold, hydropower
Libya	Petroleum, natural gas, gypsum
Madagascar	Graphite, chromite, coal, bauxite, rare earth elements, salt, quartz, tar sands, semiprecious stones, mica, fish, hydropower
Malawi	Limestone, arable land, hydropower, unexploited deposits of uranium, coal, and bauxite
Mali	Gold, phosphates, kaolin, salt, limestone, uranium, gypsum, granite, hydropower Note: bauxite, iron ore, manganese, tin, and copper deposits are known but not exploited
Mauritania	Iron ore, gypsum, copper, phosphate, diamonds, gold, oil. Fish
Mauritius	Arable land, fish
Morocco	Phosphates, iron ore, manganese, lead, zinc, fish, salt
Mozambique	Coal, titanium, natural gas, hydropower, tantalum, graphite
Namibia	Diamonds, copper, uranium, gold, silver, lead, tin, lithium, cadmium, tungsten, zinc, salt, hydropower, fish Note: suspected deposits of oil, coal, and iron ore
Niger	Uranium, coal, iron ore, tin, phosphates, gold, molybdenum, gypsum, salt, petroleum
Nigeria	Natural gas, petroleum, tin, iron ore, coal, limestone, niobium, lead, zinc, arable land
Rwanda	Gold, cassiterite (tin ore), wolframite (tungsten ore), methane, hydropower, arable land
Sao Tome & Principe	Fish, hydropower
Senegal	Fish, phosphates, iron ore
Seychelles	Fish, copra, cinnamon trees
Sierra Leone	Diamonds, titanium ore, bauxite, iron ore, gold, chromite
Somalia	Uranium and largely unexploited reserves of iron ore, tin, gypsum, bauxite, copper, salt, natural gas, likely oil reserves
South Africa	Gold, chromium, antimony, coal, iron ore, manganese, nickel, phosphates, tin, rare earth elements, uranium, gem diamonds, platinum, copper, vanadium, salt, natural gas
Sudan	Petroleum; small reserves of iron ore, copper, chromium ore, zinc, tungsten, mica, silver, gold; hydropower
Swaziland	Asbestos, coal, clay, cassiterite, hydropower, forests, small gold

	and diamond deposits, quarry stone, and talc
Tanzania	Hydropower, tin, phosphates, iron ore, coal, diamonds, gemstones, gold, natural gas, nickel
Togo	Phosphates, limestone, marble, arable land
Tunisia	Petroleum, phosphates, iron ore, lead, zinc, salt
Uganda	Copper, cobalt, hydropower, limestone, salt, arable land, gold
Western Sahara	Phosphates, iron ore
Zambia	Copper, cobalt, zinc, lead, coal, emeralds, gold, silver, uranium, hydropower
Zimbabwe	Coal, chromium ore, asbestos, gold, nickel, copper, iron ore, vanadium, lithium, tin, platinum, group metals

Source: Central Intelligence Agency
https://www.cia.gov/library/publications/the-world-factbook/fields/2111.html (accessed: 20.02.2013)

2.2 Resource Curse

As mentioned earlier, many African countries are resource-rich and it would be logical to reason that the endowments of natural resources may play a crucial role in their economies and economic development. However, the question whether production of extractive commodities, such as oil and natural gas, promotes or harms economic development still remains. The big push theory[3] stresses that poor economies need a large expansion in demand, to expand their market size, so that entrepreneurs will find it profitable to incur the fixed costs of industrialization. The logic behind the big push theory is that anything that stimulates demand is acceptable, such as a large public spending program, foreign aid, or a rise in the world price of a natural resource which is often called the resource boom (Sachs & Warner 1999, p.43). In other words, regarding the natural resources and resource booms, the big push theory provides a mechanism by which resource rents help set industrialization in motion, and, furthermore, resource booms cause industrialization because they can raise incomes and therefore demand for domestic manufactures (Sachs & Warner 1999, p. 51).

Despite the big push theory, however, it is often claimed that such resource abundance does not always lead to sustainable economic growth and development for the countries concerned. In fact, it is possible to see that many resource-poor economies often outperform resource-rich economies in economic growth. Indeed, countries which rely on primary export sectors, such as oil and minerals, often grow slower than their peers, and this phenomenon in mainstream economics is often referred to as the "resource curse" (Harford&Klein 2005, p.1). The term resource curse was first used by Auty (1993) who describes how natural resource-rich countries are not able to use the resource wealth to

[3] The originator of the big push theory was Rosenstein Rodan (1943) and further contributions were made by Murphy et al. (1989).

boost their economies but achieve lower economic growth than the resource-poor countries.

The ironic cases, resource-rich countries being outperformed by resource-poor countries, have been witnessed throughout economic history. For example, in the seventeenth century, Spain was outperformed by the Netherlands despite the overflow of gold and silver from its colonies. In the nineteenth and twentieth centuries, the growth of Switzerland and Japan, resource-poor countries, was higher than resource-rich countries such as Russia. Furthermore, it is possible to see that recent world's outstanding performers have been the resource-poor countries such as South Korea and Taiwan while resource-rich countries, such as Mexico, Nigeria, and Venezuela, have gone bankrupt (Sachs & Warner 1995, p. 2).

Despite these historical facts, it is still ironic to see the negative relationships between resource abundance and economic growth. After all, natural resources have high potentials to increase wealth and raise the investment and growth rates of an economy. Therefore, this chapter will carefully look into the negative impacts related to the abundance of natural resources. First, the resource curse effects will be illustrated.

Conflict

One of the most well known impacts of natural resources abundance is that it has the potential to provoke, or continue, civil conflict. There are four types of explanations of how natural resources can cause conflicts: "looting", also called "Greed", mechanism, the "grievance" mechanism, "state weakness" mechanism, and the "separatist" incentive mechanism.

