African Union · AUDA-NEPAD AFRICAN UNION DEVELOPMENT AGENCY

SIFA Skills Initiative for Africa

LABOUR MARKET AND SECTOR ANALYSIS:

Baseline study for Cameroon, Ethiopia, Ghana, Nigeria, Togo, and Tunisia

REPORT: NIGERIA

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Acknowledgements

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1 Introduction

The Skills Initiative for Africa (SIFA) is an initiative of the African Union Commission (AUC) and the African Union Development Agency (AUDA-NEPAD) supported by the German Government and the European Union. SIFA promotes occupation prospects of young Africans through the support of innovative skills development programmes and close cooperation with the private sector as an integral key stakeholder in the creation of jobs.

In line with this, GIZ has tasked DNA Economics to come up with a methodology to prioritize various sub-sectors across 8 African countries. This is done to assist SIFA, which require information regarding the direction and extent to their investment and financing in prioritized sector, with a specific focus on technical and vocational training students, and graduates, across all member states of the African Union. Moreover, it informs decision making on future skills development initiatives of the respective AU Member states.

This research started prior to COVID-19. Of course, COVID-19 is likely to have a large impact on most, if not all, of the economies across the globe. Accordingly, this pre-COVID methodology was adapted to ensure that a OVID-scenario analysis was completed, looking at the potential recessionary impact of the pandemic across the various sub-sectors within the countries of choice.

Given this backdrop, the current report looks to explain the methodology followed by DNA Economics in order to obtain reasonable forecasts for sub-sectoral employment and GDP trends with very tight data constraints. This methodology, although quite naïve in some sense, provides an indication of which sub-sectors will be worst affected across countries, without any up-to-date macroeconomic data.

As such, the report first sets out a methodology brief, before providing some context to the Nigerian economy. This is followed by a forecast analysis, and concludes with a ranking of every sub-sector based on the indicators set out in the methodology.

[1]Cameroon, Ethiopia, Ghana, Kenya, Nigeria, Togo, Tunisia and South Africa

2 **Methodology brief**

As best as possible, this methodology aims to answer the following question:

> "Which 3 sub-sectors would benefit most from a skills development intervention aimed at improving labour market prospects for those entering those sub-sectors?"

When defining which sub-sectors would benefit the most, we focused on a handful of indicators:

Table 1: Indicators Used to Analyse Sectoral Labour Demand

Statistical Indicators

Historical employment and real GDP growth per sub-sector
Covid-corrected employment and real GDP growth forecasts per sub-sector
Historical, and forecasted contributions of each sub-sector to national GDP and national employment
Employment-GDP elasticities (i.e. by how much does employment change if real GDP in a sector changes)
The length of time before the COVID-19 economic shock dissipates per sub-sector
The gender-equitability of each sector's employment prospects

Qualitative/Literature-Based Indicators

A sub-sector's prevalence in the literature as a government/donor agency priority
A sub-sector's perceived susceptibility to COVID-19 as found in research

Because some of these indicators were qualitative, and some are statistical in nature, it would have been arbitrary to combine them without using a statistical technique which corrects for:

1. The relationship between each variable (for instance, real GDP and employment are positively related),
2. The relationship between the same variable over time (real GDP growth in a previous year often pushes up real GDP growth in the current year due to inertia), and
3. What each variable is measured as (combining a % growth rate with the number of years it would take to recover, and so forth).

As such, Principal Components Analysis (PCA) appeared to be most suited to the analysis and was used to combine the indicators into an index of prioritization.

While historical indicators were easy enough to calculate, and while qualitative analysis was easy enough to conduct, the forecasting method was perhaps the most difficult. Due to the scarcity of data (only having data available in yearly format for all sub-sectors from between 2008 to 2018/19), the forecast method chosen needed to be able to work well with small samples. In order to do this, the technical team chose a truly mixed-method[2] following the methodology below:" (please do not forget the note 2 on mixed-methods)

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[2]Using quantitative information to inform/mix with qualitative analysis, and/or vice versa, simultaneously.

Box 1: Brief Summary of Forecast Methodology

1

Use literature (Ehlen 2007, for example) to assess the impact of pandemic influenza on national and sub-sectoral growth

↓

Economic growth is expected to decline by 2% in the best-case scenario, and 6% in the worst-case scenario in the year of the pandemic, before smoothing over time

2

From this, forecast national and sub-sectoral real GDP growth until 2024 using a Structural Vector Autoregression (SVAR)

3

Assess the relationship between changes in real GDP and Employment (Mistra and Suresh 2014) at a national and sub-sectoral level. Use these relationships to forecast employment changes given forecasted changes to national and sub-sectoral GDP in step 2

For more information on this methodology, contact Michele Capazario (michele.capazario@dnaeconomics.com)

In short, every scenario of economic decline between 2 and 6% is modelled for at a national level. Using the SVAR, these scenarios are translated into sub-sectoral changes in real GDP, whilst also forecasting how long it would take for each sub-sector to recover to pre-COVID levels. These are then weighted by employment-output elasticities for each sub-sector to understand the extent to which employment in each sub-sector would taper off.

