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Sub-Saharan Africa's Demographic Dividend: Is There a Role for Natural Resources?

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Key Points

Sub-Saharan Africa (SSA) has the most resource-rich countries in the world, many of whom are endowed with large oil, gas and mineral deposits. This discussion paper examines the role of natural resources in the economic development and demography of countries in SSA, showcasing various paths states have taken that led them to either bless or curse the discovery and development of these resources.

By 2050, the number of oil and gas exporting countries in this region is expected to almost double to 22 from 12. An additional 16 will become mineral exporting countries, which will mean that more than 80 percent of SSA states will be dependent on natural resources. How the revenues earned are managed and used will determine their economic and social future.

The region's population in 2015 was estimated to be 949 million and is expected to grow to 2.6 billion by 2050, which will constitute more than 25 percent of global population. The change in age structures will mean that by 2030, sub-Saharan Africa will represent nearly two-thirds of the growth in the world's workforce. There is an opportunity to reap the benefits of a demographic dividend in this transition but careful economic planning and policies are needed.

Natural resource-driven development in Africa to date has not led to economic growth that significantly improved the welfare of people in these countries. The sector will not create enough jobs to cater for the number of people entering the workforce in the future without proper investment in health care, education and nutrition.

Summary

Sub-Saharan Africa (SSA) has bountiful oil, gas and mineral deposits yielding more resource-rich states than in any other region in the world. This includes almost 30 percent of the world's known reserves of minerals, and 7.6 percent of the world's proven oil and natural gas reserves. These numbers are even more impressive given that Africa is underexplored compared to the rest of the world.

The region will have an estimated 2.4 billion people by 2050, which will be almost 25 percent of the world's population. These will be mostly young people, with more than 30 percent aged 10-24. By 2030, there will be roughly 24.6 million people entering the job market annually in SSA, and SSA's total workforce will increase by 910 million by 2050.

Generally, this interplay between changes in a population's age structure and economic performance is called a "demographic dividend." It seems clear that SSA will experience such a demographic transition. The question is whether SSA countries can create an economic environment where these working-age people can find well-paying jobs. As a result, politicians in most of these countries are under increasing pressure to create job opportunities and focus fiscal policies on achieving economic growth. Could natural resource development play a role in achieving a demographic dividend in SSA countries?

There are many lessons out there for SSA countries to learn from to ensure that their natural resource development does not turn into a curse similar to what happened in Sierra Leone following the mining of diamonds or in Equatorial Guinea after the discovery of oil. There are success stories from around the world and from Africa as well as for SSA states to emulate. How Botswana used revenues from diamond mining to grow its economy is one such example.

The argument for developing natural resource is clear and simple. Countries with mineral and hydrocarbon resources can earn significant economic rents, which their governments can invest or spend to improve public welfare and create intergenerational wealth. With proper management, resource revenues can enhance development that leads to sustainable economic growth. Countries seeking to use their fledgling energy sector to garner economic development would do well to focus on human capital development to create forward and backward linkages that can achieve positive economic spillovers.

Population and Natural Resources

Sub-Saharan Africa's (SSA) population dynamics are unique. Until the 1980s, SSA was the only region in the world that had not experienced fertility declines, and thus was seen as an exception to the trends of demographic transition taking place elsewhere. Trends in mortality, affected by HIV-AIDS epidemics, genocide and conflict, also adjusted life expectancies at birth for some countries in SSA. With the highest fertility rates in the world, SSA's population growth trends in the 21st century are astounding.

SSA also has large oil, gas and mineral deposits yielding more resource-rich states than any region in the world. This includes almost 30 percent of the world's known reserves of minerals, and 7.6 percent of proven global oil and natural gas reserves (British Petroleum, 2015). SSA has the largest deposits of cobalt, diamonds, platinum and uranium. These numbers are even more impressive given that Africa is underexplored compared to the rest of the world (African Natural Resources Center, 2015).

One the one hand, demographic pressure poses a great challenge for SSA policymakers. Can countries with significant unmet human development needs in 2016 meet these needs, or even improve welfare for their citizens, when their population doubles in less than 30 years? On the other hand, natural resources present an opportunity to create economic growth where past attempts to industrialize have failed.

Can SSA policymakers turn their natural resources into a blessing that can create intergenerational wealth and improve welfare? To what extent are these outcomes linked?

This discussion paper examines the role of natural resources in the economic development and demography of countries in SSA. We begin by reviewing the population dynamics and introducing the concept of a demographic dividend. We also formulate a framework to organize how we discuss SSA economies and analyze countries according to the abundance of their natural resources. Then we review how natural resources affect a country's exports and economic growth.

We examine how they can be a blessing for some countries, but a curse for others, with human development outcomes of resource-rich countries generally underperforming resource scarce countries. We present some new data on countries in Africa that might develop new hydrocarbon reserves by 2050 and become resource-rich in their own right. We attempt to answer the question of whether natural resource development can help a country capture its demographic dividend by analyzing the current case of Uganda. We conclude with a discussion of the potential for natural resources to contribute to Africa's potential demographic dividends.