According to the looting mechanism, primary commodities refer to as profitable opportunities for emerging rebel groups. Emerging rebel groups could profit by extracting and selling the commodities directly or by extorting money from a third party. Furthermore, natural resources have the potential to increase the chances of civil wars by enabling emerging rebel groups to fund their initial start up costs (WTO 2010, p. 94).

According to the grievance mechanism, resource extraction has the potential to cause grievances amongst local people who feel they have been unfairly compensated for the expropriation of their land, environmental degradation, insufficient amount of job opportunities and, moreover, the social disruptions caused by labour migration. These possibilities can lead to civil wars (WTO 2010, p. 94).

According to the state weakness mechanism, natural resources -especially oil- wealth has the potential to increase the chances of civil war by making a state less responsive to its citizens and by hindering the states' ability to resolve social conflicts. In other words, in this instance natural resources wealth is linked with the weakening of the state's bureaucracy (Oyefusi, 2007, p. 10).

According to the separatist incentive mechanism, natural resource wealth, if concentrated on a

periphery of a country or in an area populated by an ethnic minority, has the potential to raise the chances of civil war by presenting residents to form a separate state (Ross 2004b, p. 11).

Irrespective of all different mechanisms, conflict tends to occur more when a country possesses a "point source" natural resource such as oil and minerals. These point sources tend to be accompanied by rent-seeking behavior as the revenues and rents are more easily appropriable. Furthermore, there could be struggles to retain control over the point sources wealth within the government of a country which is an obstacle for a government to function effectively (WTO 2010, p. 94).

Dutch Disease

The term Dutch disease was used for the first time in the magazine "The Economist", published in November, 26, 1977. It describes the decline of the manufacturing sector, export sector, and increased unemployment rate in the Netherlands due to the natural gas revenue after it was discovered in 1960. The Dutch disease is usually known for the combined influence of two effects which often follow resource booms. According to Ross (1999, p.306). the first effect is "the appreciation of a state's real exchange rate caused by the sharp rise in exports; the second is the tendency of a booming resource sector to draw capital and labour away from a country's manufacturing and agricultural sectors, raising their production cost." As the Dutch disease is closely related to natural resources, a more specific explanation is required, and WTO (2010) provides more specific explanation of the Dutch disease.

According to WTO (2010, p.91), "An increase in revenues from natural resources can de-industrialize a nation's economy by raising the real exchange rate thus rendering the manufacturing sector less competitive." There are two types of de-industrialization which follow the natural resources boom. One is called "direct de-industrialization", also called "factor movement effect", which refers to the shift in production towards the natural resources sector. In order to specifically explain, one can postulate that there are three sectors which are natural resources (booming sector), manufacturing (lagging sector), and a sector production non-traded goods. In the "direct de-industrialization" scenario, the booming natural resources sector would take factor inputs away from the rest of the economy. When this situation occurs, it will result in creating a high demand for non-tradable goods which eventually leads to the increase in the relative price of non-traded goods. If the economy is small, where the prices of traded goods determined on world markets, it is likely to experience an appreciation of the real exchange rate, and the manufacturing sector will become less competitive (WTO2010. p. 91).

Another type of de-industrialization is called "indirect de-industrialization" which is also called

"spending effect". It is the situation where the increase in natural resource revenues leads to additional spending which result in a further appreciation of the real exchange rate (WTO 2010, p. 91). One is likely to see the increase in domestic income and internal demand for foods due to the extra revenues from the resource exports boom. In other words, the additional spending would boost the relative price of non-tradables as the price of tradables is set on world markets. Therefore, this would result in further appreciation of the real exchange rate.

Of course, countries are supposed to specialize in industries which have the most comparative advantages and, therefore, resource-rich countries should specialize in natural resources extraction and exports. However, it becomes a serious problem if the decline in manufacturing sector is ignored due to the positive spillovers on the rest of the economy. For example, Krugman (1987 p.49) argues that the discovery of tradable natural resources such as oil may cause a permanent loss of other sectors such as manufacturing sector, which he considers as the core of economic growth, and diminish the learning-by-doing benefits. When the natural resource depleted, Krumgan (1987, p.49) argues that it is unlikely that the lost manufacturing sector is to recover. More specific explanations for Dutch disease is illustrated in section 4.2.1

Institutions

Institutions play a major role in growth and development of an economy. Therefore, it can be argued that the natural resources dominance would have direct/indirect effects on economic growth through institutions. For example, Rodrik et al. (2004) argue that institutions play a crucial role in determinants of growth and development.

It has been contended that resource abundance can be an obstacle in economic growth when accompanied by weak institutions such as "poorly defined property rights, poorly functioning legal systems, weak rule of law and autocracy." (WTO 2010, p. 93). For example, when an economy is run under autocratic leadership, there is a possibility that policies are guided by the desire to extract bribes from firms. When this situation occurs, one can assume that there would be more support for the resource sector by government when a resource boom takes a place. In other words, the policies support may become biased towards the 'booming sector' and harms manufacturing sector. Consequently, a weakened manufacturing sector can harm economic growth (WTO 2010, pp.93-94).

Second, if an economy is facing natural resource booms, there is a potential for institutions to become weaker due to rent-seeking. According to WTO (2010, p.94), agents may engage in rent-seeking to appropriate the available resource income from the economy which is called "voracity effect". Also, natural resource booms have the potential to boost corruption among bureaucrats and politicians who allocate the rents from natural resources exploitation or exportation due to the

increase of the rent-seeking behavior. More Specific explanations with regards to institutions are illustrated in section 4.2.2 and 4.2.3.