This was followed by a wide stakeholder engagement workshop, which brought together key representatives in Nigeria from the TVET and business spaces, as well as focal persons from SIFA offices within the country. These individuals all had vast expertise on elements of labour demand and labour supply within the country, and assisted in honing the findings from the quantitative analysis

3 Country context

The backdrop for the Nigerian economy is set up in the following sub-sections. First, we provide a country fact sheet which summarizes some stylized facts about Nigeria's economy. This is followed by a literature synthesis. This synthesis assesses which of the sub-sectors within the economy are priorities and provides an assessment of trade and regional integration from a Nigerian perspective.
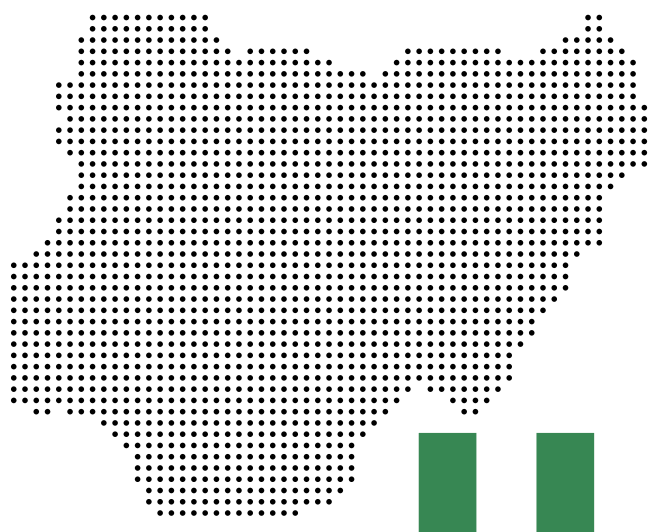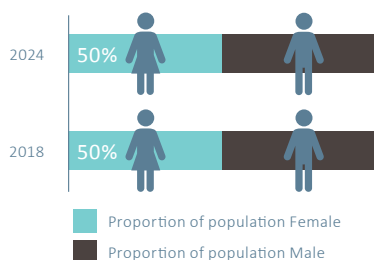
3.1 Country Fact Sheet

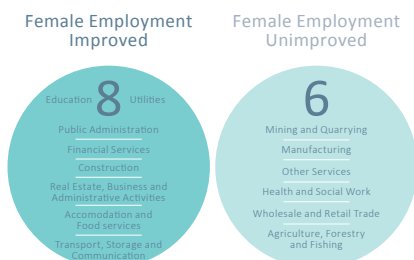### Box 2: Population, Employment, and Inequality Summary

Population
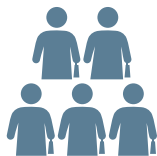
- In 2018, Nigeria had a population of approximately 200 000 000.
- This is expected to increase to 232 000 000 by 2024.
- The population is split equally by gender.

2024   50%

2018   50%

■ Proportion of population Female
■ Proportion of population Male

Employment

- Male unemployment hovers around the 9.5% mark, while the female unemployment rate is 7.5%. At a national level, unemployment in Nigeria sits at 8.5%.
- Most sub-sectors (Highlighted in blue) have improved in terms of gender-equitable employment over the last 15 years.

Female Employment Improved

8

Education   Utilities
Public Administration
Financial Services
Construction
Real Estate, Business and Administrative Activities
Accomodation and Food services
Transport, Storage and Communication

Female Employment Unimproved

6

Mining and Quarrying
Manufacturing
Other Services
Health and Social Work
Wholesale and Retail Trade
Agriculture, Forestry and Fishing

Income inequality

- The Nigerian GINI coefficient has decreased in recent history
- This signals that income inequality in NIgeria has improved quite drastically in comparison to its worst recent historical level in 1995

0.51

0.35

1995   2019

Gini Coefficient
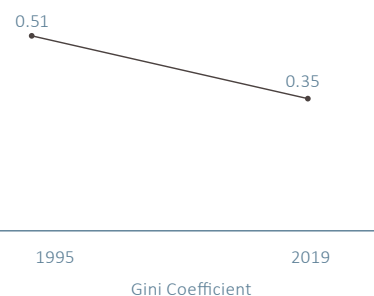
Source: (The World Bank, 2020)

In Nigeria, the last 25 years have seen improved income distribution levels in the country. Relative to the rest of Africa, unemployment rates also tend to be quite low, especially given the size of the Nigerian labour market. However, this low unemployment rate is published by the World Bank (2020). According to some estimates, however, the true unemployment rate in the country is closer to 27%. In fact, some argue that even this figure is severely understated when taking into account the number of people underemployed in the country.[3]

[3](Quartz Africa, 2020)