Population Dynamics

According to the Population Reference Bureau (2015), sub-Saharan Africa will have an estimated 2.4 billion people by 2050, which will be almost 25 percent of the world's population. These will be mostly young people, with more than 30 percent at 10-24 years old. By 2030, there will be roughly 24.6 million people entering the job market annually in SSA, which will represent nearly two-thirds of the growth in the global workforce (African Development Bank, 2015). This demographic bulge will create the largest available labor pool in the world. African nations will need to actively build labor intensive economies and education systems to absorb and prepare this potential workforce. The African Development Bank (2016) estimated that currently 10-12 million young people enter the workforce each year, although only 3 million formal jobs are created annually in SSA. If countries cannot keep pace with this demographic trend, social stability and human development progress could be undermined. Driving this expected youth bulge are three key demographic trends: life expectancy, fertility and age structure.

Canning et al (2015) summarized the current and forecast statistics for these demographic trends in SSA countries.

> Life expectancy is currently 55 years (compared with the global average of 71) and is set to exceed 65 only after 2045.

> Under-five mortality was estimated at 136 deaths per 1,000 live births compared with 9 in Europe, 54 in Asia and 38 in Latin America. This rate is projected to drop to 50 after 2045.

> Fertility rates are 5.4 children per women compared to 1.6 in East Asia. This rate is decreasing, albeit slowly, and should be around 3 children per woman by 2045. Working age population was 450 million in 2010 (ages 15-64). This number is expected to grow to 843 – 885 million by 2035, depending on population projection assumptions.

While these demographic trends can seem overwhelming in aggregate, their downward trajectory is encouraging and raises the possibility for significant boosts in economic growth. Generally, this interplay between changes in a population's age structure and economic performance is called a 'demographic dividend'. In simple terms, declines in child mortality that are followed by declines in fertility can produce a window in time where there are a large number of working-age people and a smaller number of dependents. Revisiting the above statistics summarized by Canning et al, it seems clear that SSA will experience such a demographic transition. The question is whether SSA countries can create an economic environment where these working-age people can find well-paying jobs.

Both the daunting demographic trends and the potential for a demographic dividend in SSA are well-known to politicians, civil society organizations, aid donors and development organizations. As a result, political incumbents in most of these countries are under increasing pressure to create job opportunities and focus fiscal policies to achieve economic growth. A case in point, the African Development Bank in May 2016 released its strategy called Jobs for Youth in Africa 2016-2025 that is focused on helping countries create the appropriate economic environment for the expected youth bulge. Given that most SSA economies are commodities driven, either agriculture or extractive industries, it is worth examining the role that natural resources (oil and natural gas in particular) could play in capturing a demographic dividend.

Natural Resource-Driven Economies in SSA

According to the African Natural Resources Center at the African Development Bank (2015), minerals account for an average of 70 percent of total African exports and about 28 percent of gross domestic product (GDP). For some countries in SSA, natural resources provide nearly all of its fiscal revenue. The African Development Bank estimates that natural resources will contribute more than $30 billion per year in government revenue up to 2035. As Africa continues its development through the 21st century, it is clear that natural resource development will play an important role.

While SSA's natural resource wealth is significant, the endowment of these resources varies widely from country to country. When discussing natural resource-driven economic growth in SSA, it's useful to organize the countries according to the contribution that natural resources make to the national economy. The first such classification was completed by the International Monetary Fund (IMF) in 2010, resulting in 20 SSA states designated as 'resource-rich' developing countries. The general criteria for receiving this designation include: (a) be either a low-income or a lower-middle income country; (b) have either natural resource revenue or exports that are least 20 percent of total fiscal revenue and exports, respectively, over 2006-2010; (c) while including Gabon and Equatorial Guinea because of their membership in the Central African Economic and Monetary Community (CEMAC) monetary union (IMF, 2012). A further review of economic data in 2014 revealed that an additional seven SSA countries should be designated as resource-rich developing countries (IBIS, 2014). These designations do not distinguish between the type of natural resource; whether renewable (such as timber or fish), minerals (gold or diamonds), or hydrocarbons (oil or natural gas).

The Africa Progress Panel perfectly identified the opportunities of developing natural resources in SSA

Effective and equitable stewardship of Africa's natural resource wealth could transform the region. Apart from building manufacturing industries, the development of natural resources could provide the revenues needed for investment in smallholder agriculture, food security, employment, health and education. Governments have a responsibility to future as well as present generations to harness natural resource wealth. Sub-Saharan Africa entered the 21st century with a population of 670 million. By 2025 the region will be home to 1.2 billion – a figure that will rise to 2 billion by mid-century. The demography matters. Equipped with skills and opportunities, Africa's youthful population could become a powerful – and positive – force for change. Denied a chance to realize their potential, children born today will become a lost generation. Well-managed resource wealth has the potential to lift millions of Africans out of poverty over the next decade, while giving hope to future generations. (Africa Progress Panel, 2013, p. 8)

In this discussion paper, we will classify SSA countries as either oil & gas-exporting, mineral-exporting or as resource-scarce. In this scheme, oil & gas- and mineral-exporting states will have earned at least 20 percent of total export revenues from natural resources in 2014. Resource scarce nations will have oil and mineral exports contributing less than 20 percent of total export revenue in 2014. We identify 13 SSA countries as being oil & gas exporting, 16 as being mineral-exporting and 15 as resource scarce. We do not take into account any planned or future natural resource development in classifying these countries, although later we will identify those SSA states that could develop significant natural resources in the future. Figure 1 below is a map that shows the designations of each SSA country based on an analysis of 2014 export statistics. These designations allow us to better understand the impact of natural resource exports on economic growth, and provide the context for how natural resources can be a blessing or a curse for a developing nation.

