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Gordon Institute of Business Science
Centre for African Management and Markets

FRANCOIS FOUCHE AND IAN MACLEOD

DHL GIBS BIG DATA SERIES

Build, connect and thrive
– The power of economic complexity

Centre for African Management and Markets (CAMM)
CAMM at the Gordon Institute of Business Science (GIBS) conducts academic and practitioner research and provides strategic insight on African markets. Our purpose is captured in our mission of "Build. Connect. Do." We are proud to be one of the centres at the heart of GIBS, ranked as the African continent's leading business school. This embeddedness provides a credible and respected base, and a powerful network of researchers, practitioners, academics, and policy workers throughout the continent. Our footprint is driven by our conviction that Africa's innovation and competitiveness is intimately connected to traversing borders with Africa-wide trade, cross-border investment activity, and pan-African business initiatives.

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Adrian holds a Professorship in Economics, Finance and Strategy at GIBS, and is the Founding Director of CAMM. His research focuses on Africa integration, savings and investment. He uses data and models to develop strategic insights that help businesses expand into new markets. Over the past thirty years, alongside his academic career, Adrian established, grew and successfully exited an investment firm. Adrian holds a PhD from the University of Natal, South Africa.

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CONTENTS

1 INTRODUCTION

How do we prosper? It's one of the great questions. It occupies all of our minds at least sometimes. It can take the form of an engineering problem: How do we efficiently provide clean water to a city? We can also ask the question philosophically: What is a good life? No matter the lens we apply, sound economic paths to prosperity are foundational.

On this, opinions abound. Economic schools of thought have clashed on the intellectual battlefield for centuries. Centralise or decentralise? Import or export? Tax more or tax less?

In reality, there are multiple ways for societies to prosper. Geography and mineral resources vary, for starters. Global trends must also be responded to. Politics and culture also need to dovetail with an approach that works for its time and place.

Still, we can decipher economic tactics with reliable power to generate prosperity. That is, within any societal setting and, of course, *ceteris paribus* (all else equal), actions that make a population more productive.

In this paper, we explore just one of these, remaining agnostic of school of thought or political persuasion. Specifically, we use data-backed analysis to seek out ways in which countries can produce more complex goods and services to sell across their borders.

1.1 COMPLEXITY IS KING

"Everything should be made as simple as possible, but no simpler," goes the famous quotation from Albert Einstein. Itself a simplification from a lecture the German physicist delivered in 1933[1], it is perfectly consistent with the economic claim that more complexity is better.

Any additional complexity must be justified. First, it must be complexity that the market values. Fortunately, we know what the market values. If higher complexity attracts a higher purchase price, it is additional complexity that the market wants.

Second, the complexity must be achievable within one's production constraints. A country blessed with boundless space, rich soil and experienced farmers ought not to pursue a rapid move to high-powered computer chip design. The juice is unlikely to be worth the squeeze, even if the complex silicon chips attract a high premium.

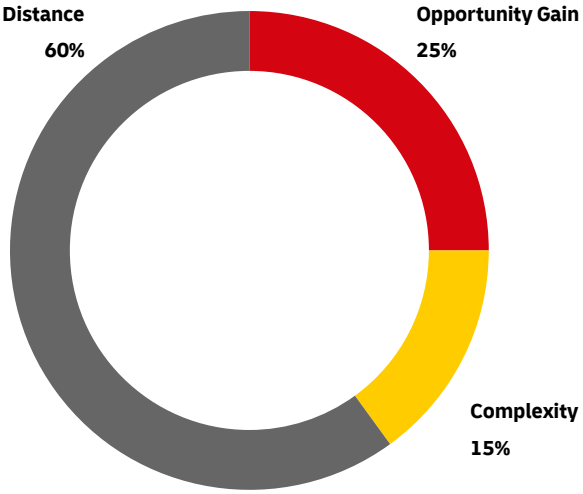
Rather, movements towards higher complexity should be short hops from existing skills and resources. To use the Harvard Growth Lab's terminology, countries need a smart combination of distance, complexity and opportunity gain in their quest to expand production and ultimately exports to obtain growing wealth.

Distance measures how easy it would be for a country to adapt existing know-how to begin producing some new output. So, it is a measure of current cognitive ability and the ease or difficulty of expanding it. For example, manufacturing cars may be a relatively small step from manufacturing motorcycles. However, refitting a welding shop to make smartphone components is a giant leap.

Opportunity gain scores the usefulness of an expansion for its linkages to other high-complexity products. In other words, the higher this score, the more likely it is that expanding into this product will open more attractive expansions. Consider how expanding from making simple computer chips to making advanced, AI-enabling ones opens opportunities to expand into production of additional tech for the growing array of advanced products like smartphones.

In short, for any given input of time and other resources, the greater the complexity of the output, the greater my net productivity. One hour at my laptop to produce some computer code is good. That same hour to produce more complex code is better.

FIGURE 1 THE THREE COMPONENTS OF PROSPERITY: OPPORTUNITY GAIN, COMPLEXITY AND DISTANCE



Source: Harvard Growth Lab

EXCEPTIONS THAT LEAVE THE RULE IN PLACE

Some countries get rich without the need for increasing complexity. One prominent example is Australia. In some ways, this resembles the export baskets of far less prosperous African nations. Australia relies heavily on extracting enormous quantities of commodities from the ground and selling them to fast-growing neighbours, especially China.

Australia's economy is, accordingly, low on complexity and has been steadily declining in complexity for several decades[2]. Nonetheless, it is among the wealthiest nations on Earth, with GDP per capita of nearly $65,000[3].

All else equal, Australia could improve prosperity with higher complexity. However, given the fortunate position they are in, being home to mineral riches and situated nearby one of the great economic booms of our time, their low-complexity approach of exploiting its resources has been a reliable path to prosperity.

[1] Robinson, A. Did Einstein really say that? Nature (2018) https://www.nature.com/articles/d41586-018-05004-4
[2] Harvard Growth Lab. https://atlas.cid.harvard.edu/countries/14
[3] World Bank (2023).

1.2 MEASURE TO MANAGE

The Growth Lab and Atlas of Economic Complexity (AEC), built by the Harvard Kennedy School of Government, provides voluminous and powerful big data and visualisations to understand nations' economic complexity. This can also be used to identify opportunities to enhance complexity.

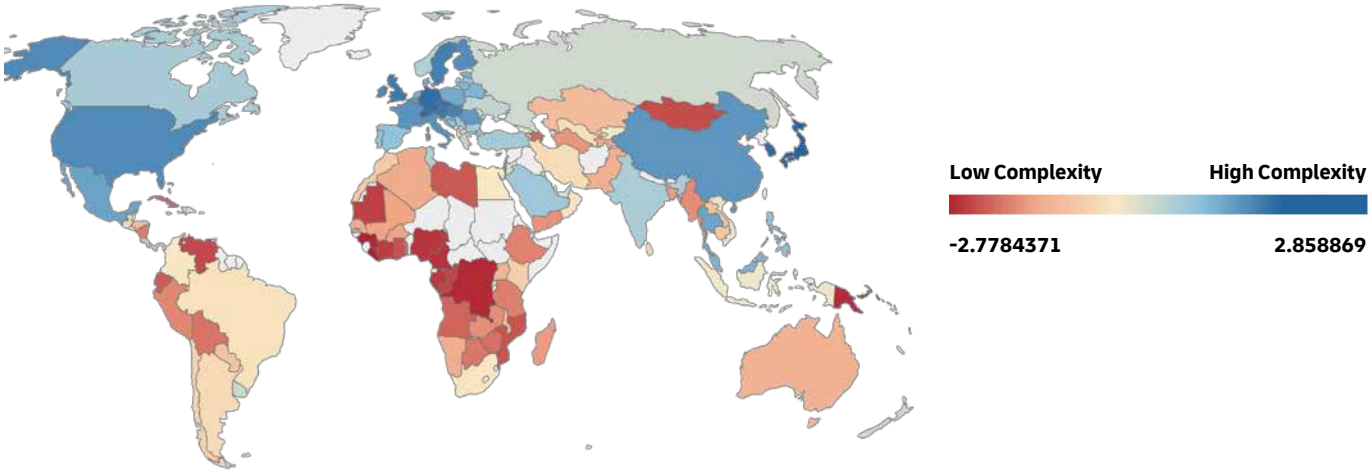
The AEC provides foundational data such as a reliable and exhaustive list of the products that each country exports, who they sell to, in what quantities and how that mix is changing. It also rates products for economic complexity.

Within each country, researchers calculate the distance between products. In other words, it quantifies how difficult it would be for a country that produces X to parlay their know-how to produce product Y, which shares some of the necessary inputs to produce X but is higher in complexity.

Such is the nature of the task of assembling, reconciling, processing and presenting trade data for almost every nation on Earth, the latest iteration captures the world as of 2021. We rely on this big data set, keeping in mind that there may have been changes since then.

A keystone output from the AEC is the Economic Complexity Index (ECI). This measures the complexity of each of the thousands of products traded globally by hundreds of nations.

FIGURE 2 MAP OF GLOBAL ECONOMIC COMPLEXITY LEVELS (2021)



Source: atlas.cid.harvard.edu/rankings

1.3 THE PREDICTIVE POWER OF COMPLEXITY

César Hidalgo and Ricardo Hausmann, the godfathers of the ECI, demonstrated the predictive power of complexity in their seminal study from 2009. In their paper, "The building blocks of economic complexity"[4], they use big data to calculate the correlation between a country's economic complexity, measured by ECI, and its real GDP per person. They find robust statistical significance in this relationship.

As Figure 2 shows, economic complexity and GDP per capita are more strongly correlated in countries where natural resource exports account for less than 10% of GDP. It stands to reason those countries blessed with natural resources can achieve prosperity higher than their economic complexity might suggest.

In countries less reliant on natural resource exports, the economic complexity level accounts for three quarters of the variance in GDP per capita.

Moreover, they find that this predictive power of complexity is more potent that many conventional indicators, such as the rule of law. This is not to suggest that rule of law is unimportant for long-term prosperity. Simply that complexity is a stronger driver of prosperity.

Their profound conclusion, "countries tend to converge to the level of income dictated by the complexity of their productive structures, indicating that development efforts should focus on generating the conditions that would allow complexity to emerge to generate sustained growth and prosperity."[5]

The authors conclude, "Understanding the increasingly large gaps in income per capita across countries is one of the eternal puzzles of development economics. Our view is that complexity is at the root of the explanation."

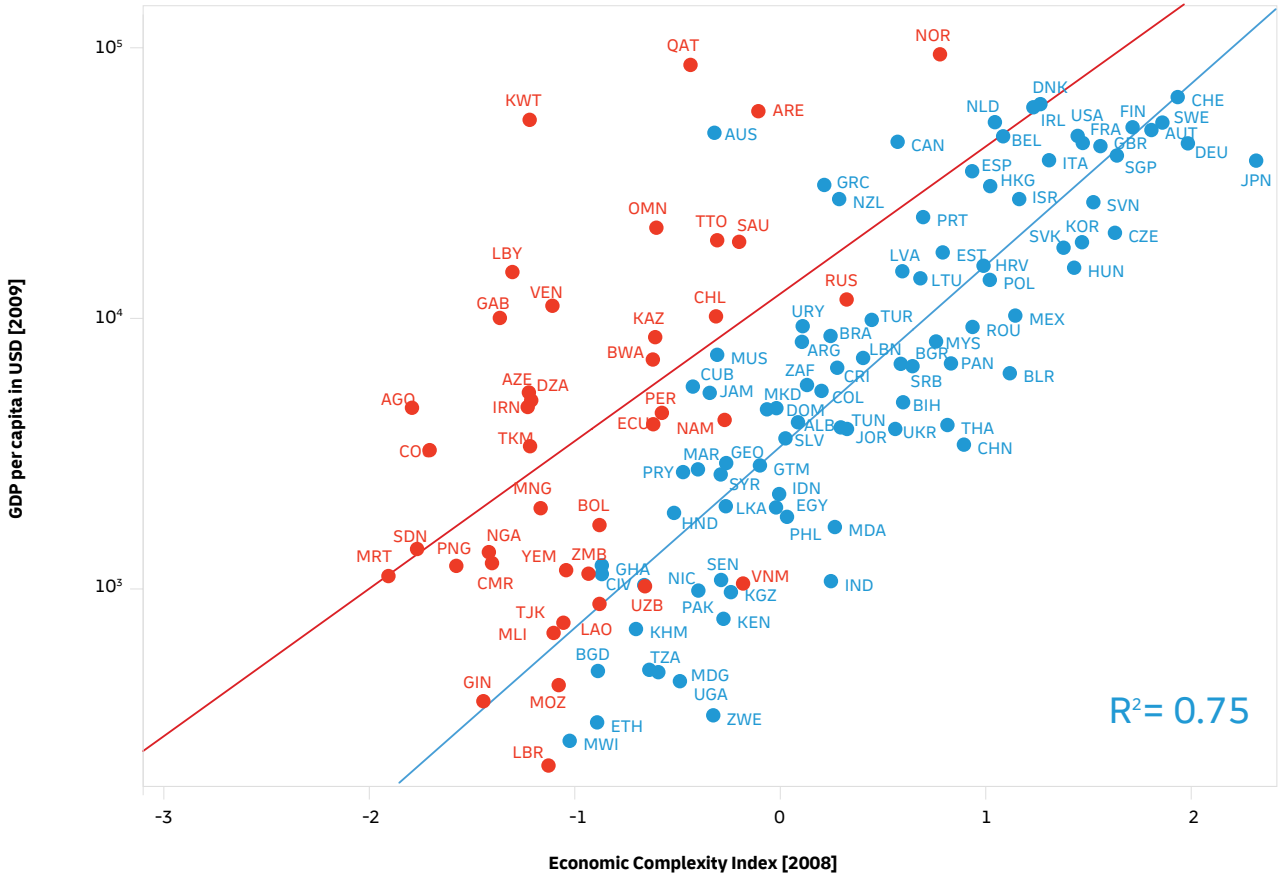
Subsequent studies have found that countries with higher complexity not only tend to grow faster but experience lower levels of income inequality and produce comparatively lower emissions.[6]

In sum, complexity is a leading indicator, drawing living standards upwards.

[4] Hidalgo, C. A., & Hausmann, R. (2009). The building blocks of economic complexity. Proceedings of the national academy of sciences, 106(26), 10570-10575.
[5] Ibid.
[6] Observatory for Economic Complexity. (n.d.) oec.world/en/resources/methods

FIGURE 3 THE RELATIONSHIP BETWEEN ECONOMIC COMPLEXITY AND GDP PER CAPITA

Shows the relationship between income per capita and the Economic Complexity Index (ECI) for countries where natural resource exports are larger than 10% of GDP (red) and for those where natural resource exports are lower than 10% of GDP (blue). For the latter group of countries, the Economic Complexity Index accounts for 75% of the variance. Countries in which the levels of natural resource exports is relatively high tend to be significantly richer than what would be expected given the complexity of their economies, yet the ECI still correlates strongly with income for that group.



Source: Hausmann, Ricardo, et al. The atlas of economic complexity: Mapping paths to prosperity. MIT Press, 2014.