3.2 Stylized Facts from Selected Literature

3.2.1 National Strategic Priority

In order to understand the developmental path of Nigeria, it is imperative to analyse literature. This literature, as analysed below, points out which of the sub-sectors are set to be of priority to investors and the state based on various literature sources, including the 2035 vision for Nigeria:
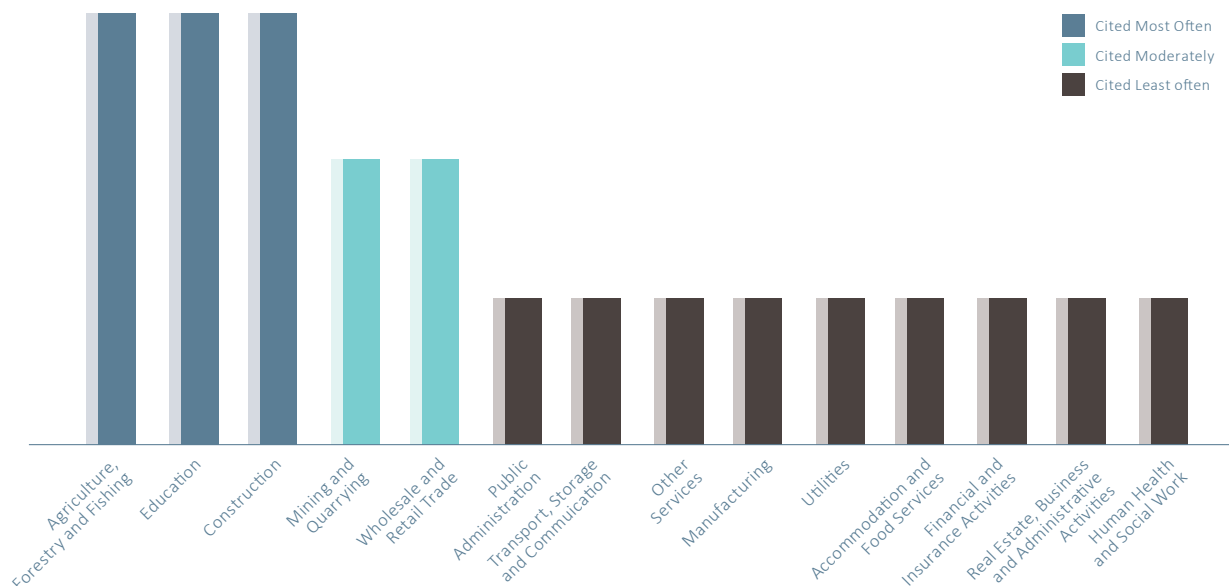
Figure 1: Sub-Sectors Priority across Literature Sources

Source: (Nigerian Investment Promotion Commission, 2017); (National Planning Commission, 2009); (The World Bank, 2019)

From the literature analysed[4], Nigeria's priority sectors are as follows:

1. In order to improve a growth slowdown, Nigeria is expected to bolster the agriculture sector given its size[5]. The state is also expected to invest in large infrastructure development, implying a greater focus on the construction sub-sector.
   a. Off the back of improved infrastructure, mining and quarrying is expected to be propped up by a large infrastructure and industrialization drive within the economy.

2. Literature also suggests that there is going to be a drive in the education sub-sector in the near future as a means to bolster the Nigerian economy further into the future

3. Strategic policy documents also point out that the economy is expected to diversify away from oil and petrol related products, leaving more focus on the development of other Nigerian products which are distributed through retail and wholesale trade.
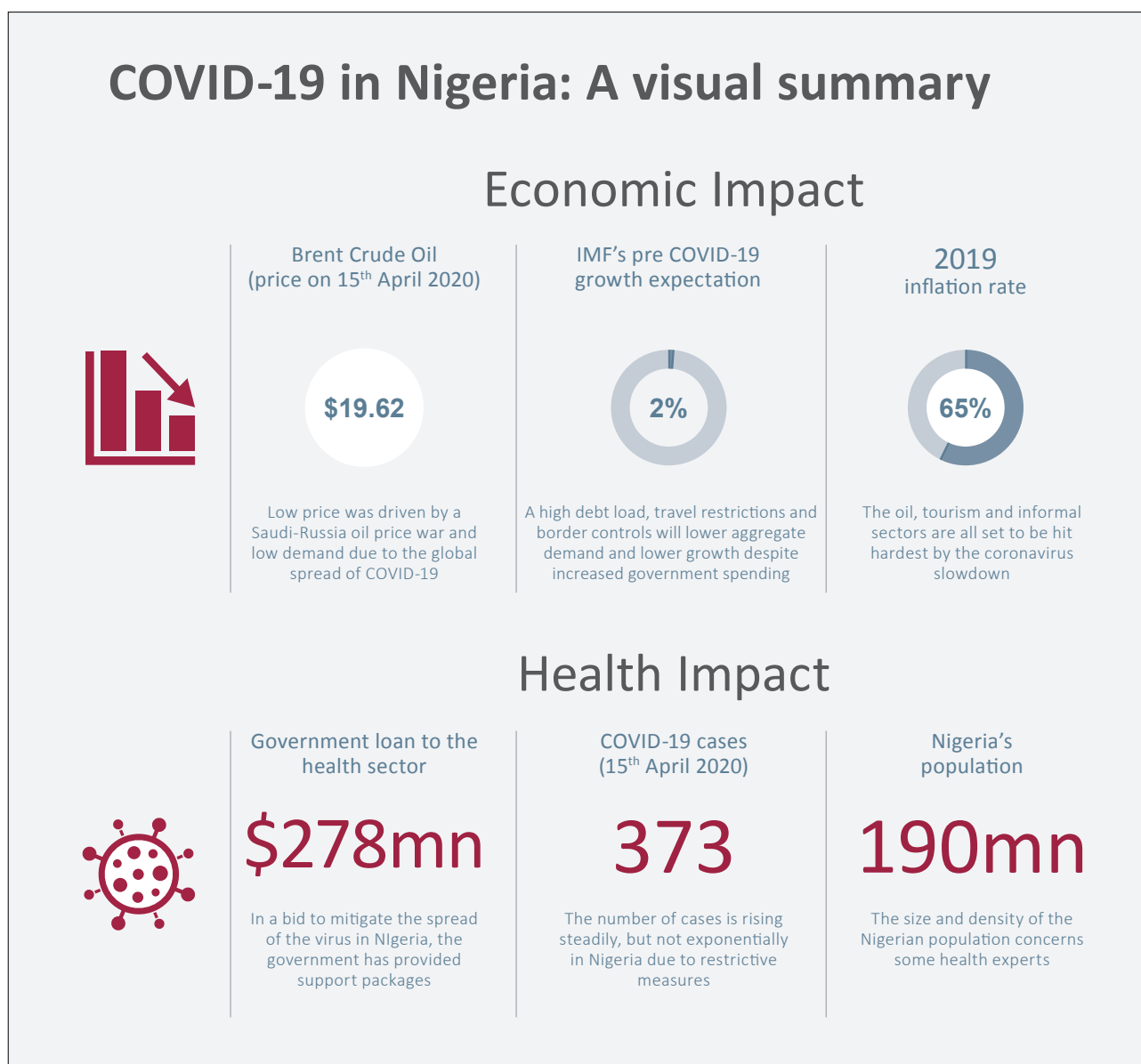
[4](Nigerian Investment Promotion Commission, 2017); (National Planning Commission, 2009); (The World Bank, 2019)
[5]Given the nature of the documents reviewed, it is unclear whether the jobs created from state-wide investment will attempt to bolster the quality of work conditions in the sector as well, or whether the bottom line (i.e., an increase in the number of jobs) is the focus.