Volatility

Natural resources, especially point sources such as oil, are usually subject to price volatility. The price fluctuation of natural resources in the past was mainly supply-driven, often linked to historical geopolitical events. The late 1970s' oil price shock, for example, represents such case (WTO 2010, p.97). On the other hand, according to Kilian (2009, p.3), the recent price volatility of oil has been caused by demand-driven factors such as the rapid income growth of key emerging markets in Asia. It is possible to assume that the heavy reliance on such a volatile natural resource would result in a volatile fluctuation of a country's government revenue and expenditures, which would in turn create an environment for unsustainable growth. Also, heavy reliance on a volatile resource, according to Budina & Van Wijbergen (2008), can lead to, or correlate with, the debt overhang problems. A more in-depth explanation for the problems of volatility and debt overhang will be illustrated in section 2.4.3.

Taxation

Tax collection from the citizens has a close relationship with the capability and accountability of government. The populance can demand efficient responsive government in return as they are taxpayers. In other words, this provides a political relationship between rulers and subjects. For example, according to OECD (2008, p.9), bargaining between rulers and taxpayers gave governments an incentive to promote broad economic prosperity and improve public policies in Western Europe and North America in ways that meet citizens' demand. Similarly, Ross (2004a, p. 229) suggests that the tax collection is thought to have contributed to the emergence of strong state and democratic institutions in many Western countries.

However, if the natural resources become guaranteed income, rulers do not need tax from their citizens. For example, Humphreys et al. (2007. P. 11) argue that when citizens do not pay tax, they often have less information about state activities and may demand less of states. Even if citizens are to disapprove of state action, they lack the means to withdraw their financial support from states.
This often leads to break down in the relationship between rulers and subjects. Consequently, the government becomes less accountable.

Debt

Resource-abundant countries have the potential to build up more debt despite large revenues from natural resources. As one may suspect, the debt issue can be linked with other resource curse

impacts/effects such as volatility and the Dutch disease. For example, when the real exchange rate increases as a result of the Dutch disease, a resource-dependent country may borrow more money as the interest payments on debt is likely cheaper. However, if the prices of natural resources and the real exchanges rates are to fall, the government of the resource-dependent country is left with less money and more expensive debt with increased interest rate.

Diversification

Usually, it is the case that resource-dependent countries, particularly in oil and mineral, fail to diversify due to the "the attenuated economic linkages between a resource sector and the rest of the economy." (Le Billon, P., 2003, p. 13). In other words, the diversification of an economy becomes difficult in a resource-dependent country because resource extraction is more profitable, and out-competes other industry. This means that natural resources exporters are in danger of becoming even more dependent on extractive industries. In other words, the large revenues from extracting natural resources can be an obstacle in bringing about long-term investment in infrastructure which tends to encourage diversification.

Human Resources

According to Haglund (2012, p.8), resource extractive industries often fail to deliver sustainable growth in small and undiversified economies, and often diverts skilled workers away from other exporting sectors which would harm their economies. Of course, if it were to attract the best talent from government sectors, it could potentially weaken the state institutions.

As can be seen above, it is possible to see the negative impacts related to the abundance of natural resources; the resource curse effects. The existence of the resource curse and its effects is not new, and many resource-rich African countries have been suffering from it.

Unfortunately, the abundance of natural resources is not the only source which provides negative impacts on economies in Africa. As mentioned earlier, based on the big push theory, poor economies need large demand expansion and anything that stimulates demand is acceptable, such as foreign aid.

According to Abuzeid (2009, p.17), foreign aid has been regarded by traditional development economists as a tool for developing countries to overcome the saving gap. The lack of capital necessary for generating investment was regarded as the main factor that has kept Third World countries in poverty. Based on this assumption, foreign aid was viewed as a crucial element that could help developing countries close this financial gap. This idea is also referred to as the big push

theory. The big push theory, regarding foreign aid, proposes that aid can form a crucial part of investment which in turn would result in higher growth and initialize an upward path to economic development. Despite the theory and the potential that foreign aid can contribute to development, however, it has been argued by a number of authors, such as Moyo (2010) and Djankov et al. (2008), that foreign aid can provide negative impacts on economic development in developing countries including many African countries. A number of suggested negative impacts of aid are illustrated below.

Conflict

An effort to seize power and get access to aid wealth may create conflict. In other words, aid can create competition for controlling the aid wealth. For example, according to Hardford & Klein (2005, p.3), the competition for control of large-scare food aid is perceived to be the cause of Somalia's civil war. They suggest that the competition over aid is less obvious compared to the competition over natural resources as aid is not usually formed as a physical resource. Therefore, one often witnesses 'rent-seeking' behavior taking place along with political infighting, fraud, and theft. Somalia's experience is one of the cases that rent-seeking activities, generated by the reception of foreign aid, led to a civil conflict.

Dutch Disease

Despite the origins of the Dutch disease and its effects mentioned earlier, there is a scenario that aid can 'replace' natural gas, or natural resources, in the Dutch disease theory. In other words, any type of large inflow of any foreign currency has the potential to bring about Dutch disease effects.

It is often the case that in many developing countries, a huge inflow of aid tends to coincide with the strengthening of local currency and damaging manufacturing exports which will, consequently, be an obstacle to long-term growth. For example, when aid flows are spent on domestic goods, it has the potential to raise the price of other resources which have a limited domestic supply. When this situation occurs, it can lead industries, mostly the export sectors, which face the international competitions and development on that resource, to become less competitive. Also, it should be mentioned that the export sector, which is considered as the essential element for developing countries to achieve sustainable growth, usually grows slower relative to capital-intensive or non-exportable sectors in countries which receive more aid (Moyo 2010, p. 63).