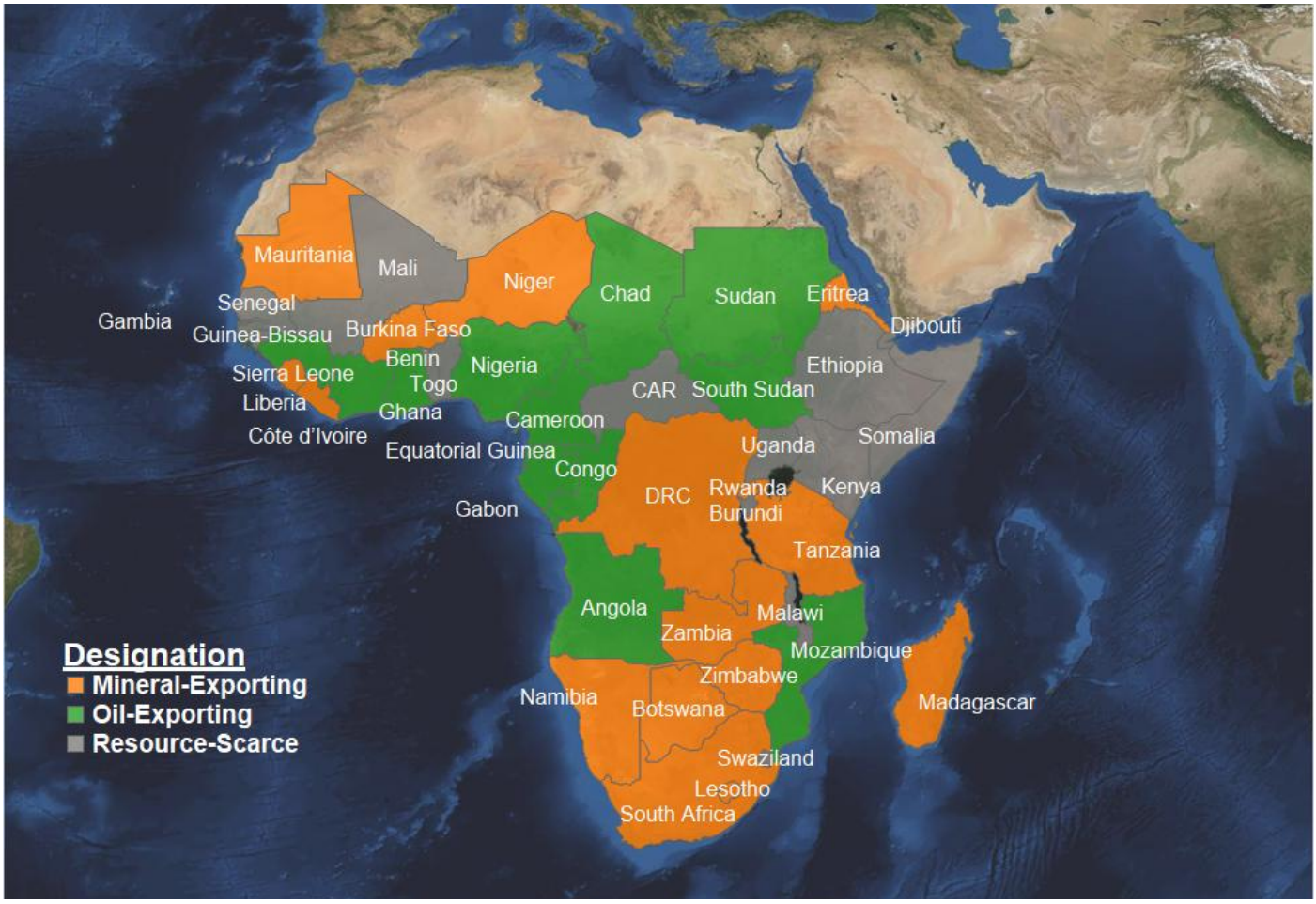

Figure 1. Map of SSA countries by natural resource designation.

Source: KAPSARC.

Exports and Economic Growth From Natural Resources

Resource-rich states in SSA tend to be highly dependent on resource exports for both foreign exchange and fiscal revenues, with oil and gas-exporting countries significantly more dependent on resource exports than mineral-exporting nations. According to the IMF, the share of fuels in total exports from oil and gas-exporting countries in SSA has increased by nearly 12 percentage points since 1990 to almost 90 percent. From 2000-2014, these countries outperformed other states in SSA, which reflects the global commodity price boom and subsequent growth surge (IMF, 2012). This strong economic performance drove increases in average per capita income for most of the resource-rich developing countries. Oil and gas-exporting states benefited more during this period than mineral-exporting due to the higher rents for hydrocarbon commodities. For example, Angola saw per capita incomes double while it tripled in Equatorial Guinea between 2000 and 2011. (Africa Progress Panel, 2013). Table 1 (overleaf) shows the export distribution and natural resource designation for each SSA country based on an analysis of 2014 export data from the International Trade Centre (2015).