3.2.2 Potential Impact of COVID

Because of the uncertainty surrounding COVID and the extent of its economic (and health) impact, a literature analysis also brings out some key risks which highlight the potential impact that COVID might have on the Nigerian economy. This is summarized in the infographic below, and is included in the analysis further on:

Box 3: Summary of the Impact of COVID-19 on Nigeria

COVID-19 in Nigeria: A visual summary

Economic Impact

Brent Crude Oil
(price on 15th April 2020)

$19.62

Low price was driven by a Saudi-Russia oil price war and low demand due to the global spread of COVID-19

IMF's pre COVID-19 growth expectation

2%

A high debt load, travel restrictions and border controls will lower aggregate demand and lower growth despite increased government spending

2019
inflation rate

65%

The oil, tourism and informal sectors are all set to be hit hardest by the coronavirus slowdown

Health Impact

Government loan to the health sector

$278mn

In a bid to mitigate the spread of the virus in NIgeria, the government has provided support packages

COVID-19 cases
(15th April 2020)

373

The number of cases is rising steadily, but not exponentially in Nigeria due to restrictive measures

Nigeria's population

190mn

The size and density of the Nigerian population concerns some health experts

Source: (African Development Bank Group, 2020); (CNBC Africa, 2020); (IMF, 2020); (Medina, Jonelis, & Cangul, 2017); (Onyekwana & Ekeruche, 2020); Invalid source specified.; (World Bank, 2020)

Because there is great uncertainty regarding the economic response to COVID-19, it is likely that this information will change on a regular basis. However, this analysis does point out that COVID-19 (the various phases of lockdown in the economy specifically) is expected to have an extremely large impact on the Nigerian economy, especially in light of the large oil price shocks constraining exports from the country.

3.3 **Trade and Regional Integration**

Intra-Africa and Intra-ECOWAS trade is summarized below:

Figure 2: Regional Integration in Nigeria across Africa and ECOWAS
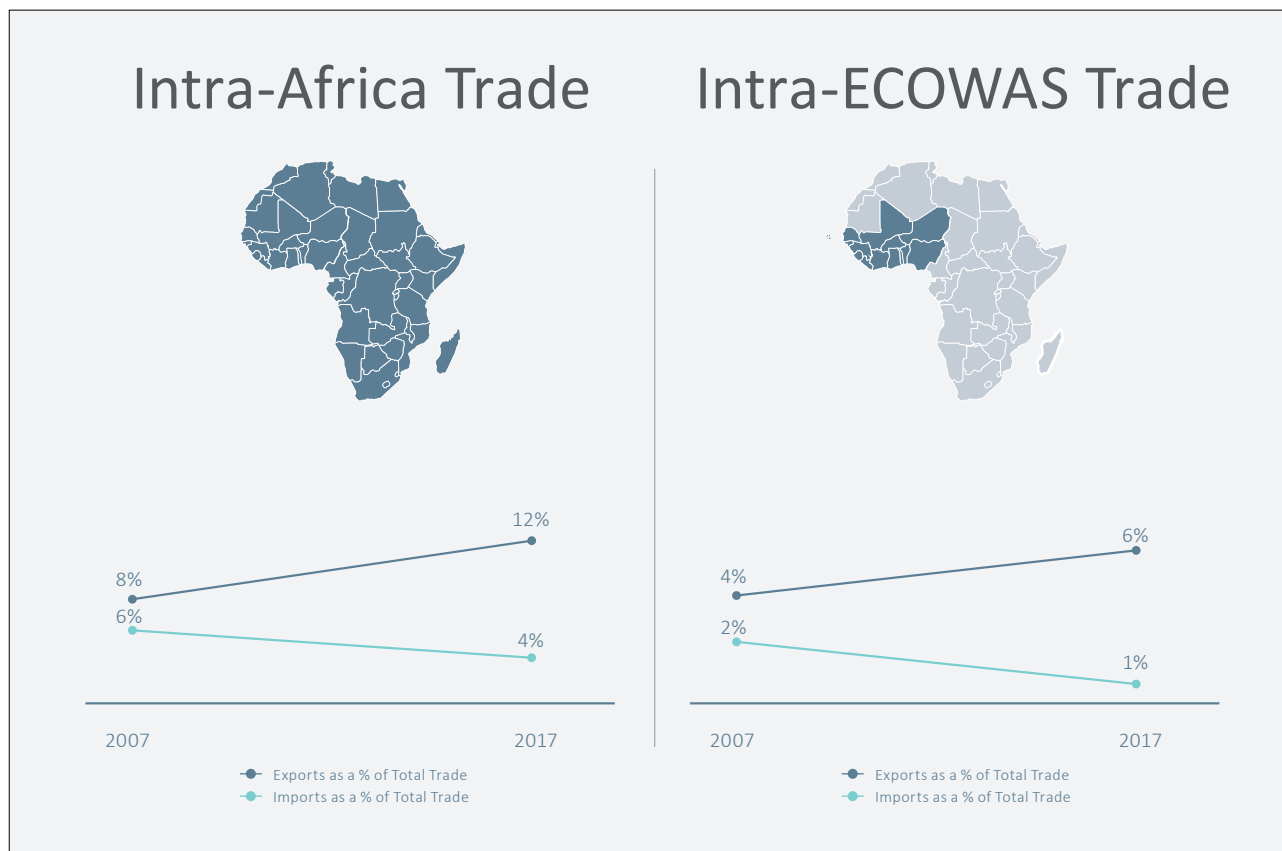
Source: Own analysis of data from ITC Trademap (2020)
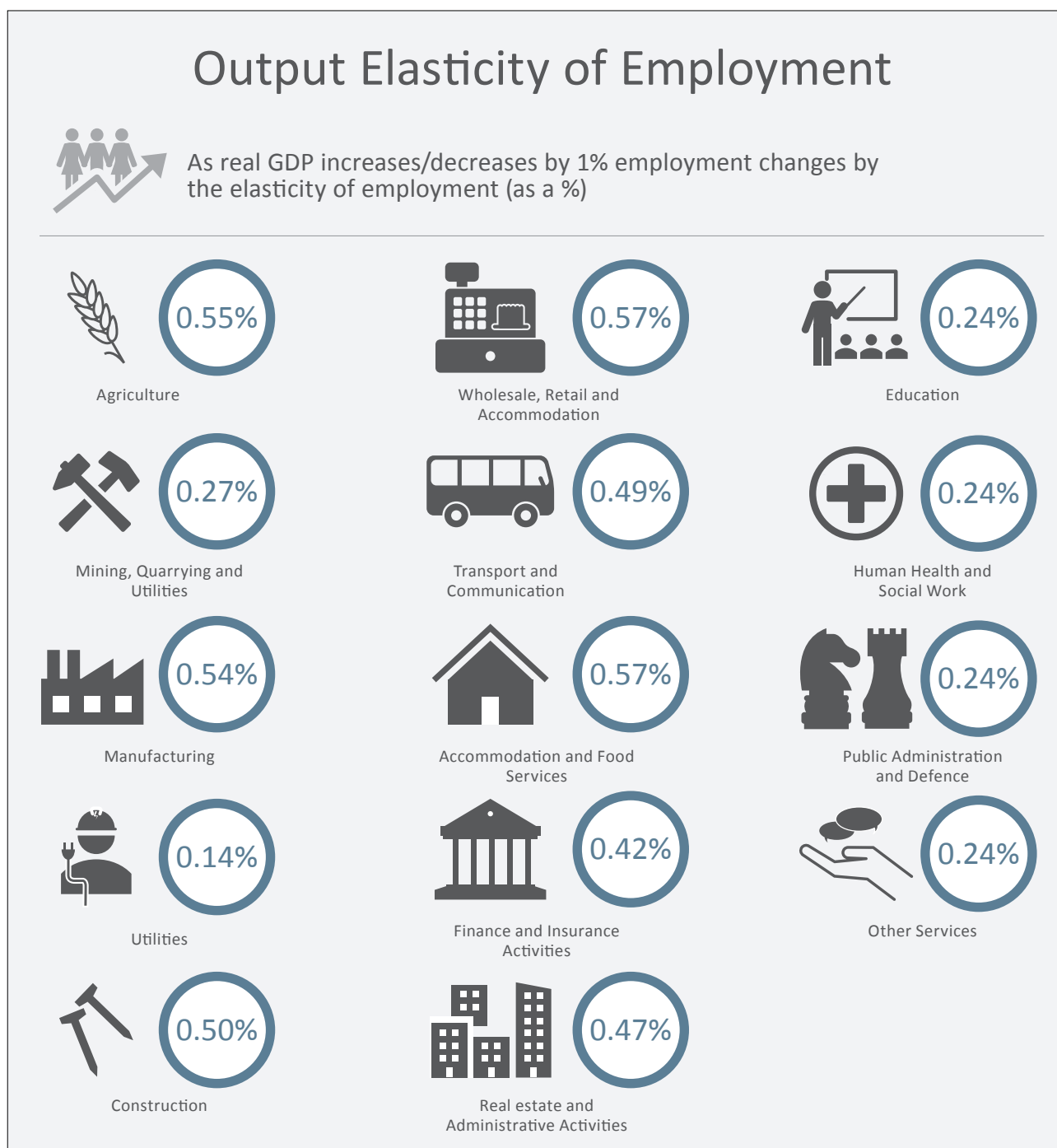
There is mixed evidence to suggest that regional integration has improved for Nigeria. While its exports to the rest of Africa and to COMESA nations has increased over the time-period, a slight decrease in imports across Africa and COMESA could signal weakened levels of trade integration. This is against a backdrop of both exports and imports declining from and to Nigeria as of 2012.