Institution

Foreign aid has the potential to turn politicians in power to engage in rent-seeking activities which will enable them to appropriate resources and exclude opponent or other groups from the

political process. Consequently, this damages such institutions as they become less democratic and less representative (Djankov et al. 2008, p.170). However, one should carefully deal with this approach as the existing poor institutions may have created the rent-seeking behavior rather than aid flows. This matter will be more specifically dealt throughout the thesis.

Volatility

Bulíř & Hamann (2003, p.66) find that aid is often more volatile than fiscal revenues. The relative volatility tends to increase when the degree of aid dependency is higher in countries. Also, the shortfall of aid and domestic revenue tend to coincide. If a country is suffering from revenue volatility, it is likely that there is higher volatility in aid receipts as well. Bulíř & A. Hamann (2003, p.83) suggest that the domestic policy instability may be the cause of the fluctuations of revenue and aid.

Taxation

A heavy reliance on foreign aid can provide a problem related to taxation which is similar to the resource curse effect. According to Bräutigam (2000, p.25), large flows of aid have the potential to reduce incentive for governments to improve their capability and accountability as they do not need to collect tax raised from their citizens. In other words, if the revenue flow is not dependent on the taxes raised from citizens, there is high chance that the government will be more accountable to aid donors rather than to their citizens.

Debt

According to Moyo (2010, pp. 64-65), when a country is in its early stage of development, it is less likely that the country would have advanced financial and institutional structures, and sizable investment opportunities to use aid effectively. Also, countries with poor financial development are not usually capable of absorbing foreign aid. If the country is not able to spend aid money, or even leave it as it is, they still have to pay interest on what they owe. Furthermore, since aid flows are not always put to good use, aid money is usually consumed rather than invested which causes higher chances of for inflation.

Human Resource

According to Bräutigam (2000, p.39), if the rules that govern bureaucracies produce bureaucrats that are unmotivated and poorly trained, aid donors often by-pass the government when they want to achieve the goals of their projects. Large donors tend to be able to pay higher salaries which would attract more skilled workers. In other words, donors can remove skilled workers away from government resulting a greater chance of weakening the institutions.

As can be seen above, foreign aid is often regarded as a curse. The possible negative impacts and effects of aid illustrated above have come to be perceived as a curse by a number of authors, and some refer to it as 'the curse of aid' by Djankov et al. (2008), or 'aid curse' by Moyo (2010). The suggested negative impacts and effects of aid often appear similar, though not always the same, to the resource curse effects. Here, it must be noted that this thesis does not argue that aid is a curse. For example, though it is possible to find similarity between the negative impacts of resources and aid, Harford & Klein (2005, p.1) argue that it is not conclusive that foreign aid may also cause a resource curse. The purpose of illustrating what is argued to be considered as negative impacts of foreign aid was to help one realize that the abundance of natural resources may not be the only source of such curse but may also come from other sources.

2.3 Oil Curse

Many African economies rely heavily on exporting their natural resources which is directly a derivative of their export revenues, government revenues, and Gross Domestic Product (GDP). Although there are many types of natural resources, point sources can be considered more 'economically valuable' than the other resources. Oil, one of the biggest point sources, is an 'economically valuable' natural resource as it is one of the biggest energy sources in the world. Furthermore, when regarding the topic resource curse, oil is probably the most debated natural resource due to its importance as a big world energy source and its value. Also, it is often the case that one comes across the term 'oil curse' when looking into the resource curse. As a number of African countries are considered as oil exporters, and oil is one of the most debated natural resources regarding the natural resource curse, this section will focus on oil and its curse effects.

As mentioned before, there are African countries which have oil fields, and there are countries that heavily rely on oil exports. According to U.S Energy Information Administration (EIA), for example, oil plays an important role in Angola's economy, which accounts for 95 percent of export revenues and over 75 percent of government revenues (EIA Country Analysis Angola). Equatorial Guinea has become a large oil exporter since the mid- 1990s. Here, the hydrocarbon sector, including crude oil, condensate, natural gas plant liquids and dry natural gas, plays a role in their economy as it accounts for 90 percent of government revenue and around 98 percent of export earnings (EIA Country Analysis Equatorial Guinea). Nigeria's economy is also heavily dependent on the oil sector as it accounts for 95 percent of export revenues and 40 percent of government revenues (EIA Country Analysis Nigeria).

Despite the large revenues from oil exports, and its potential to help economic growth and

development, many oil-producing countries have not been able to achieve their desirable outcomes. Instead, many oil-producing countries are outperformed by non-oil-producing countries. This is also evident in Africa. For example, Katz et al. (2004, p.1) compare seven oil-producing, Angola, Cameroon, the Republic of Congo, Equatorial Guinea, Gabon, Nigeria, and Chad, to other African countries. Despite the enormous revenues from oil export, they find that, in terms of per capital GDP, only Gabon and Equatorial Guinea rank above the Sub-Saharan Africa (SSA) average. Furthermore, Katz et al. (2004, p.3) find oil-producing African countries, in general, have not achieved better social indicators than other African countries. For example, in 2000, only Cameroon, the Republic of Congo, Nigeria and Gabon reduced infant mortality rates below the SSA average, and the life expectancy at birth was only higher in Cameroon, Equatorial Guinea and Gabon compared to the SSA average.

One may blame the resource curse effects for the disappointing economic performances of oil-producing countries. However, one should not forget that oil-producing countries deal with unique and more complicated difficulties compared to other natural resources-dependent countries due to the nature of oil markets and oil production. The main challenges come from the combinations of the "high volatility of oil prices, the enclave nature of the oil sector, the exhaustibility of oil reserves, and the high concentration of revenue flows from the oil sector, which invites rent-seeking behavior and may lead to governance problems." (Katz et al., 2004, p. 1). In order to gain more knowledge on the resource/oil curse, and how it is an obstacle to economic growth and development, a specific case study will follow.