Beyond fiscal revenues from exports, resource-rich countries in SSA also receive significant foreign direct investment (FDI) to develop their natural resources. These FDI flows usually provide a boost to the economy through additional domestic investment and employment. The criticism of FDI is that it does not create sustainable economic development because of absorptive capacity constraints. This means that only a percentage of the total amount invested is actually captured by domestic firms and workers. When countries have low absorptive capacity, foreign companies and expatriate workers receive most of the investments and when the project is over, the host country is left without any sustainable economic activity. As we will discuss later, the technical nature of natural resource development projects prevents resource scarce countries from meaningfully participating in these activities at the outset when most of the FDI occurs.

FDI to SSA expanded by a factor of 30 since 1995, which was 7.5 times faster than high-income countries and 10 times faster than global GDP (World Bank, 2014a). Nearly all of this FDI went to resource-rich countries in SSA due to the extended commodities boom and the capital-intensive nature of extractive industries. Research by Farole and Winkler (2014) found that SSA countries were not able to use that investment to create linkages between foreign investors and local economies, especially in the value-added area of creating domestic supply chains. As they noted, generating spillovers from FDI is not easy, particularly for small economies with limited existing capacity, and the responsibility for developing domestic firms and industries is left to governments through investment in education and human capital. Without these linkages and spillovers, economic development from resource projects in oil- and mineral-exporting countries will be limited to rent capture mechanisms of FDI, which is ultimately unsustainable. There is wide-ranging literature on whether developing natural resources can lead to sustainable economic development. On the one hand, Norway has been able to develop its natural resources and invest the revenues in education and growth, making it one of the most prosperous countries in the world. On the

other hand, Nigeria stands out as an example of how oil revenues did not significantly improve the country's overall welfare. Even Organization of Petroleum Exporting Countries (OPEC) in the Middle East saw their GDP per capita decrease by 1.3 percent each year from 1965-1998 despite oil production increasing from about 8m bbl/d in 1965 to about 22m bbl/d in 1998 (Gylfason, 2001). With this mixed performance, should natural resources be considered a blessing or a curse to developing countries?

Table 1. SSA countries natural resource designation.

Country	Designation	Primary Export Product 2014 (with % of total exports)*	# of Products Totaling >75% of Exports
Angola	Oil & Gas Exporting	Crude Petroleum (98.3)	1
Benin	Resource-Scarce	Cotton (31.8)	7
Botswana	Mineral-Exporting	Diamonds (85.5)	1
Burkina Faso	Mineral-Exporting	Gold (51.4)	3
Burundi	Resource-Scarce	Coffee (46)	5
Cameroon	Oil & Gas Exporting	Crude Petroleum (56.3)	3
Central African Republic	Resource-Scarce	Wood (84.2)	1
Chad	Oil & Gas Exporting	Crude Petroleum (97.3)	1
Congo	Oil & Gas Exporting	Crude Petroleum (61.9)	2
Congo, Dem. Rep.	Mineral-Exporting	Copper (34.9)	3
Côte d'Ivoire	Oil & Gas Exporting	Cocoa Beans (35.6)	6
Djibouti	Resource-Scarce	Other Commodities (32.9)	7
Equatorial Guinea	Oil & Gas Exporting	Crude Petroleum (94.3)	1
Eritrea	Mineral-Exporting	Ores (97.2)	1
Ethiopia	Resource-Scarce	Petroleum, Not Crude (19)	5
Gabon	Oil & Gas Exporting	Crude Petroleum (90.2)	1
Gambia	Resource-Scarce	Filaments (60.5)	4
Ghana	Oil & Gas Exporting	Crude Petroleum (33.9)	3
Guinea	Oil & Gas Exporting	Crude Petroleum (41.9)	2

Guinea-Bissau	Resource-Scarce	Edible Fruit & Nuts (67.9)	2
Kenya	Resource-Scarce	Coffee (18.8)	15
Lesotho	Mineral-Exporting	Diamonds (40.5)	3
Liberia	Mineral-Exporting	Ores (40.4)	3
Madagascar	Mineral-Exporting	Nickel (27.2)	8
Malawi	Resource-Scarce	Tobacco (42.2)	6
Mali	Resource-Scarce	Cotton (39.1)	5
Mauritania	Mineral-Exporting	Ores (50)	2
Mozambique	Oil & Gas Exporting	Petroleum Gases (30)	5
Namibia	Mineral-Exporting	Diamonds (26.7)	6
Niger	Mineral-Exporting	Ores (45.6)	2
Nigeria	Oil & Gas Exporting	Crude Petroleum (96.6)	1
Rwanda	Mineral-Exporting	Ores (31)	6
Senegal	Resource-Scarce	Petroleum, Not Crude (16.4)	12
Sierra Leone	Mineral-Exporting	Ores (84.5)	1
Somalia	Resource-Scarce	Live Animals (56.4)	2
South Africa	Mineral-Exporting	Precious Stones & Metals (15.5)	11
Sudan (North and South)	Oil & Gas Exporting	Crude Petroleum (87.5)	1
Swaziland	Resource-Scarce	Essential Oils (22.4)	8
Tanzania	Mineral-Exporting	Gold (23.9)	10
Togo	Resource-Scarce	Cotton (13.1)	11
Uganda	Resource-Scarce	Coffee (22)	15
Zambia	Mineral-Exporting	Copper (74.4)	2
Zimbabwe	Mineral-Exporting	Precious Stones & Metals (29.5)	4

Notes: *As measured in 2014, exported value in USD.