1.4 IDEAS TO ACTION

Very well. Greater complexity in the economy is an uplifting force that we can measure in substantial detail. What do we do with this information?

Understanding complexity gives policymakers power to direct structural transformation in the most efficient way. With the detail provided in big data models, we can calculate a group of new export products that deliver “bang for buck”. That is, we can identify products that our existing know-how can relatively easily adapt skillsets to produce and which will deliver heightened complexity for the economy.

With this job done, the policymaker can deploy tools with precision. These are beyond the scope of this paper, but may include the likes of tax breaks, special economic zones (SEZ), and targeted deployment of training budgets.

1.5 APPLICATION TO AFRICA

In our sample of six African nations, we see a spectrum of complexity arrangements. Some are gaining complexity over time. Others are suffering declining complexity. Some are diversifying into new products, while others remain heavily reliant on a limited export basket.

For the most part, the historical lack of trade among African nations persists. Only in rare cases is intra-Africa trade increasing.

For each country in our sample, we present a snapshot of its economic complexity, highlight any notable trends, and provide a brief analysis of potential high impact but achievable product expansions that will elevate complexity.

2 FOUR WAYS FORWARDS

Based on a country's level of complexity and connectedness, four broad types of strategies present themselves. Here connectedness is measured by the complexity outlook index (COI). This is an indicator of how many product opportunities lie within reach, based on current know-how.

1

Countries high on complexity but low on connectedness are suited to the Technological Frontier Approach. Having exploited many of the gains to be made from existing products, these countries should embark on developing brand new products. Germany and Japan are in this category.

2

Where a country is low on both complexity and connectedness, as with Denmark and Portugal, the Strategic Bets Approach is available. Here a nation has few safe bets, and so selects a small number of high-complexity products and strategically targets large leaps to these. Nigeria, Australia and Botswana should consider this angle.

3

In the case of low complexity coupled with high connectedness, the so-called Parsimonious Industrial Policy Approach is advisable. This is achieved by eliminating bottlenecks so that small leaps can be made from high-complexity products to other high-complexity products.

4

Those who have achieved high complexity with high connectedness enjoy the option of a Light Touch Approach. India is the standout performer here. Policymakers can pick and choose how best to leverage their advanced manufacturing to best diversify into the most complex products to export.

FIGURE 4 SELECT NATIONS BY LEVEL OF ECONOMIC COMPLEXITY AND CONNECTEDNESS TO OPPORTUNITIES (2021)

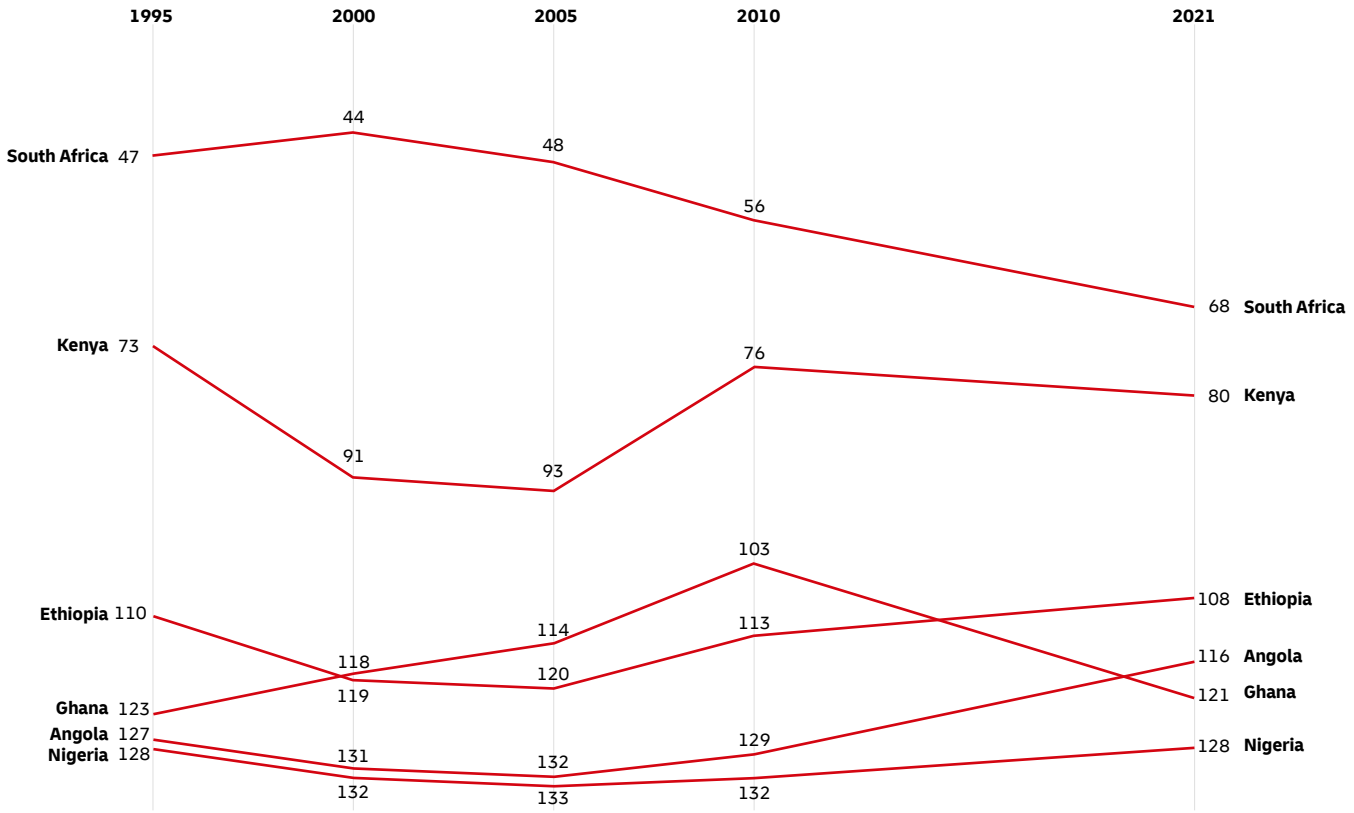
Source: Harvard Growth Lab

3 COUNTRY VIGNETTES

In this report, we use big data to investigate the economic complexity of six countries from various regions of Africa. Given the nature of data collection and verification for international trade, there is necessarily a substantial lag. Our focus period is the 15 years to 2021. This includes the latest data from the widely respected Harvard Growth Lab.

We assess the current state of six African countries' productive knowledge, via their economic complexity over the past 15 years. Countries which increased the number and complexity of the products they successfully export have grown faster. Data throughout the report is from Harvad Growth Lab, unless otherwise indicated.

FIGURE 5 CHANGE IN ECONOMIC COMPLEXITY RANKINGS FOR OUR SAMPLE OF AFRICAN NATIONS (1995 - 2021)



Source: Harvard Growth Lab

3.1 ANGOLA

Angola is the 116th most complex country out of 133 in the world of ECI rankings. This is up from 127th in 1995. Lower middle-income Angola's gradually improving complexity has been driven by marginally diversifying its exports.

An OPEC member, Angola produces around 1 million barrels of oil per day, making it sub-Saharan Africa's largest oil producer, just ahead of Nigeria[7].

The Lusophone West African nation is currently suffering the dual ills of unemployment and inflation. "The currency depreciation and the increase in gasoline prices have both fuelled inflationary pressures since mid-2023. Year-on-year inflation reached 24% in February 2024, compared to 11.5% in February 2023, driven primarily by food prices."[8]

↑ 12

Angola's complexity has improved 12 positions in the past decade

+7 NEW PRODUCTS

7 New products were added in the last 15 years

GDP PER CAPITA, 2021

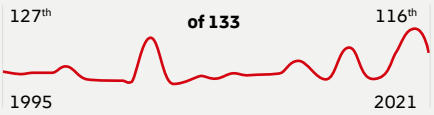
$1,903

110th of 133

ECI RANKING

116TH

of 133



GROWTH PROJECTION TO 2031

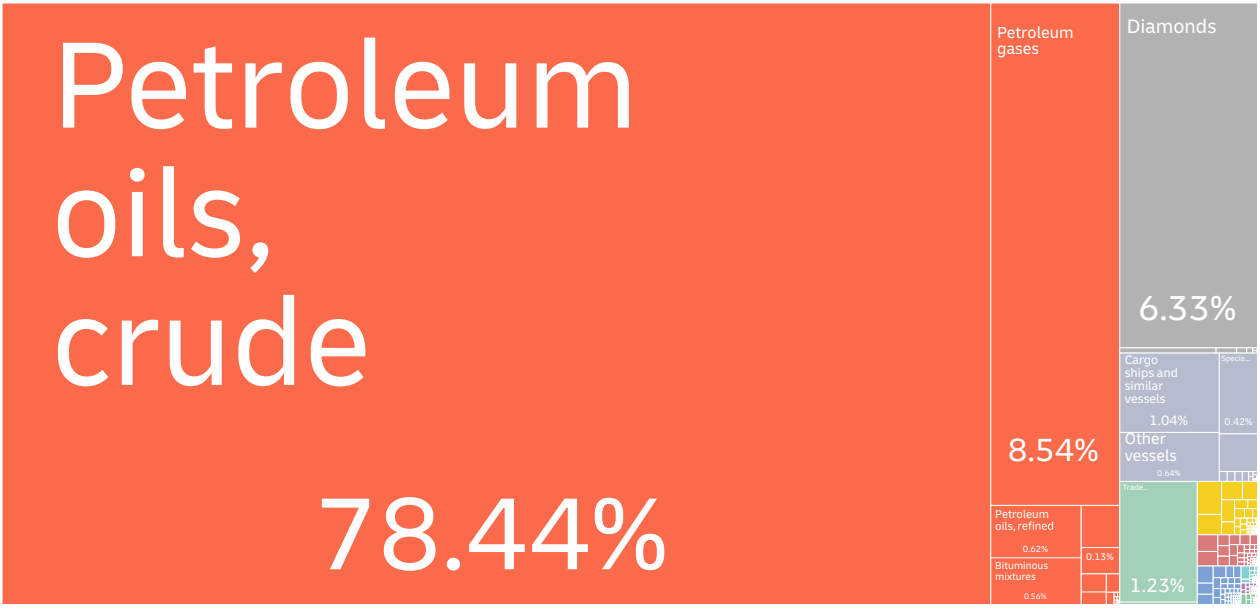
2.62%

78th of 133

ANGOLA'S EXPORTS

Angola can boast a trade surplus. Total exports of $34.6 billion compare to imports of $18.4 billion. Exports are growing at 4.6% per year. Angola's chief hurdle to a more productive trade situation is the reliance on low-complexity petroleum oils and crude. This accounts for 78% of total exports. The remainder of exports are also primarily in low-value-add product baskets, including minerals and stone. Worryingly, Angola's mineral exports have fallen substantially as a share of the world market since a peak in 2009.

FIGURE 6 ANGOLA'S EXPORT BASKET (2021)



[7] US International Trade Administration (2024).
[8] World Bank (2024).

Angola has added just seven new products to its export basket since 2006. This expansion contributed $108 in income per capita in 2021. Much of the expansion was the very small move within the petroleum space. Cargo ships and similar vehicles are growing as an export product. However, these are not high complexity outputs.

FIGURE 7 ANGOLA'S NEW EXPORT PRODUCTS ADDED TO THEIR BASKET BETWEEN 2006 AND 2021

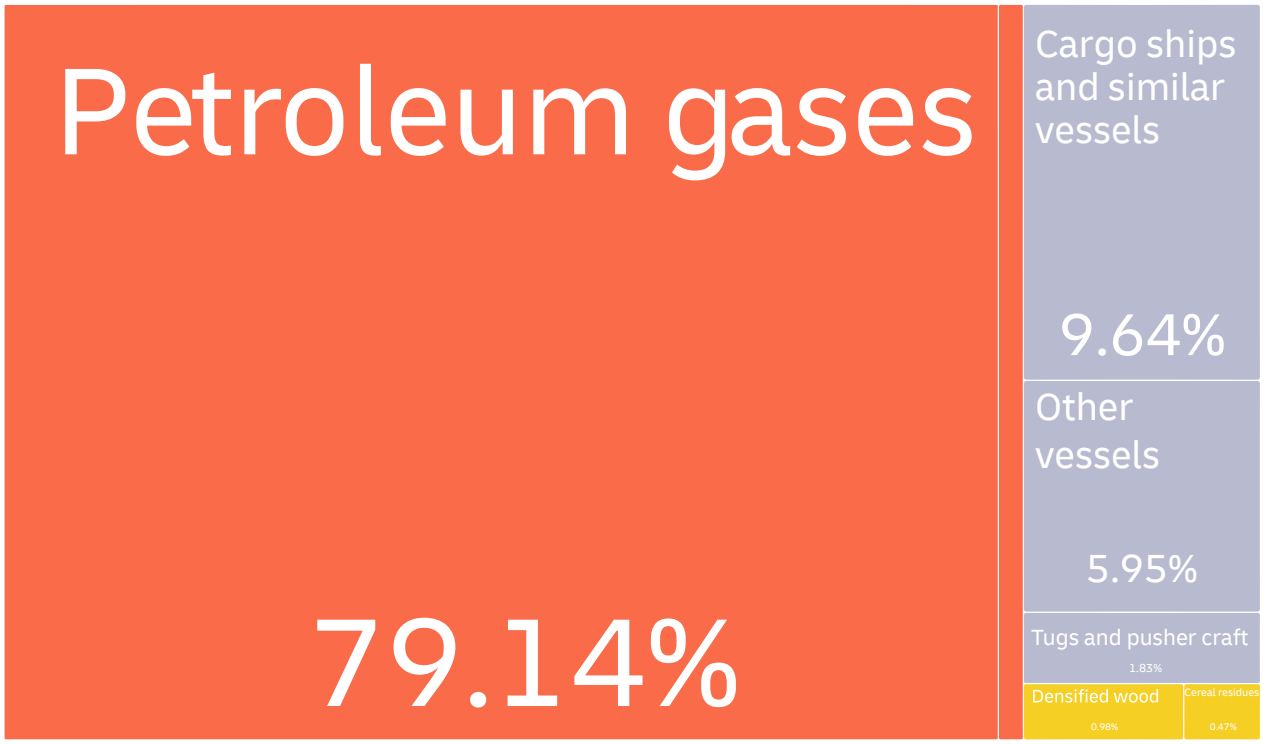


FIGURE 8 ANGOLAN EXPORT DESTINATIONS (2021)