2.4 Case Study: Nigeria

When researching the topic of the oil curse in Africa, Nigeria stands out as the main example. Therefore, this case study will specifically look into Nigeria's experience with oil and the oil curse within the country. A brief history of oil discovery and details on oil production and exports will be illustrated before looking specifically at the oil curse.

2.4.1 Short Oil History in Nigeria

In 1908, the Nigerian Bitumen Corp, a German company, began oil exploration in Nigeria. The Nigerian Bitumen Corp operated in the Araromi area of the present day Ondo State. In 1914, however, due to the beginning of World War I, the company abandoned its dry, shallow wells. In 1936, the Shell D'Arcy gained the rights to search for hydrocarbon across Nigeria and prospecting began the in 1973. However, it was interrupted again by World War II. In 1947, with the end of World

War II, Shell and British Petroleum formed the Shell-BP unit of Nigeria. Oil was finally discovered in 1956 at Oloibiri in the Niger Delta after half a century of exploration. Nigeria began to produce oil in 1958 at the rate of 5,100 barrels per day, most of which were exported (NLNG- The Magazine, 2011, p. 4).

Nigeria gained its independence in 1960, and the exploration rights in both onshore and offshore areas adjoining the Niger Delta were extended to other foreign companies. By 1961, foreign companies, such as Mobil, Agip, gulf Oil (Chevron), Safrap (Elf), Amoseas (Texaco/Chevron), Tenneco and others, had begun exploration both onshore and offshore. Most of the companies were successful in offshore area but it was the Shell group which had the best onshore fields. As oil had become increasingly important to its economy, in 1971, the state established the Nigerian National Oil Corporation (NNOC) and joined the Organization of Petroleum Exporting Countries (OPEC). NNOC ran as an upstream and downstream company and the petroleum ministry had a regulatory function. Later, in 1977, the NNOC and the ministry merged which created Nigerian National Petroleum Corp (NNPC). All the oil industry sectors, including both upstream and downstream, were controlled by NNPC and its subsidiary companies. Although the national oil companies took direct control of production operations in certain OPEC member countries, the multinational oil companies were still allowed to continue with such operations under the joint operating agreements in Nigeria. This shows the respective stakes of the companies and the Nigerian government in the venture (NLNG-The Magazine, 2011, p.4).

Despite Nigeria's major problems, such as political instability, corruption, and poor governance, the nation is still perceived as an attractive area for upstream investment by international oil companies. In fact, as mentioned earlier, Nigeria's oil sector accounts for 95 percent of export revenue and 40 percent of government revenues, which makes them one of the biggest oil dependent economies in Africa. By the end of 2011, it was estimated that Nigeria had 37.2 billion barrels of proven oil reserves. The majority of these reserves are found in Niger River Delta and offshore in the Bight of Benin, the Gulf of Guinea, and the Bight of Bonny. The production of crude oil averaged nearly 2.13 million bbl/d in 2011. Nigeria exported 2.2-2.3 million bbl/d of crude oil in 2011. It is estimated that around 767,000 bbl/d of crude, 33 percent, of Nigeria's crude was exported to the United States making Nigeria the 4th largest foreign oil supplier to the United States for 2011. Europe (28 percent), India (12 percent), Brazil (8 percent), Canada (5 percent), and South Africa (3 percent) are additional importers of Nigerian crude oil (EIA Country Analysis Nigeria).

2.4.2 Conflicts: Oil Bunkering in Nigeria

In Nigeria, all minerals, oil and natural gas belong to the federal government of the country as it is stated in Constitution of the Federal Republic of Nigeria 1999, section 44 (3) which is illustrated below.

"*Notwithstanding the foregoing provisions of this section, the entire property in and control of all mineral, mineral oils ,and natural gas in under or upon any land in Nigeria or in, under or upon the territorial waters and the Exclusive Economic Zone of Nigeria shall vest in the Government of the Federation and shall be managed in such manner as may be prescribed by the National Assembly*." (Constitution of the Federal Republic of Nigeria 1999)

Therefore, any forms of oil extraction outside the framework of an agreement with the federal government are considered illegal and a crime. In Nigeria, however, large amount of oil continues to be extracted illegally. This activity is called "oil bunkering", and bunkered oil in Nigeria accounts for about 10 percent of Nigeria's daily oil production (Human Rights Watch, 2003, p. 2).

According to Human Rights Watch (2003, p.18), oil bunkering is considered as the most profitable private business in Nigeria. The 'bunkerers' tap into pipelines away from oil company facilities and connect the pipelines to barges which are hidden in creeks, and the oil is then sold. Although there are police and military to prevent such activities, they are often bribed and ignore such bunkerings. It is estimated that the stolen oil is sold at around US$15-20 per barrel on the spot market. As there is no capital costs, the infrastructure belong to the government and the oil companies, the estimated profit is around US$2-3 million per day (Human Rights Watch 2003, p. 18).

Not only does illegal bunkering jeopardize Nigeria's oil production and its economy it also leads to conflict and violence. More specifically, it fuels conflicts and violence between armed groups. The conflict in the Niger Delta in 2004, between the Niger Delta People's Volunteer Force (NDPVF) led by Alhaji Dokubo Asari, and the Niger Delta Vigilante (NDV) led by Ateke Tom, represents conflicts resulting from oil and oil bunkering. What is more important to be noted here is that the violence around Port Harcourt in 2004 was mainly due to the struggles to control territory, and bunkering routs. For example, Fred Alasia, Chief of Staff to River State Government, stated that the conflict between NDPVF and NDV was due to the disagreements over business transactions and contracts for protecting barges that lift crude oil (Human Rights Watch 2005, p.8) in the interview with Human Rights Watch in 2004.