Source: International Trade Centre — Trade Map.

Natural Resources as a Blessing

The argument for developing natural resource is clear and simple. Countries with mineral and hydrocarbon reserves can earn significant economic rents that their governments can invest or spend to improve public welfare and create intergenerational wealth. With proper management, resource revenues can enhance development that leads to sustainable economic growth. This can be achieved through productive public investment and expanding human capital in a country. In the best case, investments from resource revenues could create linkages between the energy sector and the larger economy, generating positive spillovers to other sectors and increasing employment. In low-income countries (LIC), where annual per capita incomes average $626 (World Bank, 2014), resource revenues can be used to alleviate poverty, which leads to positive human development outcomes.

We can consider the case of Botswana, a mineral-exporting country that was one of the poorest in Africa when it gained independence in 1966, with GDP per capita of about $70. In 2014, Botswana's GDP per capita was $7,240, fueled largely by the discovery and development of diamonds. Botswana has been one of the fastest growing economies in the world governed by a mature democracy with free and fair elections and strong institutions. Revenues from diamonds are invested in education at one of the highest rates in the world of around 9 percent of GDP (World Bank, 2014). According to analysis by the African Development Bank (Meijia & Castel, 2012), Botswana was able achieve these outcomes through a three-pronged approach that involved a) pursuing economic diversification; b) de-linking expenditure from revenues and employing expenditure smoothing mechanisms; and c) investing surplus revenues for future generations. Botswana's management of natural resources certainly serves as a model for other SSA countries with significant amounts of minerals and hydrocarbons.

Natural Resources as a Curse

If Botswana is the case study for natural resources as a blessing, then Sierra Leone might be its counterpoint. Sierra Leone is also a mineral-exporting country whose diamonds were discovered in 1935. The country gained independence from Britain in 1961 when it's GDP per capita was around $150. Sierra Leone's GDP per capita in 2014 was around $775 (World Bank) and it is among the poorest countries in the world despite diamonds accounting for almost 30 percent of export value since 2002 (International Trade Centre, 2015). Since independence, Sierra Leone has suffered large-scale illicit diamond trading, endemic corruption and a decade-long civil war fueled and prolonged by diamond mining (Maconachie & Binns, 2007). Sierra Leone's civil war, which began when rebels from Liberia crossed the border to conduct operations in diamond-rich southeastern Sierra Leone, would eventually spill over and contribute to Liberia's second civil war from 1999-2003. We can summarize Sierra Leone's natural resource experience as one of a) negative growth impacts; b) the prevalence of poverty; c) increased social conflict; d) poor governance/weak democratic institutions; and e) negative regional impacts of resource projects.

Many resource-rich countries, especially in SSA, which develop their natural resources have experiences more similar to Sierra Leone than Botswana. Indeed, when compared to resource scarce countries, resource-rich states tend to have a worse growth performance, less openness, lower quality governance institutions and less income per capita. The empirical foundation for these findings can be seen in the work of Sachs and Warner (1995, 1997 and 2001). Taken together, the negative economic performance of resource-rich countries coupled with the political economy issues of corruption, rent-seeking behavior, bad governance and conflict suggest that natural resources are more of a curse than a blessing. Richard Auty observed this in his research and coined the phrase "resource curse" in 2001 to describe these negative impacts. Since then, the phrase has become commonplace.

Literature on resource development is dominated by economic analysis of the negative growth impacts of resource-rich countries. Stevens' (2015) review of the economic literature on this topic neatly summarized nearly 30 years of scholarship on the macroeconomic performance of resource-rich countries. In short, a large number of studies have supported the theory of a negative link between natural resource development and GDP growth, although these studies looked at the full spectrum of resources, both renewable and non-renewable. More recent work has challenged this theory on the grounds that the methods used to measure resource abundance and the econometric techniques used to test the hypotheses are insufficient. Recent contrary findings notwithstanding, the available evidence still points to demonstrable negative growth impacts for countries that have developed their natural resources.

Related to negative growth impacts is the macroeconomic concept of Dutch disease in resource-rich developing countries. Dutch disease is said to occur when a country develops natural resources, the export of which causes a real appreciation of the exchange rate and causes a contraction in the non-natural resource tradable sector. In the Netherlands in the 1970s, the discovery of gas led to a decline in manufacturing that adversely affected economic growth, thus the name Dutch disease. This economic condition has been observed, with varying levels of impact, in nearly every country that has developed natural resources. In SSA, where most states do not have an industrial base or any significant manufacturing sector, Dutch disease effects can be more severe because the all-important agriculture sector usually declines.