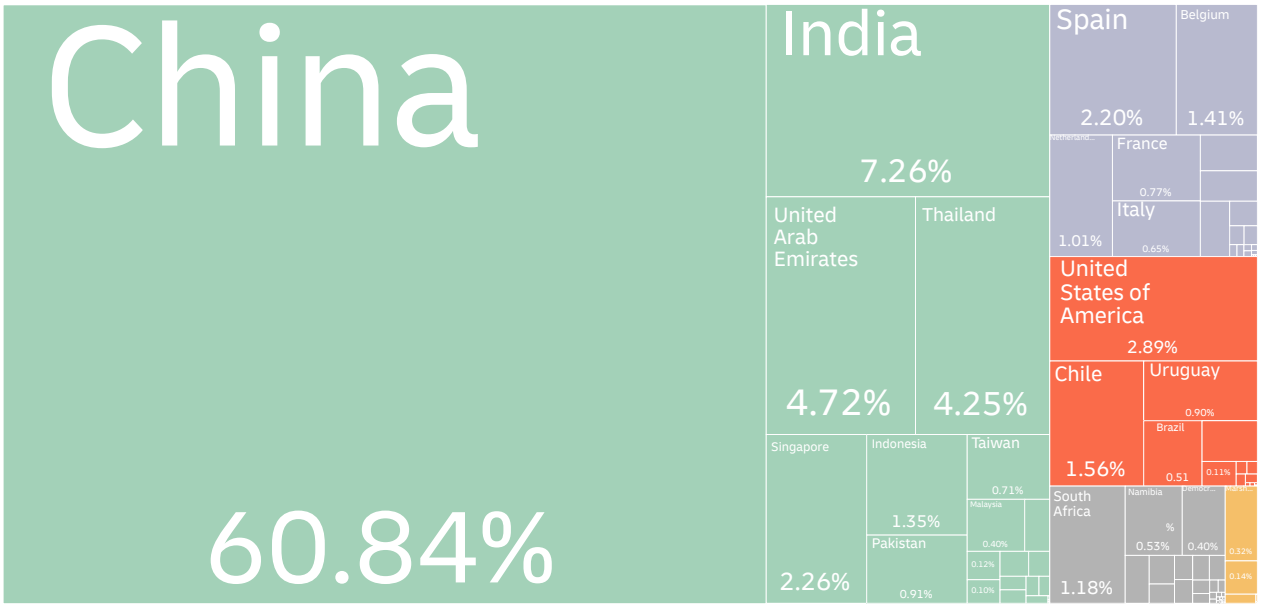
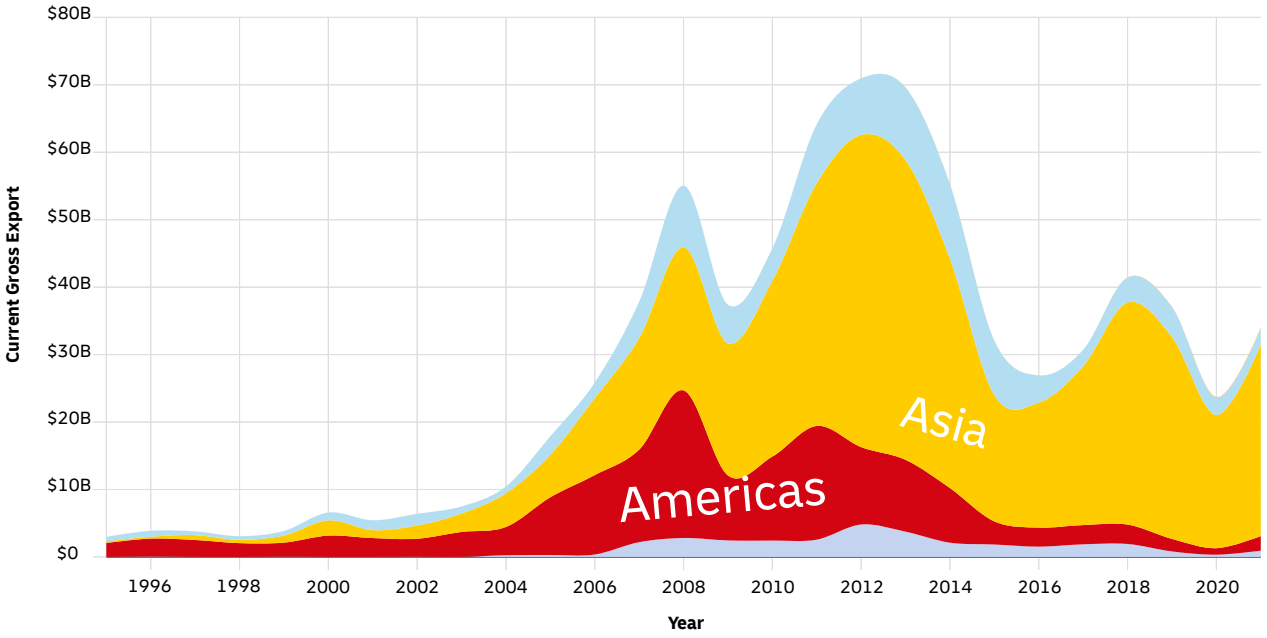


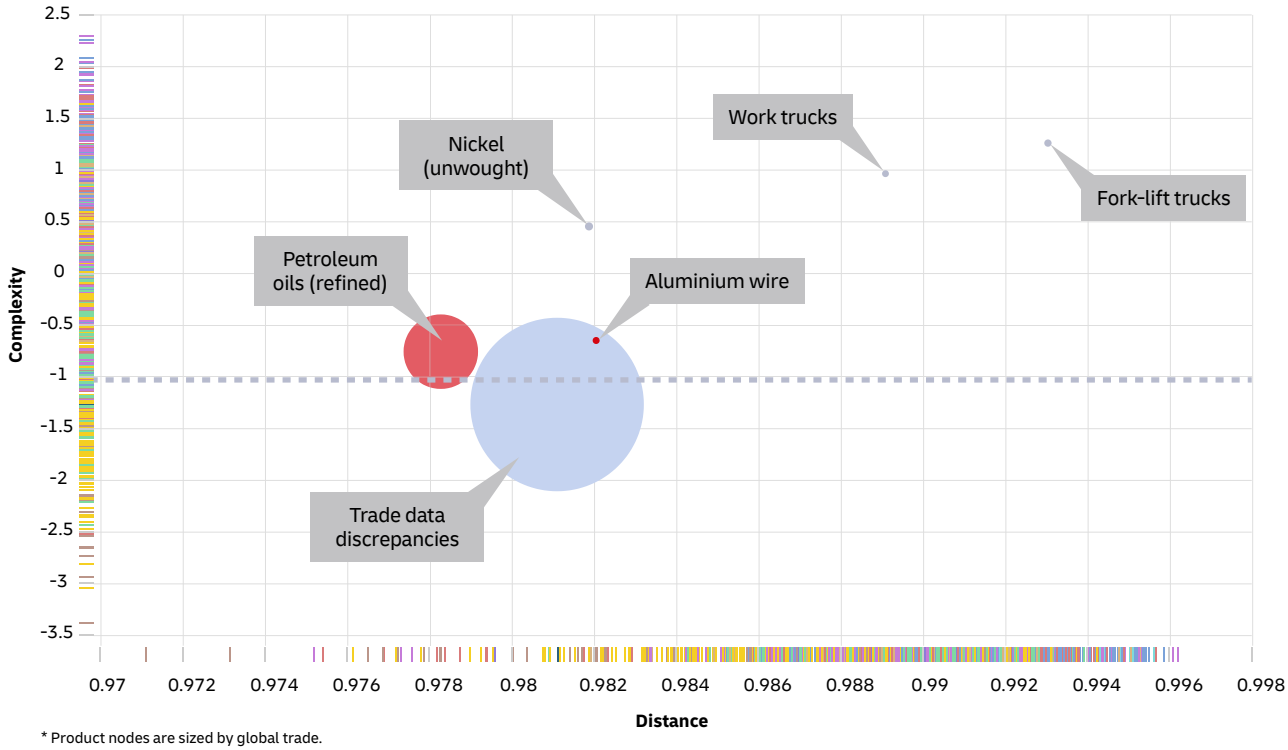
FIGURE 9 CHANGE IN ANGOLA'S EXPORT DESTINATIONS OVER TIME (1995 – 2021)



PRODUCT EXPANSION OPPORTUNITIES

Angola's economy is less complex than expected for its income level. This will hinder growth. Harvard Growth Lab's 2031 predicts just 2.6% annual growth for the decade 2021 to 2031. This puts the country in the bottom half of nations globally. Angola is making small inroads into more complex exports. These include pharmaceutical products, chemicals, trains, and optical and medical apparatus. Modest steps into higher complexity could be achieved by expanding into metals, including nickel, aluminium and tin products. Large leaps into complexity that Angola might consider include a variety of industrial vehicles, including work trucks and fork-lifts.

FIGURE 10 ANGOLA'S PRODUCT EXPANSION OPPORTUNITIES



* Product nodes are sized by global trade.

3.2 SOUTH AFRICA

Long the continent's most complex economy, South Africa was overtaken by Egypt in the latest ECI rankings. South Africa fell from the 47th most complex economy in 1995 to 68th by 2021 – a single position behind Egypt. This is reflected in GDP per capita figures and is driven by a lack of diversification. At a per-capita level, South African's lost 0.8% in purchasing power in the five years to 2021.

South Africa enjoyed a trade surplus in 2021, with $147 billion in exports to $107 billion in imports, driven largely by high commodity prices. Non-oil exports expanded at 7.9% annually over the five years to 2021.

↓3

South Africa's complexity has worsened 3 positions in the past decade.

+6 NEW PRODUCTS

6 New products were added in the last 15 years

GDP PER CAPITA, 2021

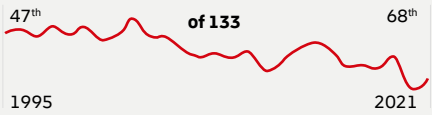
$7,055

66th of 133

ECI RANKING

68TH

of 133



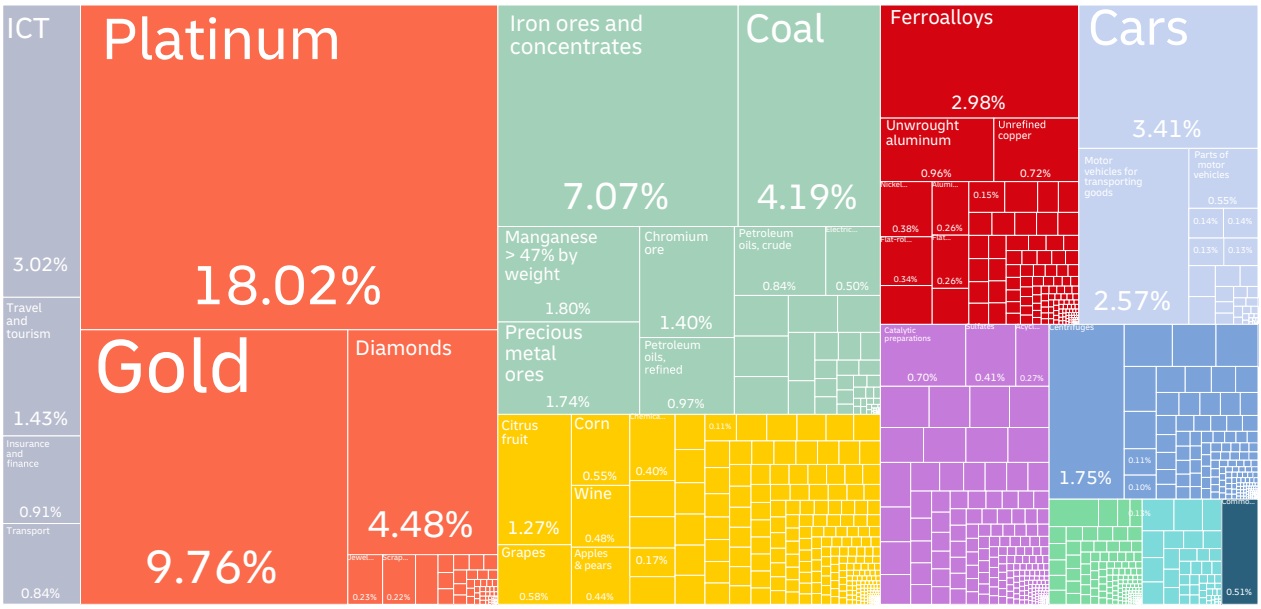
GROWTH PROJECTION TO 2031

2.23%

97th of 133

SOUTH AFRICA'S EXPORTS

FIGURE 11 SOUTH AFRICA'S EXPORT BASKED (2021)



The dominance of extractive industries means South Africa's exports are weighted towards moderate and low complexity goods. These include precious metals and stones, and ores, slag and ash. The country added six new export products to its basket between 2006 and 2021. Zinc ore makes up nearly two thirds of this expansion. Some new products have receded in recent years. For example, textile exports. The bulk of export growth is through additional exports of one product – stone – rather than entry into new products.

FIGURE 12 SOUTH AFRICA'S NEW EXPORT PRODUCTS ADDED TO THE BASKET BETWEEN 2006 AND 2021

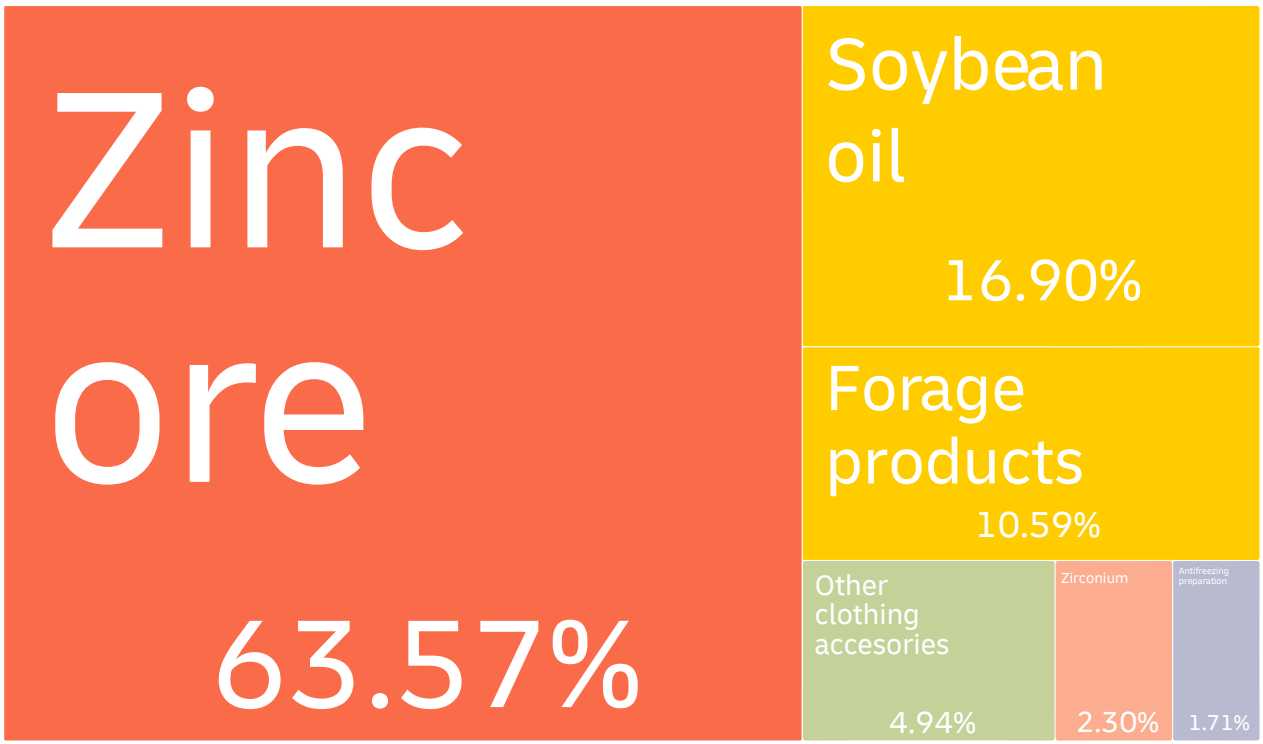


FIGURE 13 SOUTH AFRICA'S EXPORT DESTINATIONS (2021)