The conflict between the NDPVF and NDV can fall under the category of looting mechanism, also called greed, mechanism. As mentioned before, looting mechanism suggests that rebel groups profit

by extracting and selling the commodities directly. During this process, in order to secure the bunkering routes, conflict and violence occur between rebel groups or even between with rebel group and the national force.

2.4.3 Volatility & Debt

Government revenues and expenditure of many oil-producing countries tend to experience higher volatility because of the high volatility of oil prices combined with undiversified revenue and export bases. Budina & Van Wijnbergen (2008, p. 431) argue that natural resources' commodity prices and revenues tend to be volatile, and have the potential to translate into macro-economic instability and a volatile real exchange rate. Accordingly, many oil-producing countries are exposed to oil price volatility due to the enormous wealth from oil. Budina & Pang (2007) and Budina & Van Wijnbergen (2008) perceive volatility as a tax on investment in traded production, such as in agriculture and manufacturing, and such could potentially have a negative impact on growth. Also, it can become more complicated with the heavy dependence of the budget on volatile fiscal revenue from oil.

Table 2 presents the volatility comparison between Nigeria and other countries in several key economic indicators. As seen below, Nigeria is among the top ten volatile countries during the period of 1961-2000, in most of indicators except consumer price inflation and monetary growth. When focusing more on the recent period of 1991-2000, Nigeria still remains in the top ten volatile countries in most measures except for GDP growth.

Table 2: Measures of Macroeconomic Volatility, 1960-2000

	Sample Size	1961-2000 a/			1991-2000 b/		
		Nigeria Rank	Sample Median (%)	Nigeria (%)	Nigeria Rank	Sample Median (%)	Nigeria (%)
Real Growth per-Capita							
GDP	87	9	4	8	68	3	2
Revenue c/	71	3	11	41	2	10	47
Price Inflation							
Terms of Trade d/	90	3	10	27	3	7	28
Consumer Prices	114	21	7	19	9	3	25
Real Exchange Rate ($/N) e/	84	4	7	31	2	5	35
Policy							
Monetary Growth	125	32	14	20	33	9	16

a. Countries with 15 or more observations in the period. Most countries (80%) had observations for 20 years or more.
b. Countries with 9 or more observations in the period. For revenue, it was 8 or more observations.
c. Deflated by CPI. Nigerian data include stabilization account drawings in 1995 and 1999.
d. Nigeria is 1rst out of 110 countries for the standard deviation of terms of trade in levels, 1960-00.
e. Long-run average is for 1979-2000. IMF did not provide data prior to this period.

Source: World Bank (2003), p. 26

Countries with high volatility, and interest groups competing for the resource rent, such as Nigeria, tend to overspend in good years and under-adjust in bad years. More specifically, in these countries, each interest group is likely to overexploit windfall gains in order to offload adjustment costs to others while capturing the gains from its lobbying effort. This behavior of expenditure is likely to lead even higher volatility (Budina & Pang 2007, p.13).

In Nigeria, public expenditure has been closely correlated with current revenues and, due to this reason, its share in non-oil GDP has been also highly volatile. This experience can be seen throughout several decades in Nigeria. For example, the public expenditure increased from 10 percent in 1971 to 60 percent in 1980 and back to 20 percent in 1984. Public expenditure increased again in 1993, reached 70 percent, and went down to 30 percent in 1997 which again increased by 80 percent in 2001 (Budina & Pang 2007, p. 12).

What is more concerning is that the close linkage between government expenditures and current revenue has the potential to lead to wasteful spending, public investment projects' poor productivity, and corruption. For example, according to Budina & Pang (2007, p.14), "when investments are made during boom periods in line with the increase in current income, projects are likely to be beyond the country's ability to absorb, while maintenance of the new projects may suffer when prices subsequently fall." Also, it is likely that maintenance of the new projects is to suffer when prices fall. This problem occurred in Nigeria during the late 1970s and 1980s when most of the projects, which were financed by public borrowing, did not succeed in generating the rate of return that was needed

to improve the repayment capacity of the country.

More specifically, during the 1970s, public expenditure was mostly financed by revenue from oil, which was possible due to the high oil price in the 1970s, domestic borrowing, and modest external borrowing. During the second oil shock in 1980, the price of oil increased to almost US$40/barrel and the stock of gross external debt was around US$4.3 billion, 6.6 percent of GDP, which was relatively modest. Also, foreign reserve still stood at US$10.6 billion. However, the problem occurred after the collapse of the oil price in the early 1980s. After the collapse, Nigeria faced a rapid increase in external debt and loss of foreign exchange reserves. The public and publicly guaranteed that external debt increased from US$4.3 billion to US$11.2 billion, and foreign exchange reserve experienced substantially decline from US$10 billion to US$1.23 billion between 1981 and 1983. Nigeria had to borrow heavily from commercial sources at high interest rate in the early 1980s (Budina & Pang, 2007, pp. 4-5).

Budina & Pang (2007, p.23) argue that the main factor behind the buildup of large debt between 1981 and 1983, during the period of oil price collapse, was due to Nigeria's pre-2000 fiscal policy. They suggest that, while the non-oil deficit was reduced due to the result of the sizeable public expenditure cuts, the drop in oil revenue as a result of the oil price collapse was much larger. This allowed the average annual non-oil deficit to exceed the average annual oil revenue by more than 50 percent of non-oil GDP for the period. This in turn led to a build up of external public debt (Budina & Pang 2007, pp. 6-7).