Another example of negative economic growth impacts occurs when governments begin to receive natural resource revenue windfalls and become over-dependent on these funds. This usually occurs when commodity prices are high. This over-dependence exposes government fiscal policies to the boom-bust commodity cycles, in effect leading to budget surpluses when commodity prices are high and deficits when prices are low. Research by the IMF confirms this pattern and found that fiscal behavior in developing oil-producing countries suggest that government expenditure, consumption, investment, non-oil revenue and non-oil primary balances are strongly procyclical (Erbil, 2011). Ultimately, procyclical fiscal policies lead to inefficient and unproductive investment of resource revenues that stifles economic growth.

The political economy literature on the resource curse generally focuses on dysfunctional state rent-seeking behavior, large public sectors, unsustainable budgetary practices, civil conflict and war. Again, Stevens (2015) ably reviewed the political economy literature on social conflict and the resource curse. He found strong evidence that natural resource development is associated with increased social conflict. Possible reasons for this include a) resource revenues are significant enough to fight over so that they can be looted; b) natural resource projects can alienate local communities; and c) conflict exacerbates poverty and resources that could be used to alleviate poverty are often diverted to fighting. Recent research, however, does not appear to support the claim that the resource curse degrades governance or democratic institutions.

The case of Equatorial Guinea also well illustrates the resource curse. It is a small oil and gas-exporting country with a population of about 800,000. According to the IMF, GDP per capita has averaged more than $30,000 since 2008 making it the only high income country in SSA, however 75 percent of the population lives on less than $700 per year (Lawson-Remer & Greenstein, 2012). Equatorial Guinea is often labeled repressive and autocratic by international organizations and led by a strongman president who has been in power since 1979. The country has the worst score of all African countries on the World Bank's Control of Corruption Index. Oil rents as a share of GDP is 47 percent, which exposes Equatorial Guinea's fiscal policies to swings in commodity prices. In their 2015 end of mission press release, the IMF concluded:

> **"The growth outlook poses very significant challenges with prospects dominated by falling oil production volumes and very weak prices, given that hydrocarbons account for around 80 percent of the economy. With limited fiscal buffers to cushion the drop in government revenues, fiscal retrenchment will be unavoidable, and will contribute to an economic contraction of 9½ percent in 2015. Growth is expected to decline over the medium term. The gradual decline in oil output will likely continue in coming years, but may potentially be somewhat mitigated by the introduction of new extraction technologies and ongoing exploration."**

Many SSA countries are expecting to discover and develop natural resources to meet their national development plans over the next 20-35 years. For some countries, this will be their first experience extracting and monetizing natural resources. For others, there will be new opportunities to learn from or to continue to repeat past mistakes.

The Next 35 Years

As we have argued in this paper, natural resource development will be a key driver of wealth and welfare in SSA countries. We think it is useful to present estimates of potential natural resources for each SSA country through 2050, although it is strictly limited to oil and natural gas as research for this discussion paper did not identify any estimates of future mineral resources. This data on future hydrocarbon resources was provided by Rystad Energy, an independent oil and gas consulting firm based in Norway.

Twenty-six countries are estimated to have hydrocarbon resources, including six that are currently resource-scarce (Ethiopia, Kenya, Senegal, Somalia, Somaliland and Uganda). Four countries that are mineral-exporting will probably become oil and gas-exporting if these estimated resources are developed (Madagascar and Mauritania, Mozambique and Tanzania). Figure 2 below presents the estimated total remaining reserves by SSA country. It is important to note that these are not recoverable reserves, but are probable reserves. The distinction being that recoverable reserves are proven and can be developed using existing technology, but probable reserves are unproven and have at least a 50 percent confidence level of being developed.