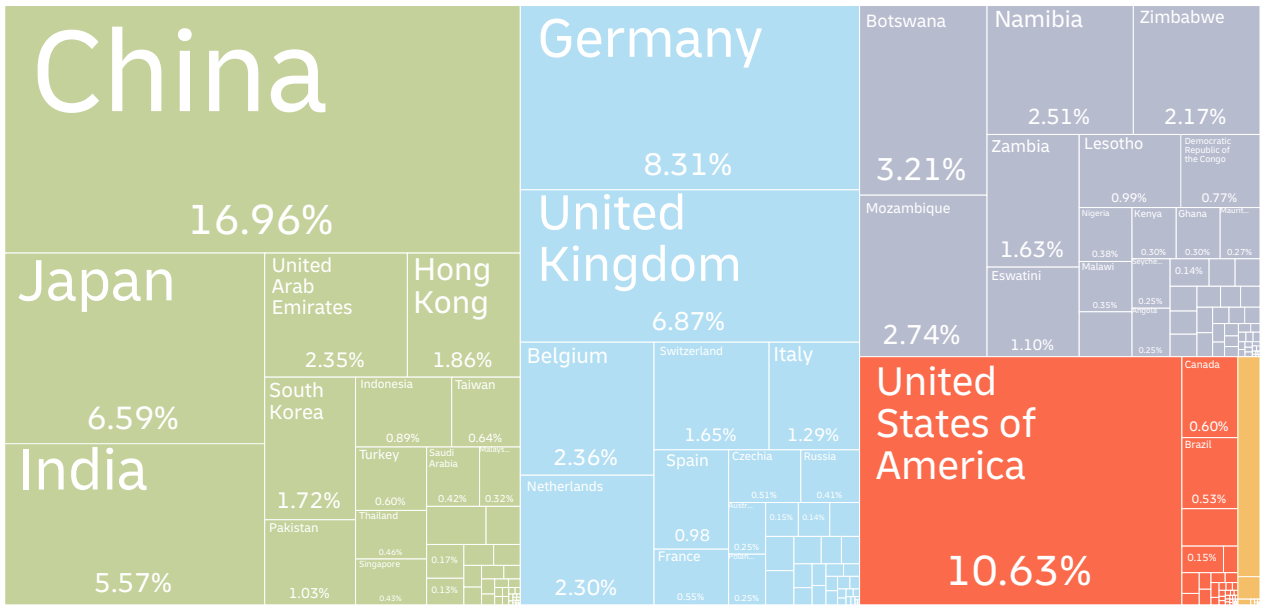
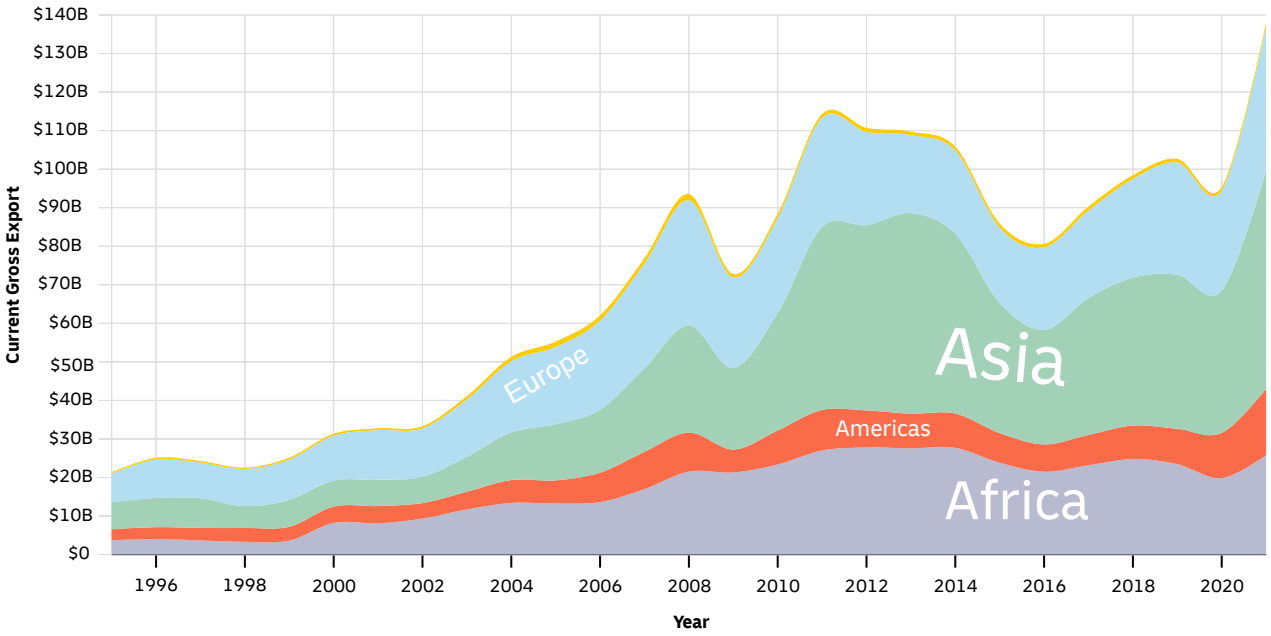


FIGURE 14 CHANGE IN SOUTH AFRICA'S EXPORT DESTINATIONS OVER TIME (1995 – 2021)



PRODUCT EXPANSION OPPORTUNITIES

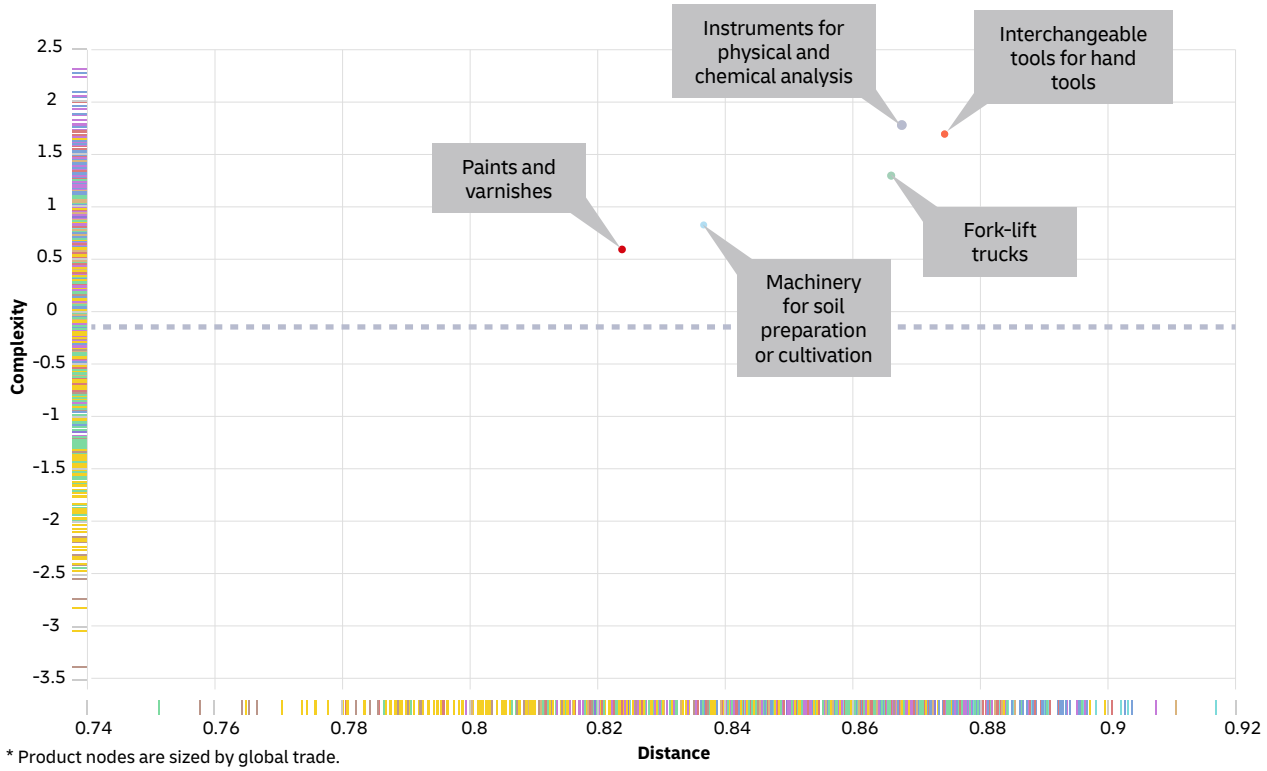
The government of national unity formed after the 2024 elections has been largely well received by markets. Improved sentiment from foreign investors may aid in expanding complexity as capital allocation and skills become more market driven and available.

South Africa is marginally more complex than expected for its income level, creating a gentle tailwind for growth. However, embedded challenges such as corruption and constrained power supply are major hindrances to growth.

South Africa's low-hanging fruit lies in products like chocolates, paints and varnishes, and agricultural machinery.

High-complexity, high-gain options include instruments for physical or chemical analysis, fork lifts and interchangeable hand tools.

FIGURE 15 SOUTH AFRICA'S PRODUCT EXPANSION OPPORTUNITIES



* Product nodes are sized by global trade.

3.3 NIGERIA

Highly attractive to investors for its size and large population of some 218 million people, Nigeria's economy is nonetheless five positions from the bottom of the ECI rankings for complexity. Despite improvements in recent years, the west African country's current position of 128th is also precisely where it was in 1995.

This stagnation of complexity helps to explain the declining prosperity. GDP per person in Nigeria is just over $2,000 and has declined in recent years.

↑ 5

Nigeria's complexity has improved 5 positions in the past decade.

+7 NEW PRODUCTS

7 New products were added in the last 15 years

GDP PER CAPITA, 2021

$2,065

107th of 133

ECI RANKING

128TH

of 133

GROWTH PROJECTION TO 2031

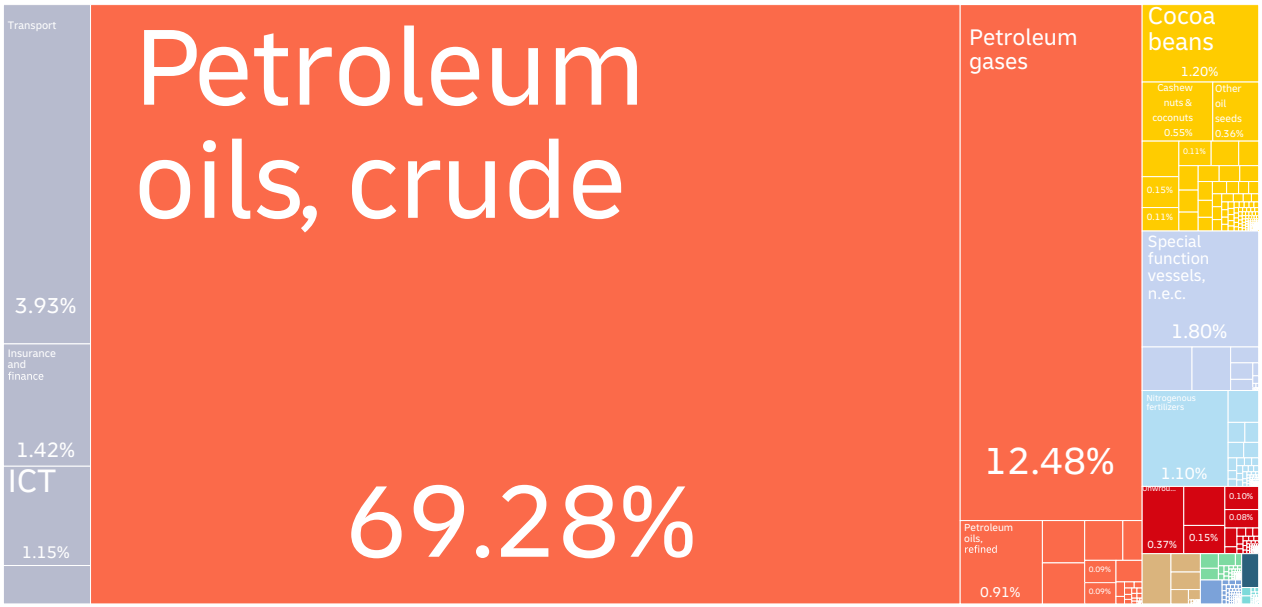
3.38%

48th of 133

NIGERIA'S EXPORTS

Nigeria exported products and services worth USD $57.6 billion in 2021, following five years of annual growth at just under 10%. Nonetheless, the country still imports more than it exports, meaning a current account deficit of -$3.25 billion. Approximately 85% of exports are petroleum related. This serves to keep the economy's export complexity low and exposure to oil price risk high. Petroleum oil and crude oil are very low complexity, with a score of -2.4. Furthermore, Nigeria's share of the global oil market has been trending downwards since 2000.

FIGURE 16 NIGERIA'S EXPORT BASKET (2021)



Nigeria has added seven new products to its export basket since 2006. However, these have all been low-complexity items. The additions account for just an additional $2 in income per capita per year.