4 Data analysis

4.1 Employment-Output Elasticity

In order to forecast in light of COVID-19, it is necessary to understand the relationship between real GDP and employment in order to model relatively accurate scenarios. This is best summarized by estimating the employment elasticity for each sector, as seen overleaf:

Box 4: Output-Employment Elasticity Summary per Economic Sub-Sector in Nigeria

Output Elasticity of Employment

As real GDP increases/decreases by 1% employment changes by the elasticity of employment (as a %)

0.55% Agriculture	**0.57%** Wholesale, Retail and Accommodation	**0.24%** Education
0.27% Mining, Quarrying and Utilities	**0.49%** Transport and Communication	**0.24%** Human Health and Social Work
0.54% Manufacturing	**0.57%** Accommodation and Food Services	**0.24%** Public Administration and Defence
0.14% Utilities	**0.42%** Finance and Insurance Activities	**0.24%** Other Services
0.50% Construction	**0.47%** Real estate and Administrative Activities	

Source: Analysis of data from Central Bank of Nigeria (2020); verified by data from The World Bank (2020) and United Nations (2020)

Of course, in normal circumstances, the higher the elasticity of employment, the more likely a sector is to incorporate growth into employment. However, the inverse also holds true- if an elasticity is high, then worsened economic growth theoretically translates to far worse losses in employment than if an elasticity was lower. Because this is the mechanism which assists us in modelling employment further into the report, the sectors with the highest employment elasticities are also those most susceptible to economic shocks, namely:

1. The accommodation and food services sub-sector,
2. The wholesale and retail sub-sector, and
3. The agriculture sub-sector.

The sector which is least susceptible to an employment shock is the utilities sub-sector on the other hand, which has an extremely low employment-output elasticity of 14%. If GDP were to decline in this sector by 1%, employment would only drop by 0.14%. It is this relationship which assists in the modelling of forecasts for employment growth and decline in the following sections.

4.2 **National**

At a national level, Nigeria has experienced fair economic gains between 2009 and 2014, averaging 7% real GDP growth yearly in that period. However, since 2014, the Nigerian economy has slumped significantly, and in 2016 the country's real GDP decreased by 2%. However, in light of the COVID-19 pandemic, real GDP growth is expected to slow down even further:

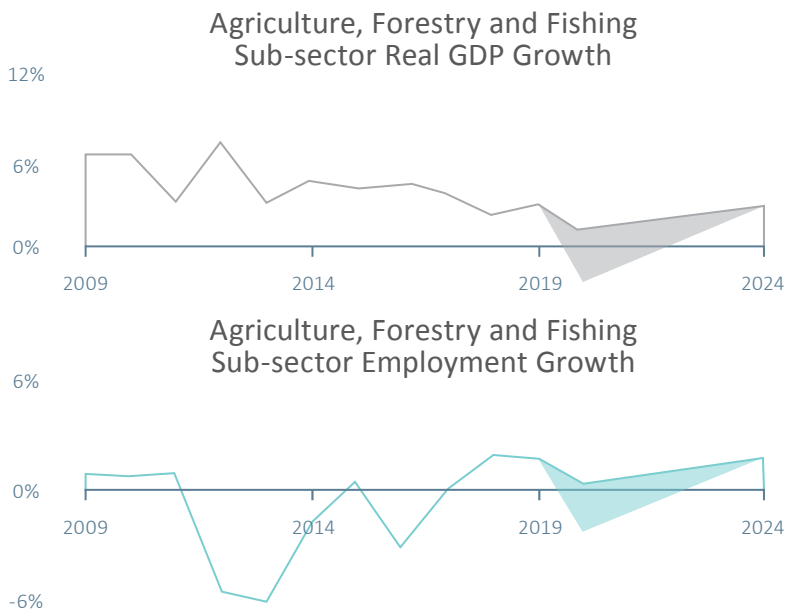**Figure 3: National Real GDP and Employment Forecasts for Nigeria**
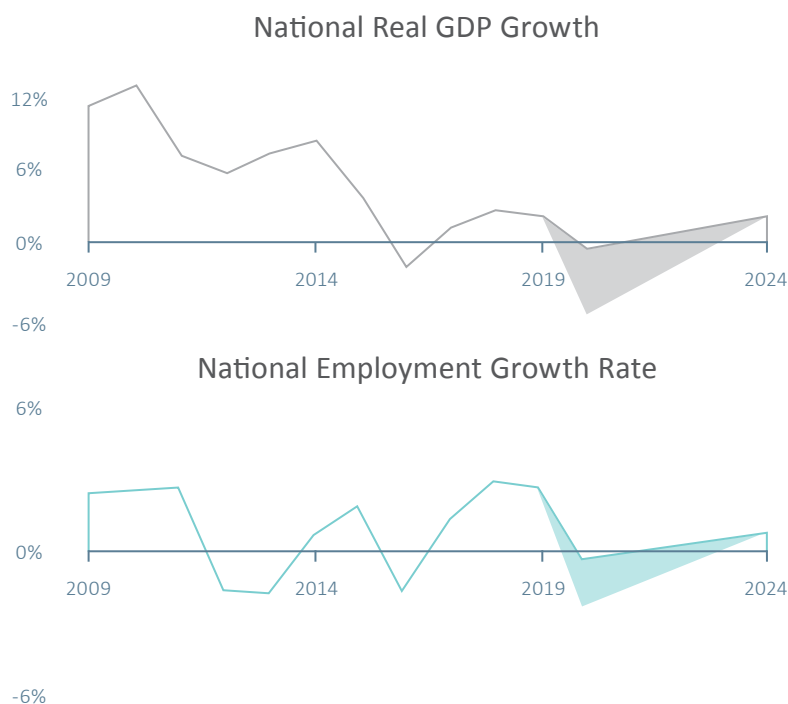
Forecasts for the Nigerian economy show that:

· Due to COVID, the best-case scenario would be for Nigeria's growth to recover to slightly above 0% after 2021. If this is the case, the economy will decline by between 0.5-1% during 2020 and 2021.