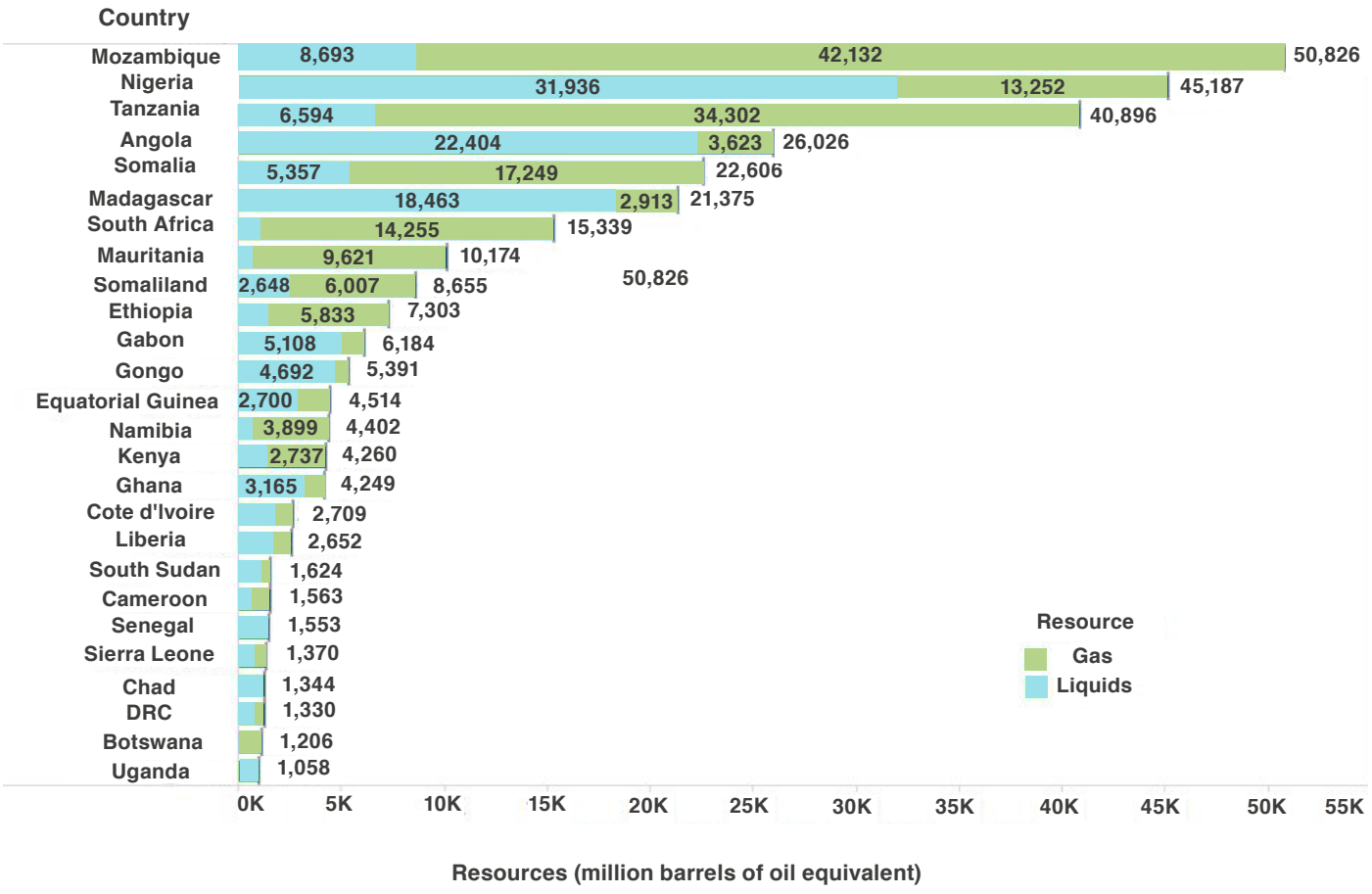

Figure 2. Estimated total remaining reserves by country.

Notes: These estimates include unconventional resources, such as shale gas, and resources that have not yet been discovered. Only SSA countries with > 1b barrels of oil equivalent are shown here.

Source: Rystad Energy UCube.

Leveraging Natural Resources for a Potential Demographic Dividend

The demographic dividend is the potential growth in a country's economy as the working-age population grows when mortality and fertility rates decline. This change in the population age structure is known as the demographic transition. A smaller share of children in the population enables greater investments in health care, education and nutrition that can lead to changes in labor productivity. It is assumed that, to capture a demographic dividend, a country experiencing the demographic transition will need policies in place to support productive employment and boost per capita income. A number of SSA countries are expected to undergo the demographic transition by 2050, raising the potential for opening the demographic window of opportunity and thereafter capturing the demographic dividend, increasing economic growth and improving societal welfare.

As we discussed earlier, natural resource development and hydrocarbon reserves in particular, with its significant FDI flows, have the potential to improve welfare through efficient and productive investment of resource revenues. Could natural resource development and the proper management of resource revenues help a country capture the demographic dividend? The answer is yes, but this is highly dependent on the timing of a country's demographic transition, amount of recoverable resources, development profile for extracting and producing the resources, and economic growth policies for investing resource revenues.

We can illustrate this with the case of Uganda, which is currently a resource scarce country that has made capturing a demographic dividend a part of its national development plan, Uganda's Vision 2040. Uganda has never meaningfully developed hydrocarbon or mineral resources before and its economy is primarily based on agriculture. As discussed, Uganda is one of the SSA countries that will develop natural resources in the next 35 years. As of 2015, Uganda has discovered 6.5 billion barrels of oil, of which 1.4 billion barrels are recoverable with existing technology. Uganda expects to begin producing oil in 2020. Assuming an average oil price of $75 per barrel with a 30-year development profile and 100 percent export of crude produced, under the most efficient and productive fiscal policy scenarios, Uganda can expect to see a welfare increase of $603 million per year or $17.27 per person per year in 2012 US dollars (KAPSARC, 2015).

In aggregate, over the production life of the resources, this is a significant amount of money. However, it is clear that managing oil revenues efficiently will not yield the investments required to drive the changes in labor productivity that could support the demographic transition. Uganda will need to adopt economic growth policies that optimize investments in the energy sector to create linkages to other economic sectors and create positive spillovers, such as increasing the efficiency and productivity of agriculture.

The extractive industries are capital intensive and do not necessarily create jobs on the same scale as labor-intensive manufacturing and services sectors. Hydrocarbon and mineral projects usually require a flurry of investment and employment to explore and develop the resources over a short period of time. Then these projects have long production plateaus that recover the initial investment while employing small amounts of workers. According to public estimates from Total, the French oil operator with exploration and production rights in Uganda, the

planned development profile will require a peak level of 13,000 direct jobs (during the construction phase) and a sustained workforce of 3,000 direct jobs at crude production plateau.