FIGURE 17 NIGERIA'S NEW PRODUCT EXPORTS (2006 - 2021)

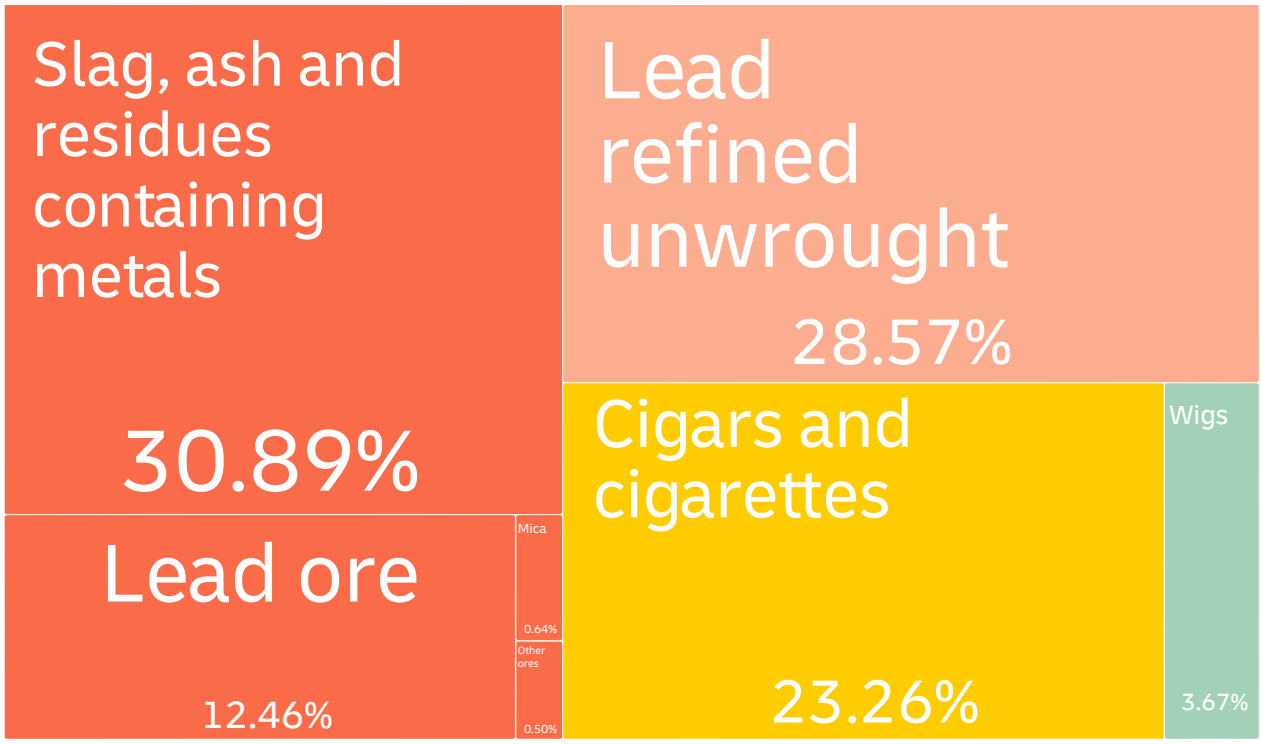


FIGURE 18 NIGERIA'S EXPORT DESTINATIONS (2021)

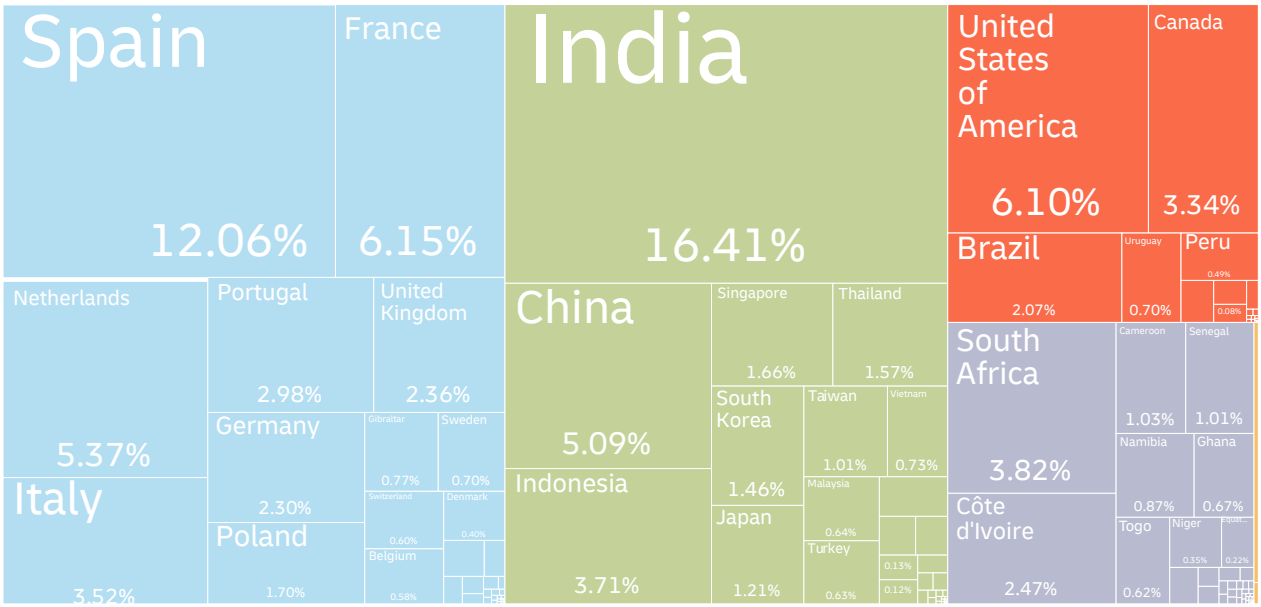
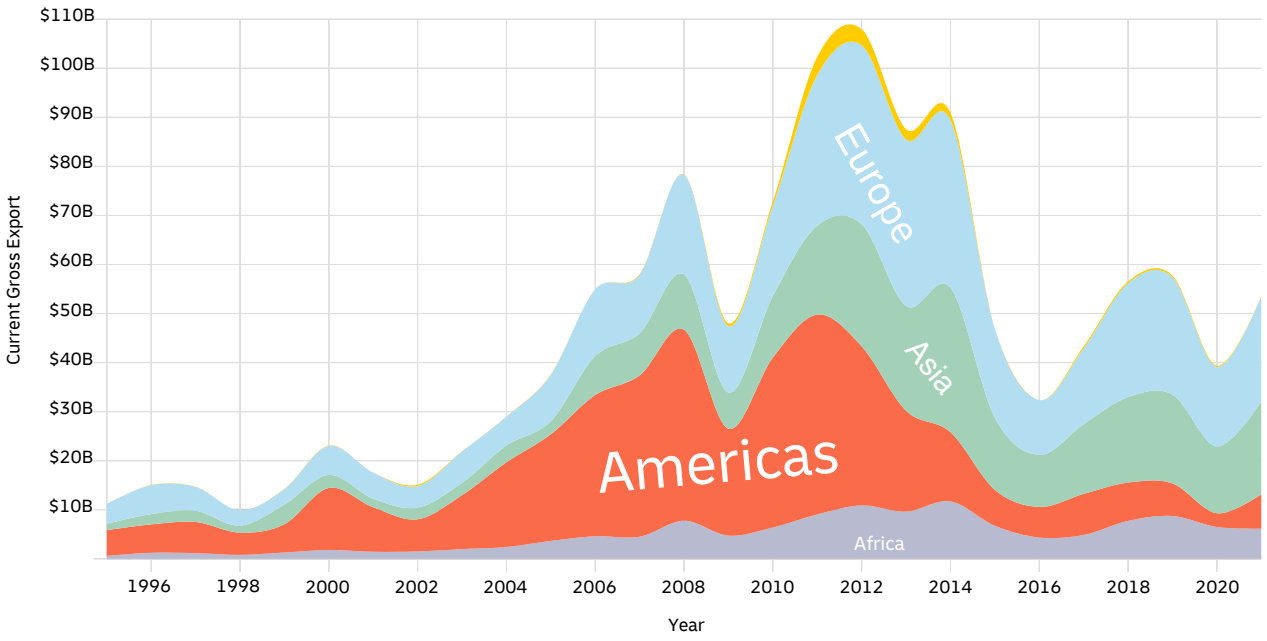


FIGURE 19 CHANGE IN NIGERIA'S EXPORT DESTINATIONS OVER TIME (1995 - 2021)

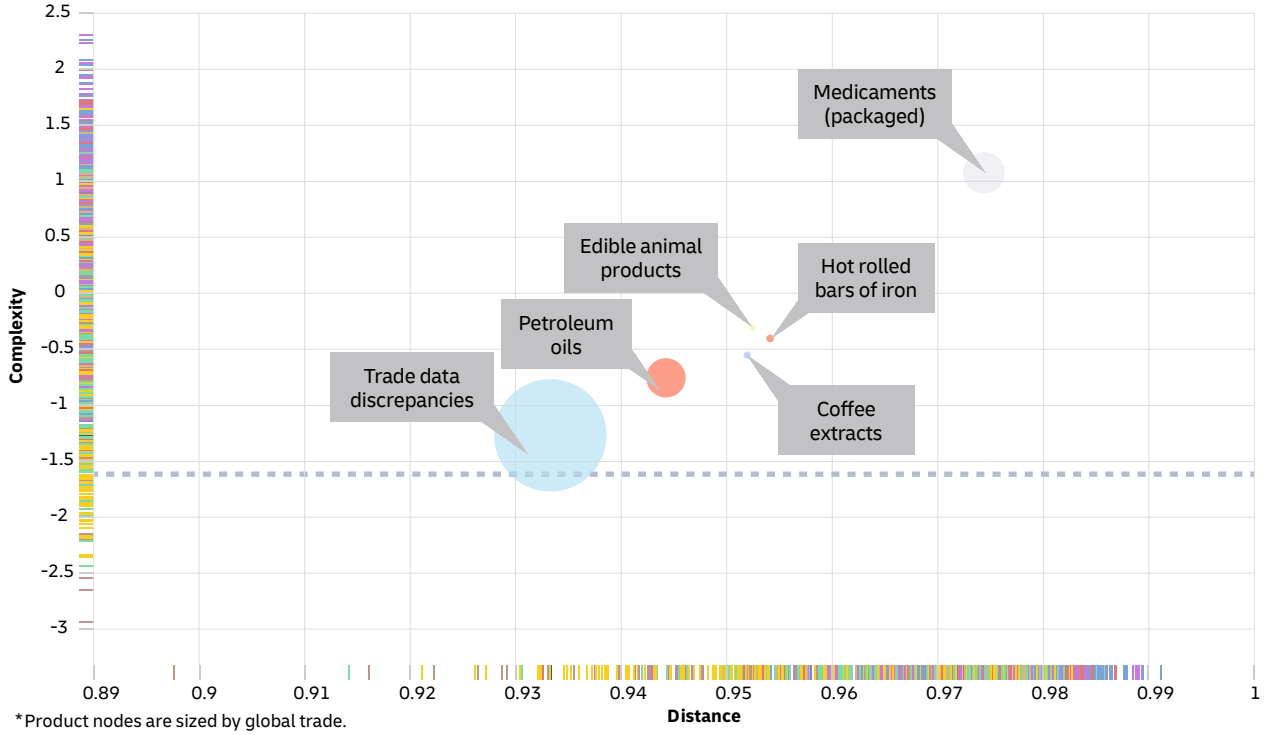


PRODUCT EXPANSION OPPORTUNITIES

The Growth Lab's 2031 Growth Projections foresee growth in Nigeria of 3.4% annually over the coming decade, ranking in the top half of countries globally. However, low complexity is a drag on this figure improving.

From its base in petroleum exports, Nigeria can leverage existing know-how to expand with relative ease into edible animal products, a variety of iron products, and coffee extracts. Medications represent a difficult but high-reward leap.

FIGURE 20 NIGERIA'S PRODUCT EXPANSION OPPORTUNITIES



*Product nodes are sized by global trade.

3.4 GHANA

Ghana can point to notable improvements in prosperity. GDP per capita growth averaged 3.1% in the five years to 2021, well above regional averages. The longer-term trend is even more impressive. From a GDP per capita of just $370 in 1995, the average Ghanaian generated $2,410 by 2021. That is a six-times return over a quarter of a century.

Unfortunately, Ghana's economic complexity is not assisting this progress. The country has stagnated and become less complex, falling 34 positions in the ECI rankings in the decade to 2021, following impressive improvement in the decade prior.

↓34

Ghana's complexity has worsened 34 positions in the past decade.

+6 NEW PRODUCTS

6 New products were added in the last 15 years

GDP PER CAPITA, 2021

ECI RANKING

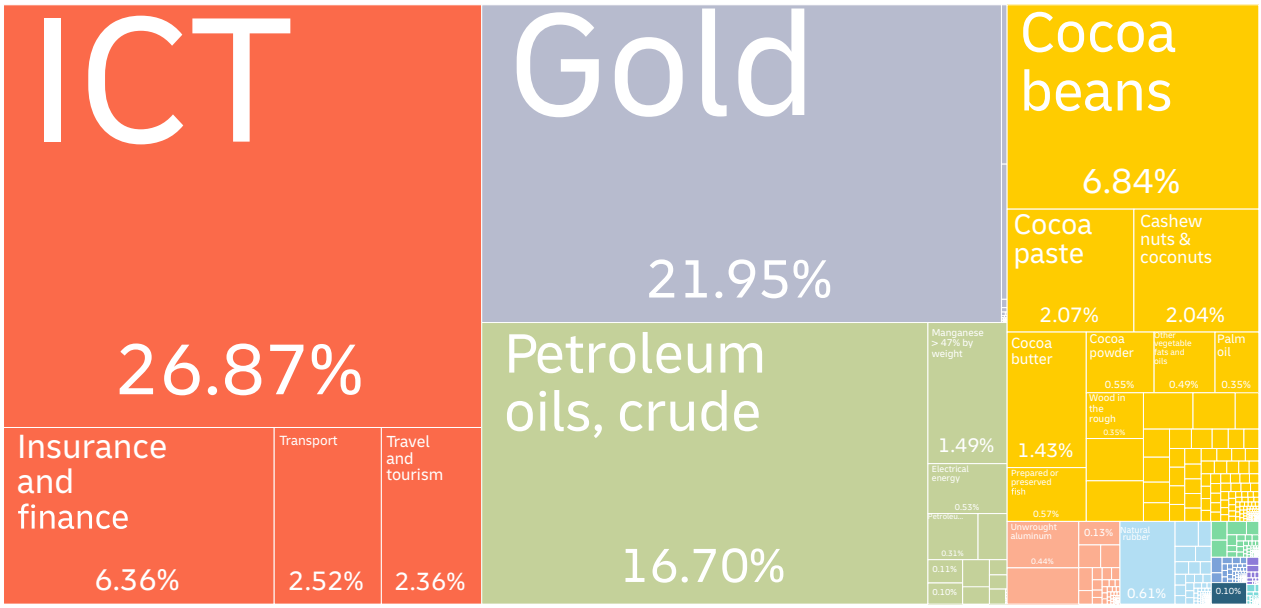
GROWTH PROJECTION TO 2031

2.87%
64th of 133

GHANA'S EXPORTS

Ghana exhibits a noteworthy current account deficit. Despite exporting $24.1 billion in 2021, the country imported $32.8 billion. Nonetheless, the ratio is moving in the right direction. Five-year annual growth in exports of 6.9% outpaces overall economic growth. The substantial ICT services component of the export basket – more than a quarter of the total – also represents a tailwind towards a high-complexity export bundle in the future. A heavy reliance on extractive and agricultural products ensures low complexity overall.

FIGURE 21 GHANA'S EXPORT BASKET (2021)



Despite expanding into six new export products over 15 years, almost all the growth has been in petroleum products. It's market share of textile exports has stagnated and it is yet to make meaningful inroads into more complex, high-income products like electronics and machinery.