When oil price drops unexpectedly, it is often not an easy task to adjust expenditure downward although the need to do so is much greater than the actual decline in income which triggers the need for adjustment in the first place. This is due to the fact that oil-producing countries such as Nigeria often have problems with access to capital markets. It would logically follow that Nigeria's need to borrow is low when oil prices are high, and is high when prices are low. The problem is that their capacity to borrow is inversely related to their borrowing needs as the value of their oil wealth also peaks when prices are high and drops when prices are low. According to Budina & Van Wijbergen (2008, p.433), the linkage between shortfalls in income, collateral values decline, and reduction in resource inflows can lead to debt overhang problems. The debt overhang refers to a situation where new lenders are concerned that their money will be diverted to service old debt, reducing the value of their claims even if projects, which are financed by the new moneys, have a high rate of return to service new debts in the absence of old claims outstanding (Budina & Van Wijbergen 2008, p. 433). Consequently, the need for adjustment becomes larger than the current income fall because following debt repayment can not be refinanced as well. As a result, adjustment costs are raised even higher. This explains how the volatility of Nigerian government expenditure has exceeded the

volatility of oil price. Budina & Wijbergen (2008) find the combination of the good year/bad year behavior and the debt overhang problem as one of the main explanation for Nigeria's disappointing non-oil growth record.

2.5 Existing Solutions Case Studies: Lessons from Norway and Botswana

This section will present the case studies of two countries which have experienced and avoided/escaped the resource curse, Norway and Botswana respectively. Although they have been successful, this does not then imply that their methods can be copied and utilized to form the remedy for other countries suffering from the resource curse, such as Nigeria. It is however, important to examine their experiences as countries suffering from the resource curse may adopt, and or find their own way to deal with the resource curse.

2.5.1 Norway

According to EIA, Norway is the largest oil producer in Western Europe, and the seventh largest oil exporter in the world. As of January 1, 2012, Norway had around 5.32 billion barrels of proven oil reserves, found mostly in the North Sea. Furthermore, around 50 percent of Norway's exports revenue, 21 percent of GDP, and 26 percent of government revenues were from crude oil, natural gas, and pipeline transport service in 2010 (EIA Country Analysis Norway).

Norway has frequently been mentioned when discussing the oil curse as it is considered as an oil-producing country which successfully avoided/escaped the oil cures. However, this is not to say that the Norwegian economy never suffered from the oil curse. Norwegian politicians began spending windfalls from the point in which Norway began to produce oil in the 1970s. Consequently, the Norwegian economy was faced with high inflation coupled with currency exchange rate appreciation. When the oil prices collapsed in 1986 Norway's economic growth slowed.

After this painful experience, Norwegian politicians started to pay attention to oil addiction. For this reason, Norway built "The Government Pension Fund (GPF) of Norway", originally called "The petroleum Fund of Norway", in 1990. The Norwegian politicians passed legislation which specifically required most of the government-owned oil company to be placed in an investment fund in order to ensure that the wealth generated from oil and natural gas would benefit future generations (Hundley 2007). More specifically, according to the Norwegian Ministry of Finance, the purpose of the GPF is to "facilitate government savings to finance rising public pension expenditures, and support long-term considerations in the spending of government petroleum revenues." (Ministry of Finance,

Norway).

The Norwegian GPF played a crucial role in dealing with the oil curse, and this can be a great lesson for oil-producing countries that are currently dealing with the oil/resource curse.

First, together with the fiscal guideline, the Norwegian GPF functions as a fiscal policy tool which limits government spending. The capital of this fund consists of petroleum activities revenues. The expenditure of the fund is a transfer to the fiscal budget in order to finance the non-oil budget deficit. For instance, the fiscal guideline puts a limit on the non-oil structural central government deficit of 4 percent of the GPF's assets which is the estimated long-run real rate of return. Therefore, this rule amounts to saving the real capital of the fund and spending only its return (Velculescu 2008). By using a similar system, oil-producing countries in Africa could learn how to deal with the volatility of oil price and, furthermore, may reduce their debt problems.

Second, the Norwegian GPF pursues a transparent investment strategy. The Norwegian Ministry of Finance, the owner of the fund, regularly reports on governance framework, goals of the fund, investment strategies and results, and ethical guideline. The operational manager of the fund, the Central Bank, then publishes reports on the management of the fund which present its performance and annual list of all investments. Furthermore, it also publishes the information on the fund's voting in shareholders' meetings (Velculescu,2008). Oil-producing countries can benefit from such system which can reduce high corruption rate.

Lastly, the assets of the Norwegian GPF are invested exclusively abroad. This strategy ensures risk diversification and proper financial returns. More importantly, it protects the non-oil economy from shocks in the oil sector, by keeping harmful oil rents out of the economy, which puts pressure on the exchange rate. In other words, it prevents the possibility of Dutch disease which many of the oil-producing countries suffer from (Velculescu, 2008).

2.5.2 Botswana

Although Botswana is not an oil-producing country, it suffered from the resource curse due their diamond abundance which can be also considered as a point source.

As mentioned earlier, there are many negative effects that can be provided by the heavy reliance on natural resources, and many African countries suffer from the resource curse. However, Botswana wisely dealt with the resource curse and is now considered to have escaped from it.

Botswana is one of the most resource-rich countries in the world. It exported US$2 billion worth of diamonds, nickel, copper, gold, and other resources which was over 80 percent of its total exports in 2002. Among these resources, diamonds were the main resource which contributed the most to

their economic growth (Iimi, 2006, p. 6).