· In the worst-case scenario, Nigeria's economy would only recover into positive growth by 2023. If this is the case, it is expected that Nigeria will have a negative growth between 3 and 5% in 2020, before improving slightly over the following three years.

· These scenarios translate to a decline in employment by, at worst, 2.5% in 2020 (approximately 900 000 jobs shed in the worst-case scenario).

Source: Analysis of data from Central Bank of Nigeria (2020); verified by data from The World Bank (2020) and United Nations (2020)

4.3 **Primary sector**

While not as stark as the national picture, the forecasts provide the following insight for the agriculture sub-sector:

Agriculture, Forestry and Fishing Sub-sector Real GDP Growth

Agriculture, Forestry and Fishing Sub-sector Employment Growth

- · It is clear that both employment and real GDP are expected to decrease in 2020. In the worst-case scenario, economic growth is expected to decline by close to 3% in the agricultural sub-sector, translating to a decline in employment of around 2.5% (approximately 400 000 job losses in the sub-sector).

- · The sub-sector is expected to recover in the worst-case scenario by 2022, which is relatively short in comparison to the other sub-sectors to follow.

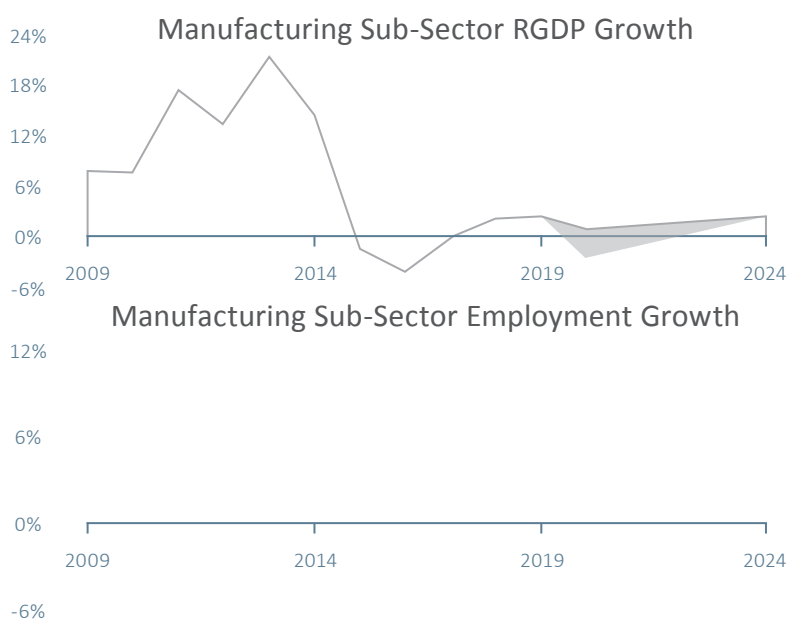- · In 2019, roughly 20 million people were working in the sub-sector in Nigeria.

Source: Analysis of data from Central Bank of Nigeria (2020); verified by data from The World Bank (2020) and United Nations (2020)

The Mining and Quarrying sub-sector (which employed 3 million people in 2019) is expected to decline dramatically post-COVID:

Mining and Quarrying Sub-Sector RGDP Growth

Mining and Quarrying Sub-Sector Employment Growth
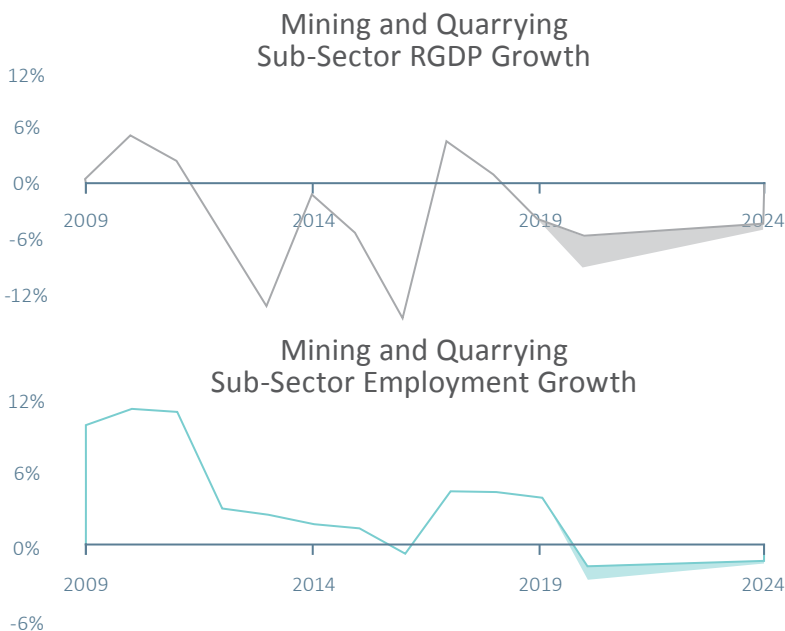
- · Real GDP is expected to decline by close to 6% in the best case COVID scenario in 2020, and decline by close to 9% in the worst case, after it was historically set to shrink by 2% on average.