FIGURE 22 GHANA'S NEW EXPORT PRODUCTS ADDED BETWEEN 2006 AND 2021

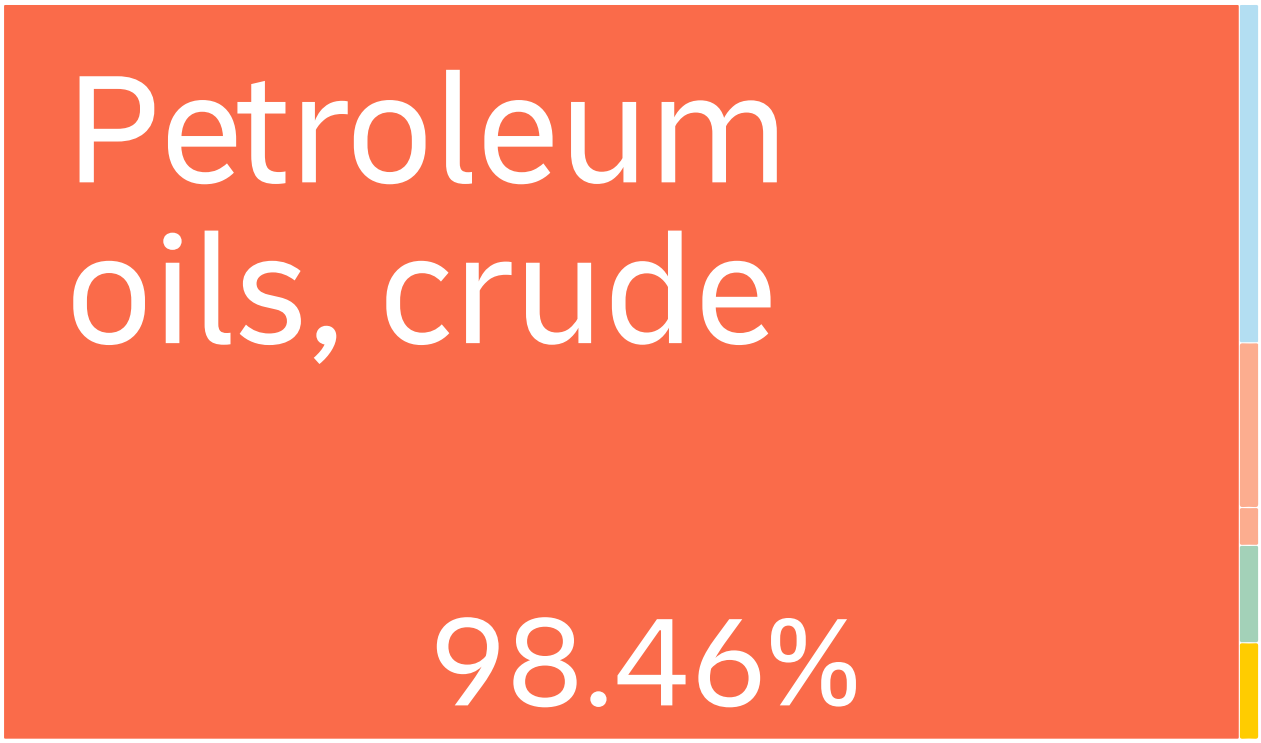


FIGURE 23 GHANA'S EXPORT DESTINATIONS (2021)

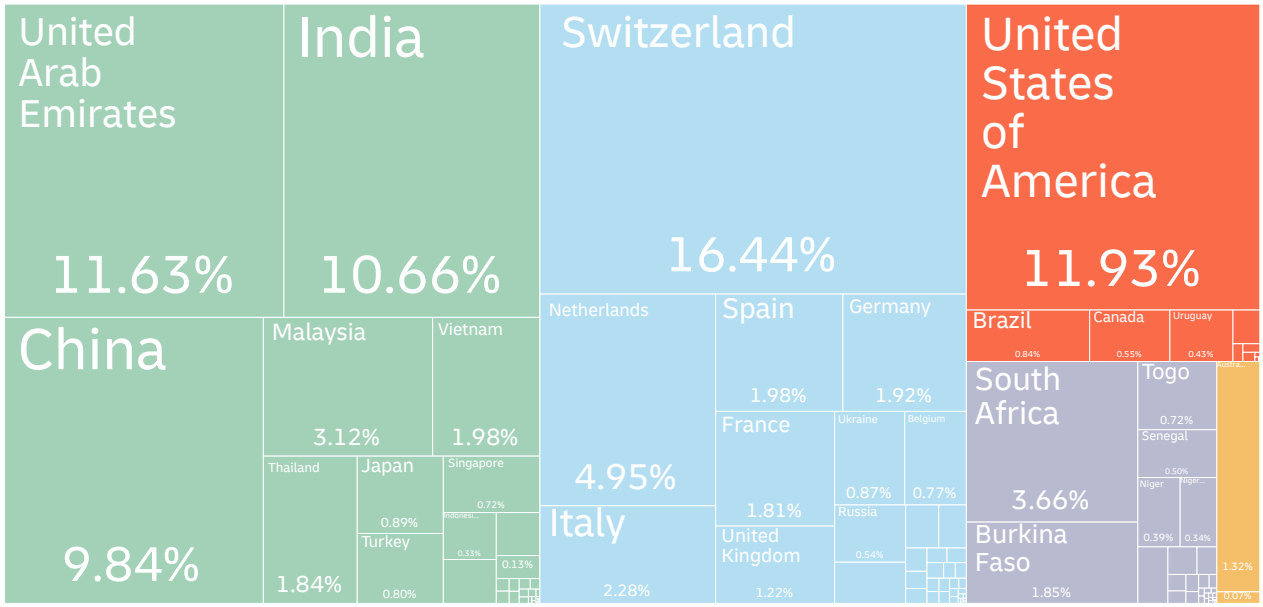
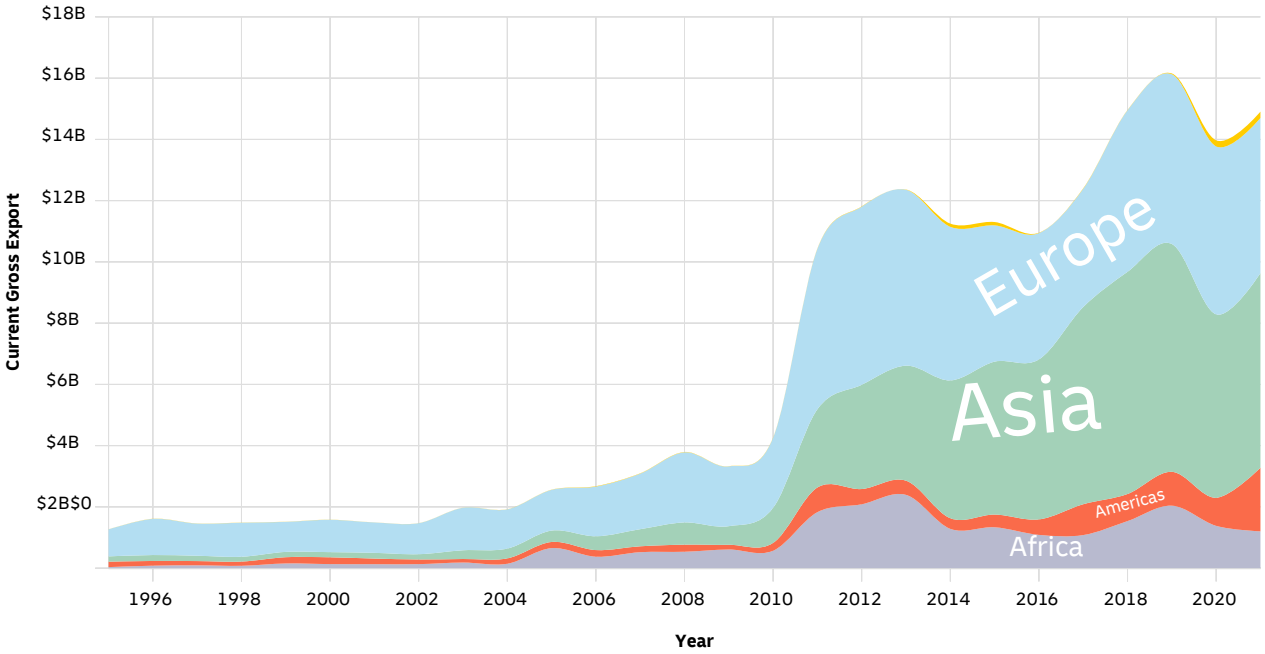


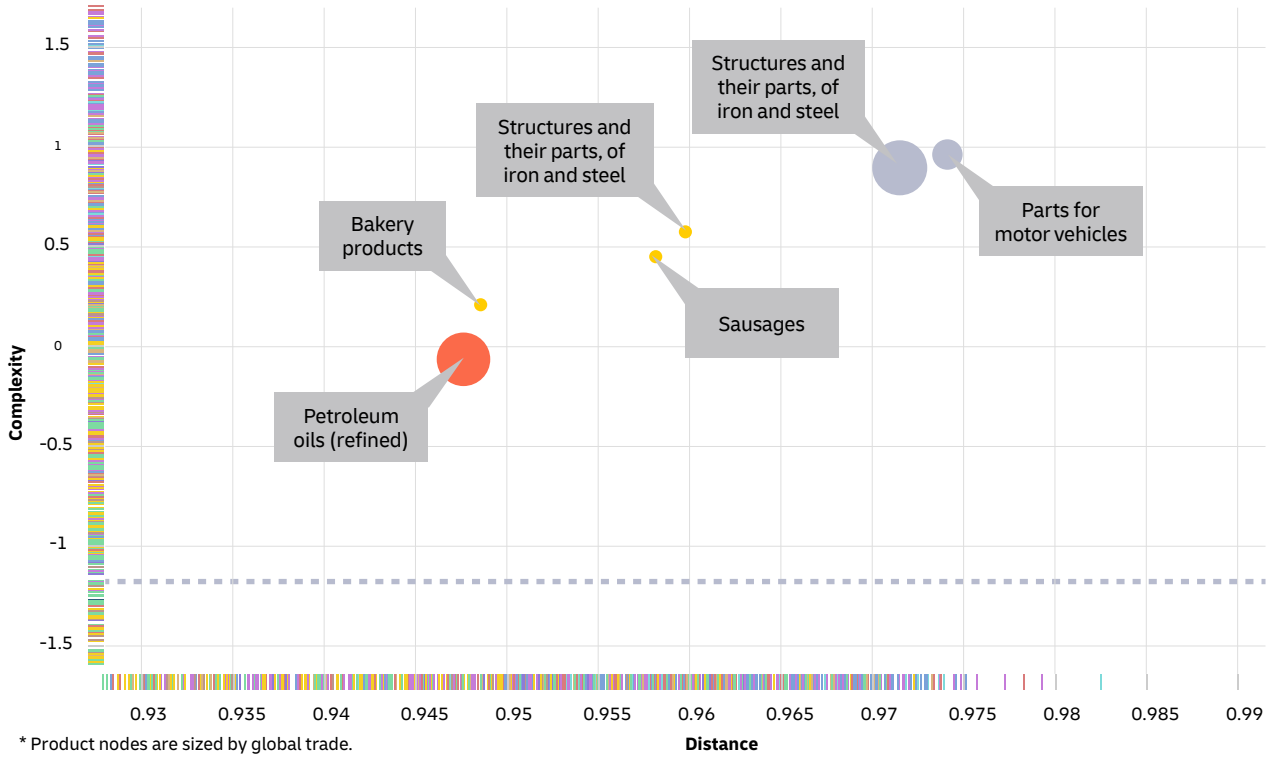
FIGURE 24 CHANGE IN GHANA'S EXPORT DESTINATIONS OVER TIME (1995 - 2021)



PRODUCT EXPANSION OPPORTUNITIES

Ghana can make small steps into greater complexity by expanding into the likes of baked goods, sausages and steel and iron structures and their parts. Cars and car parts represent enticing but difficult expansion opportunities for the long-run.

FIGURE 25 GHANA'S PRODUCT EXPANSION OPPORTUNITIES



* Product nodes are sized by global trade.

3.5 KENYA

Kenyan's can be heartened by the nation's growth outlook. The Growth Lab projects a GDP growth rate of 4.3% per year to 2031, placing it 22nd out of 133 countries.

That said, despite its justified status as a thriving tech hub, the "Silicon Savannah" in Nairobi is not sufficient to make Kenya's economy a complexity leader. It is the 80th most complex economy on the ECI rankings list.

↓6

Kenya's complexity has worsened 6 positions in the past decade.

+14 NEW PRODUCTS

14 New products were added in the last 15 years

GDP PER CAPITA, 2021

$2,069

106th of 133

ECI RANKING

80TH

of 133

GROWTH PROJECTION TO 2031

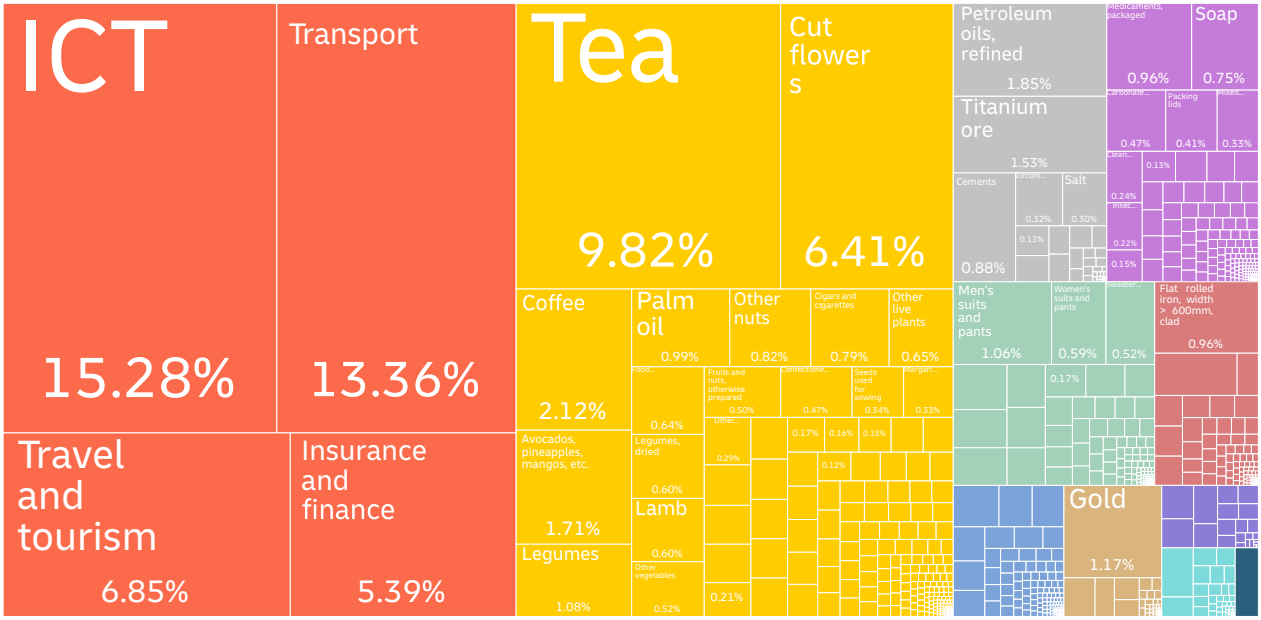
4.33%

22nd of 133

KENYA'S EXPORTS

Kenya is notable for the large share of services in its export basket. Its notable tech hub and mobile-money driven economy are represented by a 15% portion of exports. While this is the largest single export, it is smaller than other services combined and far smaller than the combined agriculture sector. The country's ICT services exports are only modestly positive on the ECI complexity index. Insurance and finance exports are slightly more complex, but most of the economy, ranging from tea and other agriculture, minerals and clothing, drag the overall complexity down. With exports of $12 billion and imports of $25 billion, Kenya runs a large trade deficit.