Diamonds were discovered in 1967 in Botswana and, since then, the nation has been experiencing strong growth. However, there have been a number of arguments that the nation's strong growth may not be sustainable as the capital-intensive mining sector provide insufficient amount of employment opportunities. This argument can be considered convincing as the contribution of mining production to the GDP was around 40 percent, while it only absorbed 4 percent of total employment between 1998 and 2002 (Iimi 2006, p. 7). The government of Botswana has been trying to diversify its economy, but development of the non-traditional industries has been one of the nation's biggest challenges.

Despite these obstacles, however, Botswana is considered to have escaped the resource curse. Iimi (2006) argues that Botswana's success in escaping the resource curse stems from its sound institutions and good governance. Table 3 illustrates the Governance Research Indicator Country Snapshot of 2002. Each index is normalized between zero and one. As can be observed below, Botswana scored relatively highly compared to other countries which indicates that the nation's governance level is in a good shape.

Table 3: Governance Research Indicator Country Snapshot (GRICS). 2002

	Botswana	Lesotho	Namibia	South Africa	Swaziland	Sub-Saharan Africa	Low-income countries	Middle-income countries	High-income countries
Voice and accountability	0.75	0.53	0.66	0.75	0.28	0.42	0.38	0.57	0.82
Political stability	0.78	0.57	0.69	0.52	0.64	0.45	0.40	0.59	0.82
Government effectiveness	0.66	0.40	0.48	0.59	0.36	0.30	0.27	0.42	0.77
Quality of regulation	0.72	0.44	0.59	0.66	0.50	0.38	0.34	0.51	0.85
Rule of law	0.67	0.48	0.60	0.53	0.34	0.33	0.29	0.47	0.84
Control of corruption	0.62	0.39	0.47	0.51	0.36	0.29	0.25	0.39	0.76

Source: Iimi (2006, p.9)

Of course, each aspect is important and has an influence on natural resource management. However, Iimi (2006) especially accentuates on four aspects, Voice and Accountability, Government Effectiveness, Quality of Regulation, and Control of Corruption, which played crucial role in Botswana's escape from the resource curse.

The aspect of voice and accountability indicates the ability to discipline the ones in authority for resource extraction. Resource rents are often spent inappropriately when unmonitored by the citizens and when only processed by the ones in power who often are corrupted. Botswana's free 2004 national election, which was conducted under the Southern African Development Community for democratic elections, demonstrates that Botswana's attempts to stop such situation from

occurring (Iimi 2006, pp 9-10).

The aspect of government effectiveness is important regarding the natural resource management because an effective resource management policy by the government can prevent overexploitation of the resource wealth. In order to prevent this situation and ensure sustainability, the government of Botswana uses the Sustainable budget Index (SBI). The SBI measures the ratio between consumption expenditures and non-resource revenues. The government can be certain that natural resource capital is not being consumed as long as SBI turns out less than one. By using the SBI, Botswana was able to avoid over-spending during 'good times' in the early 1980s, and drastic spending cuts in 1991 when diamond prices fell (Hamilton 2006, p. 26). This system can be effective in oil-producing countries such as Nigeria as they will be able to deal with volatility of oil price and prevent debt problems.

The aspect of quality of regulation is especially important in natural resource management, as it involves a long-term relationship with private parties. Of course, it would be problematic if price controls or excessive regulatory burdens are to occur. Regarding this matter, Botswana's diamond-mining leases term is 25 years and the nation's quality of regulation is relatively good. For example, in Botswana's mining sector, Botswana's government retains 50 percent of the shares in Debswana, and the Ministry of Minerals, Energy and Water Resources has direct responsibility for natural resource regulation and management (Iimi 2006, pp. 10-11).

The aspect of corruption control is also important as transparent distribution of resource wealth is crucial. Botswana has been able to avoid corruption in the public sector relatively well because of their transparent budgetary and procurement process. The Directorate of Corruption and Economic Crime, an independent anticorruption authority established in 1994, plays a crucial role in lowering the corruption level by reporting corruption cases to the president directly. Also the sound anticorruption framework in Botswana is an important element that helps manage resource properly. This kind of system would be particularly helpful in countries such as Nigeria where corruption is one of the biggest problems (Iimi 2006, p.11).

By looking at several theoretical effects of the resource curse and case studies, one could argue that many resource-abundant African countries may be suffering from the resource curse. However, this is not to say that all effects of the resource curse always appear in the resource-abundant countries. Also, there are different opinions on a number of resource curse effects in resource-rich countries. For example, there are different perspectives on Dutch disease in Nigeria. Budina & Pang (2007, p.11) argue that, as Nigeria started an "explicit expenditure smoothing policy" in 2004, there was no real Dutch disease problem nor will there be one in the future. On the other hand, Olusi &

Olagunji (2005) argue that Dutch disease is present in Nigeria. They argue that the impact and effect of Dutch disease are different between developed countries and less developed countries as their lagging sectors are different. In the Dutch disease theory, as presented earlier, the lagging sector is manufacturing sector. However, Olusi & Olagunji (2005, p. 161) argue that the traditional lagging sector for less developed countries, including Nigeria, is the agricultural sector. Accordingly, they argue that the agricultural sector is regarded as the lagging sector making the case of Dutch disease very much present in Nigeria.

As can be seen above, the presence of the resource curse, and its form, in resource-rich countries may be different dependent on the way one perceives it. However, what is important is to see how an individual country would deal with the resource curse. It is not an easy task to find the ultimate solution for the resource curse as countries may suffer more from one resource curse effect than another. Nevertheless, as can be seen from the case studies in Norway and Botswana, it is possible to avoid/escape from the resource curse. Their solutions appear to be similar as it was the quality of their institutions coupled with good governance that played a significant role in avoiding/escaping the resource curse. Therefore, the improvement of institutional and governance can be considered one of the solutions in avoiding/escaping the resource curse.