Oil and gas activity in Uganda has the potential to generate 100,000-150,000 indirect and induced jobs, although 80 percent of these jobs will be short-term during the peak construction phase and will have to be transferred to other economic sectors or to neighboring countries to remain sustainable (Hammann, 2014). The peak construction phase ends about seven years into Uganda's oil fields development, which began in 2012. Unless Uganda is already well into its demographic transition, it is unlikely that direct, indirect and induced employment in the oil sector will lead to significant changes in labor productivity.

International oil companies and associated service companies operating in Uganda will require highly skilled technicians to operate sophisticated equipment. Uganda, like most resource scarce SSA countries, does not have the human capital to meaningfully participate in the energy sector from the start. It has been investing in education and human capital development programs since 2011 to educate and train Ugandans to work in the oil sector. This includes both individual workers and small and medium size enterprises (SMEs).

Many of the highly skilled jobs in the oil sector require at least four years of education, training and mentorship. It is therefore unlikely that there will be a significant number of Ugandan workers or firms participating in the highly-skilled technical jobs during the construction phase of development (where 80 percent of the employment is required). To maximize national benefit from these human capital investments, Uganda needs to enable these skilled workers and/or the most innovative and adaptive SMEs to transfer to other economic sectors and make those sectors more efficient and productive. Over time, these linkages should create positive economic spillovers that could lead to new capabilities for manufacturing or a more productive agriculture sector.

While the size of Uganda's recoverable oil reserves and the timing of field development do not appear to line up with a demographic transition; proper management of the oil revenues combined with human capital development and attractive incentives could create the linkages to accelerate economic growth. Careful planning and implementation of Uganda's oil sector could create the policies that support productive employment, boost per capita income and allow Uganda to capture the demographic dividend later this century. Lest we forget, all this must be done while struggling with the economic and political issues of the resource curse that Uganda will inevitably encounter. If Uganda can navigate those issues successfully, it could become the first SSA oil and gas-exporting country to realize a natural resource blessing.

Uganda's case is illustrative of the complexity involved in leveraging natural resources to help capture a demographic dividend. Each SSA country that is planning on developing its natural resources to spur economic growth will grapple with similar issues.

Conclusions

The role of natural resources in shaping SSA's development through the 21st century is clear. By 2050, more than 75 percent of SSA countries will be considered resource-rich developing countries. Many of them have linked the successful extraction and monetization of natural resources to their national development plans. Although as we have discussed here, success is not guaranteed.

The challenges of natural resource-driven development are manifold and complex. Rents from developing natural resources and royalties from their export generate tremendous fiscal revenue for governments. Managing those revenues to create inclusive economic growth requires strong political institutions, competent technocrats and a vibrant civil society to oversee the sector and communicate what resource revenues can mean for a country's development. In the absence of good, honest and transparent revenue management, the macroeconomic impacts, which include price volatility and its related commodity boom-bust cycles, Dutch disease effects, negative economic growth impacts and over-dependence on natural resource revenues, can pull a country down the resource curse path. In the worst case, these negative impacts can push countries toward instability and conflict, or turn them into failed states.

The good news is that SSA countries are no longer struggling to develop these natural resources on their own. There is significant expertise, support and programmatic assistance provided by international organizations such as the World Bank and International Monetary Fund. Non-governmental groups such as the Africa Progress Panel, Extractive Industries Transparency Initiative and Natural Resources Governance Institute are active in many SSA countries with capacity building programs for government officials. Finally, international donors such as the Norwegian Agency for Development Cooperation, Department for International Development (UK), and the German Gesellschaft fur Internationale Zusammenarbeit (GIZ) also provide expert assistance, research and funding to educate policymakers, the private sector, civil society groups and the general public, about hydrocarbon and mineral value chains and ways to participate in these sectors.

If SSA countries are to capture their demographic dividend through the development of natural resources, then governments will need to successfully navigate the revenue management issues and prioritize investments from natural resource revenues into health care, education and nutrition. The timing and magnitude of natural resource discoveries will determine the extent to which a country's energy sector will be able to create the necessary jobs for the demographic transition. The impact of these jobs will be modest, however, due to the capital-intensive (as opposed to labor-intensive) nature of energy projects.

Countries seeking to leverage their nascent energy sector to spur economic development need to be focused on human capital development to create forward and backward linkages that can achieve positive economic spillovers. Perhaps armed with the knowledge about the resource curse and with assistance from international organizations and donors, we will be able to count on more SSA countries turning their resources into blessings.

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About the Authors

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About the project

Natural Resource-led Development in New Producing Countries

Our project seeks to understand how natural resource extraction can drive inclusive economic growth in new producing countries. We are engaged in a multiyear multidisciplinary study with four objectives:

- Understand the human geography of new producing countries.
- Assess the magnitude of new discoveries and estimate direct fiscal impact.
- Understand how industry can be localized to create economic growth.
- Estimate spillovers and welfare impacts to society.

We recognize that policymaking in new producing countries is a complex process, and our project also seeks to understand the interactions of actors' interests that drive energy sector policies.

Our initial focus is on four countries – Kenya, Mozambique, Tanzania and Uganda – that expect to develop significant oil and gas reserves in the next 5-7 years. Through natural resource development, these countries hope to achieve middle-income economic status by 2030-2040. This project is conducted through close collaboration with leading think tanks and NGOs in Africa.

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