FIGURE 26 KENYA'S EXPORT BASKET (2021)



Most of Kenya's new product exports are very low in complexity, chiefly titanium mining and agriculture. However, it can point to several highlights of new, high-complexity exports. Self-propelled bulldozers, excavators and road rollers represent green shoots worth supporting.

FIGURE 27 KENYA'S NEW EXPORT PRODUCTS ADDED BETWEEN 2006 AND 2021

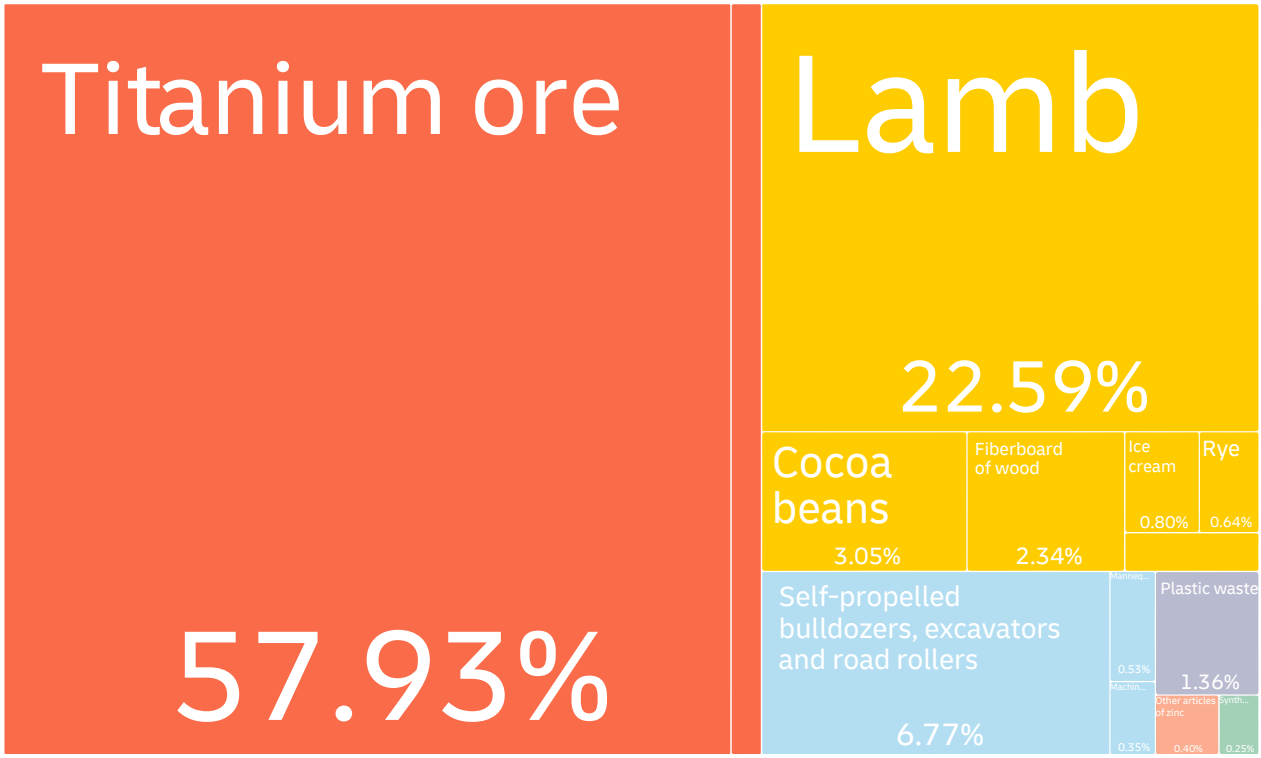


FIGURE 28 KENYA'S EXPORT DESTINATIONS (2021)

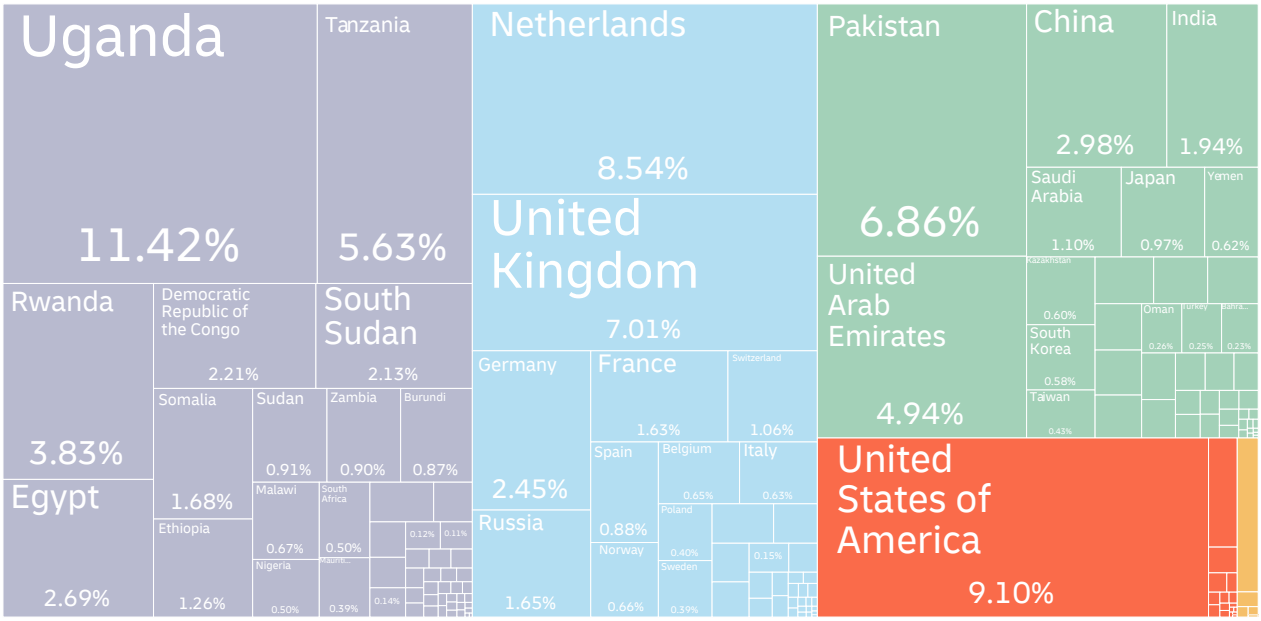
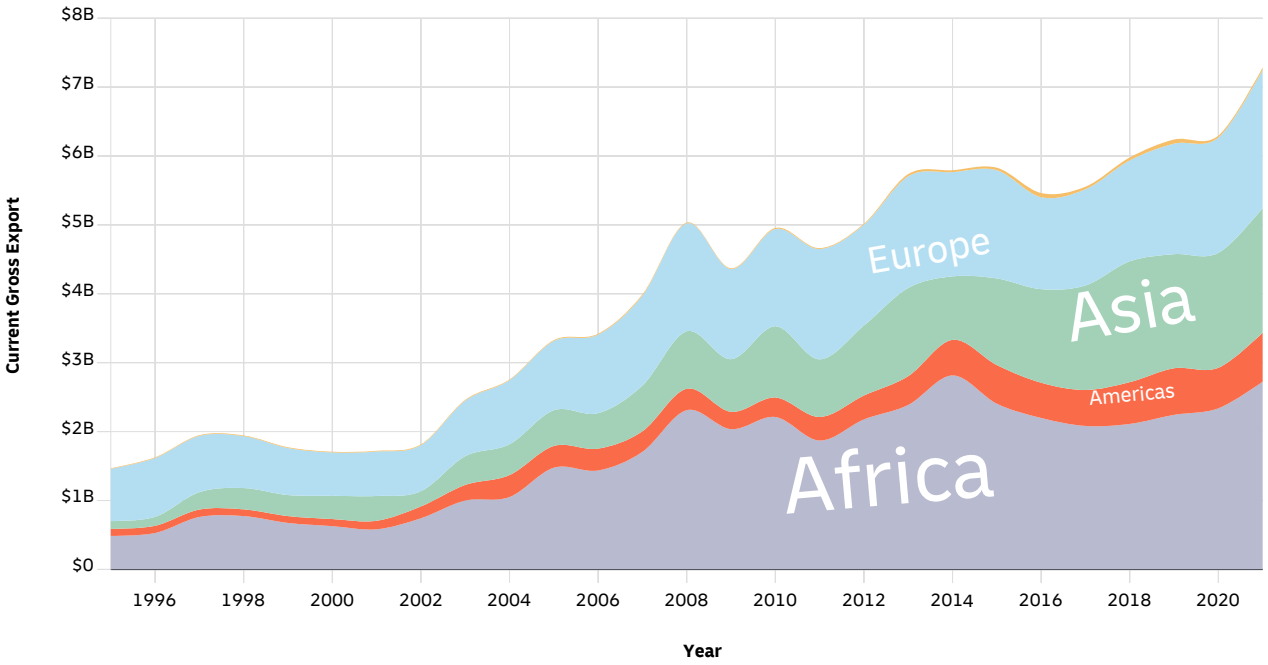


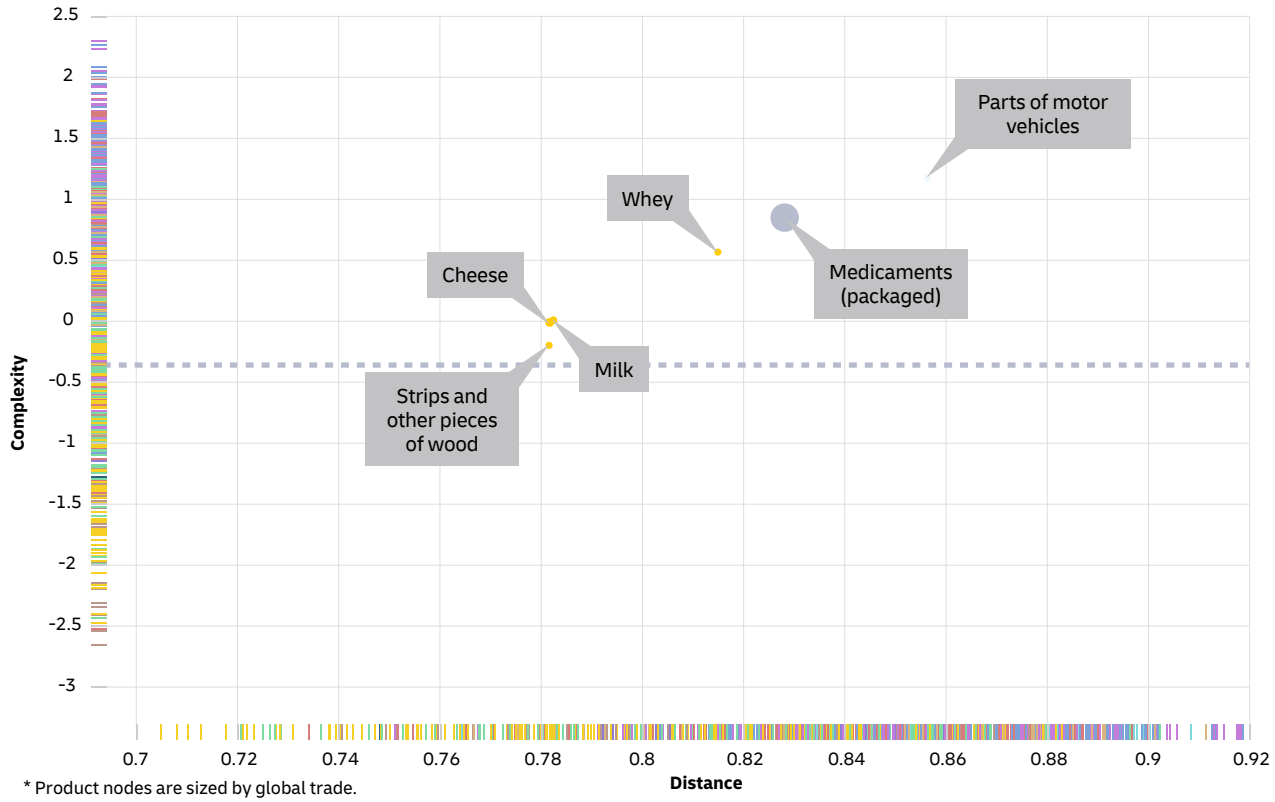
FIGURE 29 CHANGE IN KENYA'S EXPORT DESTINATIONS OVER TIME (1995 - 2021)



PRODUCT EXPANSION OPPORTUNITIES

Kenya's success in mobile money and ICT must be expanded to additional high-complexity products. Small but high-impact steps can be made in agriculture by moving into milk, cheese, whey and wood products. Medicines are a larger leap. Car parts could be targeted for larger gains in the long term.

FIGURE 30 KENYA'S EXPANSION OPPORTUNITIES



* Product nodes are sized by global trade.

3.6 ETHIOPIA

As home to more than 120 million people, but with a GDP per capita of under $1,000, Ethiopia has a pressing need for high-impact reforms. Despite substantial ups and downs, the country's economic complexity is no higher today than it was in the mid-1990s.

↑ 5

Ethiopia's complexity has improved 5 positions in the past decade.

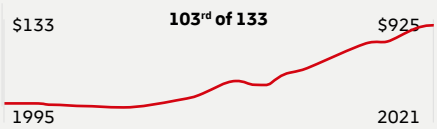
+25 NEW PRODUCTS

25 New products were added in the last 15 years

GDP PER CAPITA, 2021

$925

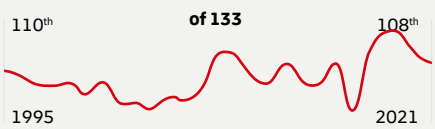
103rd of 133



ECI RANKING

108TH

of 133



GROWTH PROJECTION TO 2031

5.2%

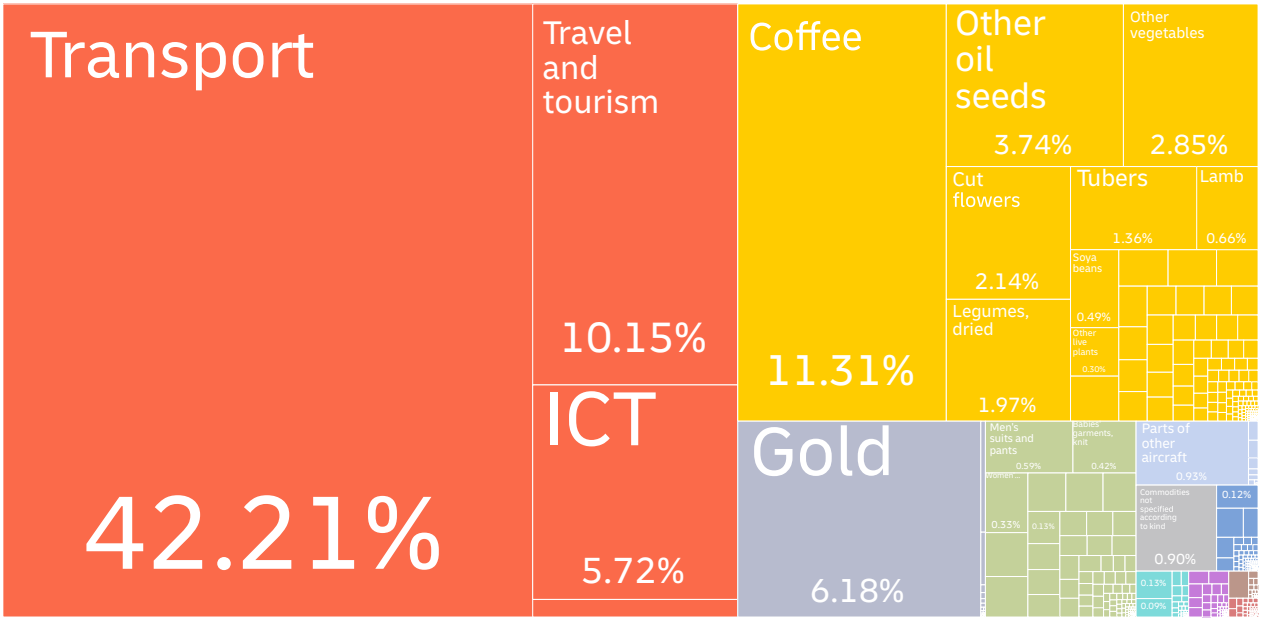
11th of 133

ETHIOPIA'S EXPORTS

Ethiopia's modest exports of $9.5 billion per year come with some positive trends. Exports grew at nearly 12% per year for the five years to 2021. Just as important, non-oil exports grew at the same rate, outpacing the global average.

Low-complexity products and services – chiefly transport, agriculture and minerals – ensure Ethiopia a lowly ECI ranking of 108. Imports of $21 billion make for a large current account deficit to overcome if Ethiopia is to make gains as an exporter.

FIGURE 31 ETHIOPIA'S EXPORT BASKET (2021)



The addition of 15 new export products to its basket shows a certain dynamism in Ethiopia. Unfortunately, the expansion has largely been into low-complexity products, many of these being items of clothing with low complexity scores. Electrical ignition equipment is a laudable exception. This represents a direction to pursue further.

FIGURE 32 ETHIOPIA'S NEW EXPORT PRODUCTS ADDED BETWEEN 2006 AND 2021

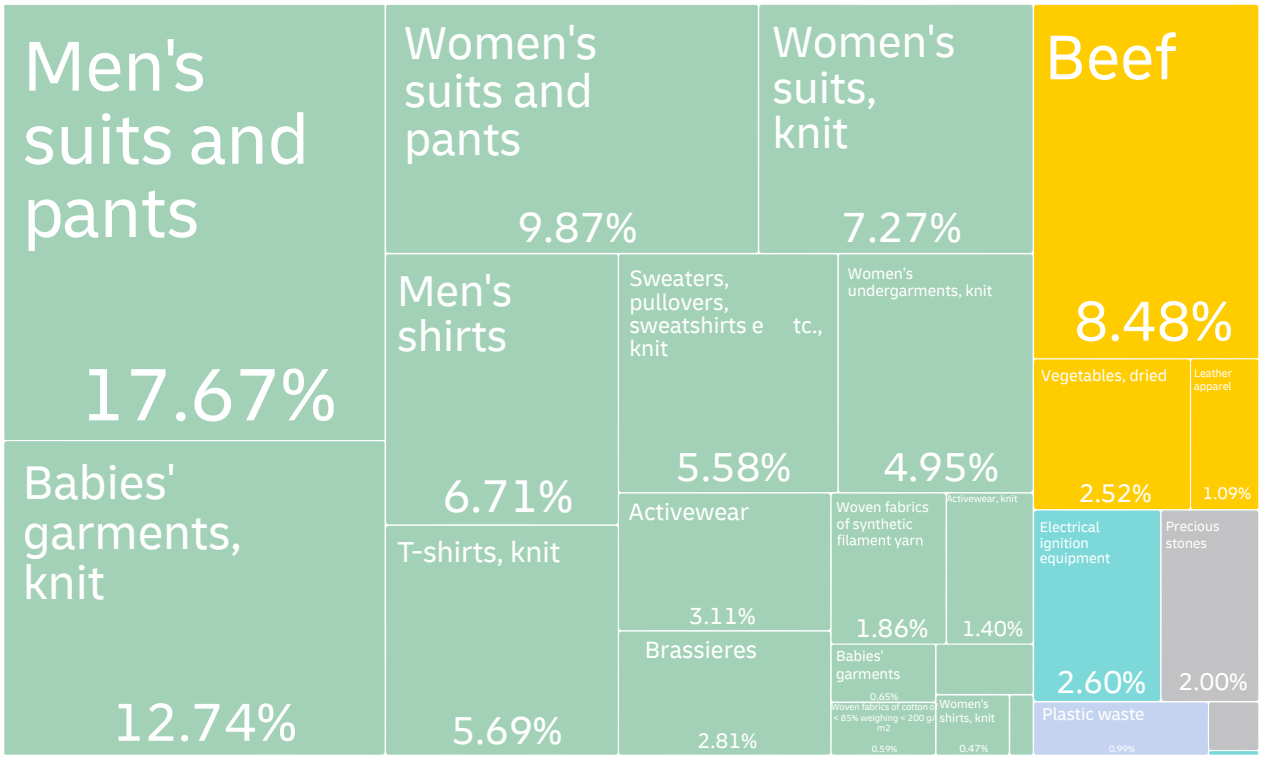


FIGURE 33 ETHIOPIA'S EXPORT DESTINATIONS (2021)

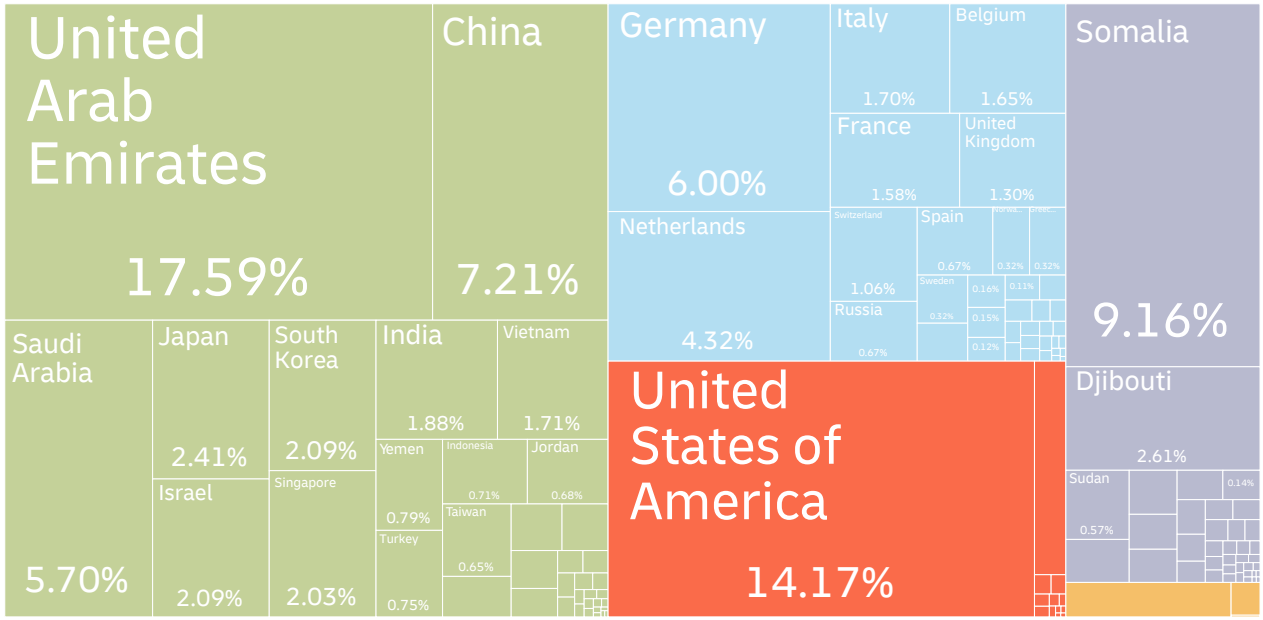
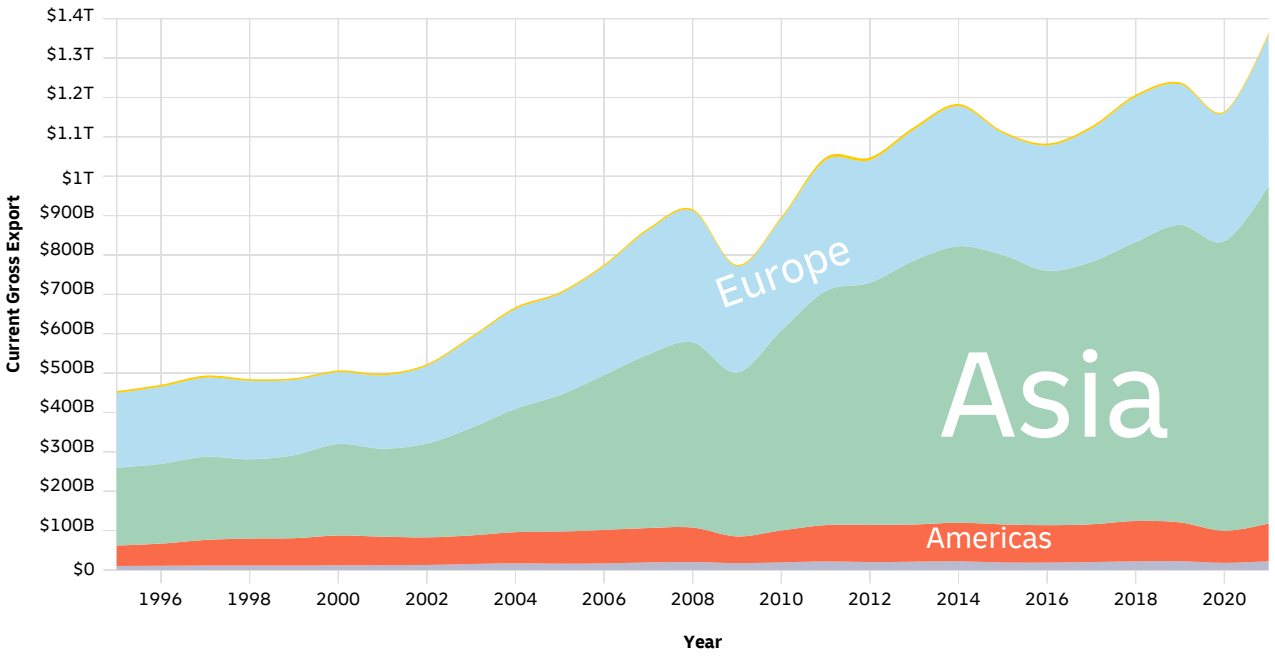


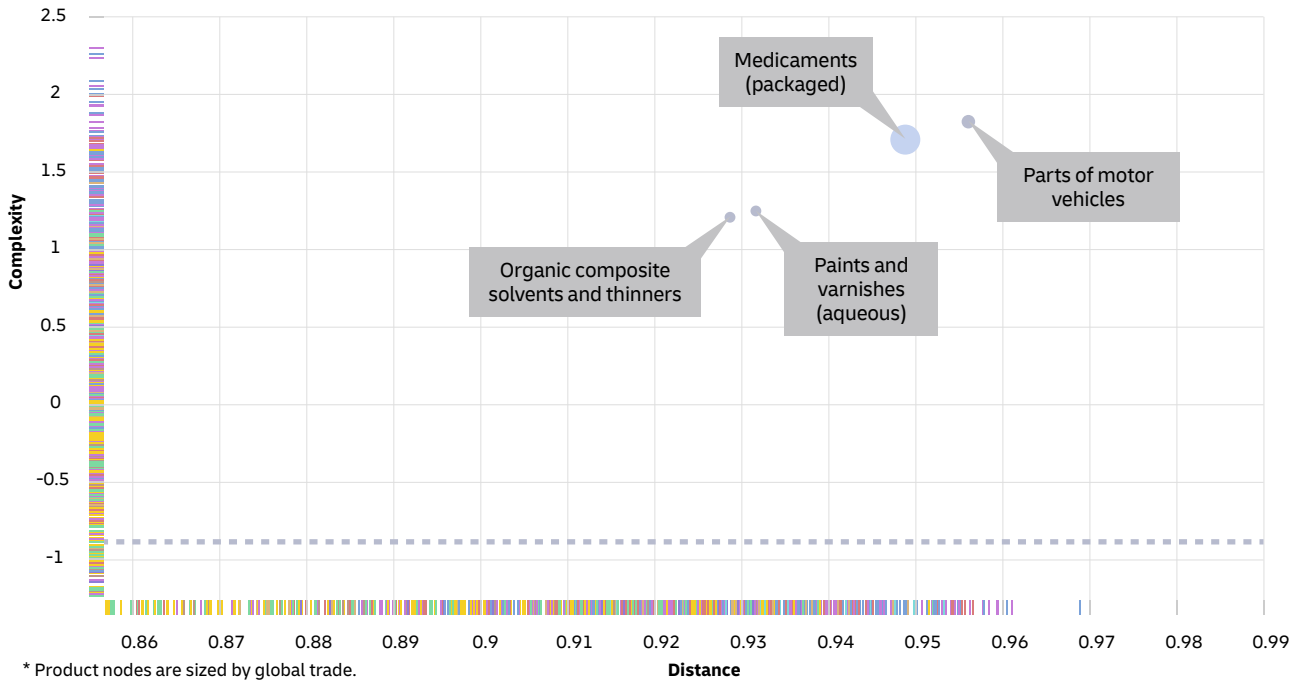
FIGURE 34 CHANGE IN ETHIOPIA'S EXPORT DESTINATIONS OVER TIME (2006 - 2021)



PRODUCT EXPANSION OPPORTUNITIES

Ethiopia's complexity is in line with its level of income. A strong growth projection of 5.2% per year can be elevated with even a marginal shift to a higher complexity economy. Multiple chemical products represent low-hanging fruit for Ethiopia to expand into. These include cleaning products, paints and varnishes, and solvents and thinners. As with Kenya, medications are a moderate jump and car parts make sense as a long-term goal with major returns to effort.

FIGURE 35 ETHIOPIA'S PRODUCT EXPANSION OPPORTUNITIES



* Product nodes are sized by global trade.

4 CONCLUSION

Like any human phenomenon, prosperity is driven by multiple complex and interrelated factors. Several of the ingredients of a prosperous society are well represented in policymakers' toolkits. One that appears to receive less attention that it deserves is economic complexity.

Governments, industrial leaders and policymakers can achieve meaningful steps towards expanded prosperity by deeply analysing the rich data on economic complexity at a national level and using the insights this generates to nudge industrial output towards greater complexity and, thereby, improved productivity and prosperity per person.

In short, more people producing more complex products to sell to export markets can reliably introduce a rising economic tide and greater prosperity for all.

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