- · This translates to between a decrease in employment of between 2 and 3% (or, 7 500 jobs) in the sub-sector in 2020.

- · In the best or worst-case models, recovery in the sub-sector is expected to take longer than 5 years unless drastic interventions are put forward in the sector.

4.4 **Secondary sector**

Although an international literature analysis suggested that the manufacturing sector in most countries will likely experience the worst of the economic shock, it is likely that the manufacturing sector in Nigeria will not fair in the worst of all sub-sectors. However, the economic shock will potentially play itself out negatively, given the balance of evidence:

Manufacturing Sub-Sector RGDP Growth

Manufacturing Sub-Sector Employment Growth

- Real GDP is expected to grow by close to 0.5% in the best-case COVID scenario in 2020, and decline by close to 3% in the worst case.

- This translates to between a 0.25% increase in employment and a 1.5% decline in employment for 2020 (the latter of which translates to a loss of 70 000 jobs in the sub-sector). The sector previously housed some 4.6 million workers in 2019.

- In the worst case, the manufacturing sub-sector is likely to recover slightly by 2022.

Source: Analysis of data from Central Bank of Nigeria (2020); verified by data from The World Bank (2020) and United Nations (2020)

Of all sub-sectors, the construction sector in Nigeria is expected to recover the most rapidly from the COVID economic shock (having employed close to 1.6 million people in 2019):

Construction Sub-Sector RGDP Growth

Construction Sub-Sector Employment Growth
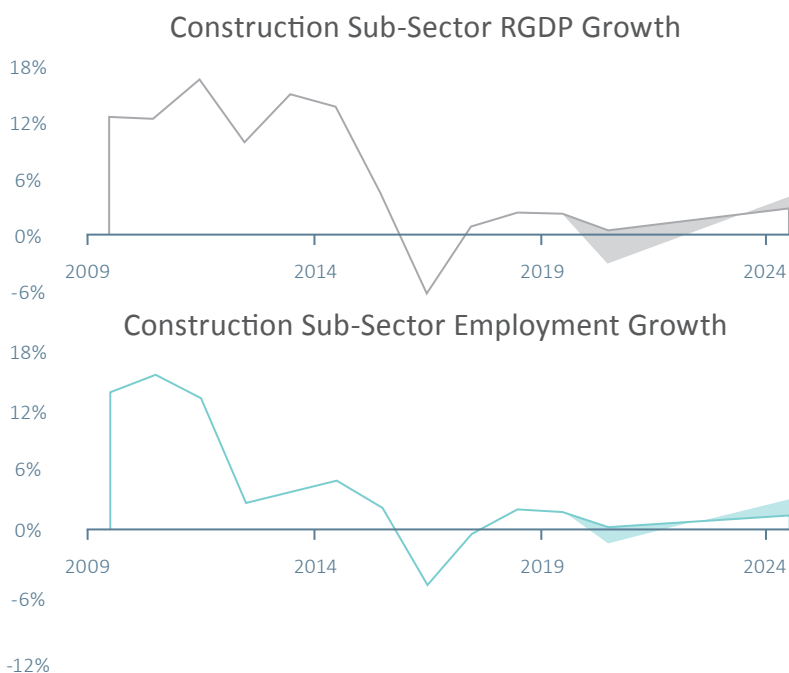
- Real GDP is expected to grow by between 0.5% in the best case COVID scenario in 2020 and decline by close to 1.5% in the worst case.

- This translates to between a 0.25% increase in employment and a 0.25% decline in employment for 2020 (or, roughly, 4 000 jobs being shed).

- In the worst case, the manufacturing sub-sector is likely to recover slightly by 2021, with relatively strong, positive economic and employment growth expected in the sub-sector from 2022 onwards.

Source: Analysis of data from Central Bank of Nigeria (2020); verified by data from The World Bank (2020) and United Nations (2020)

The utilities sub-sector (which employed 220 000 people in 2019) is expected to decline as well:

Utilities Sub-Sector RGDP Growth
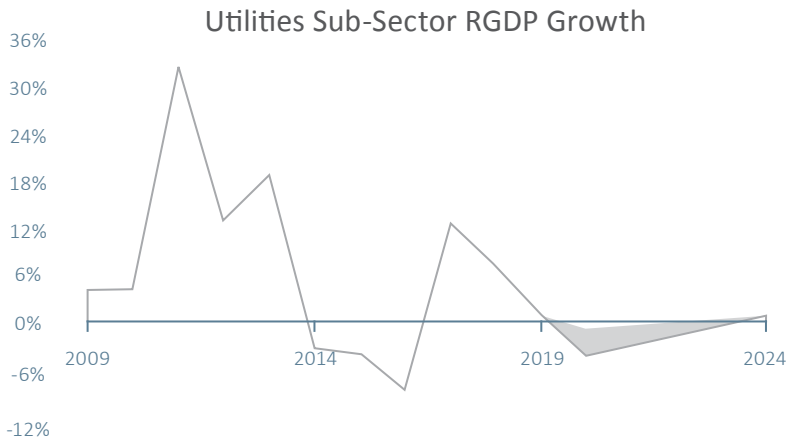
- · Real GDP is expected to weaken by between 2 and 6%.

- · This translates to an employment decline of between 1 and 3% in 2020 (the worst case translating to a loss of up to 6500 jobs in the sector).

- · The sub-sector is expected to recover by 2022/2023 in terms of employment and in terms of real GDP.
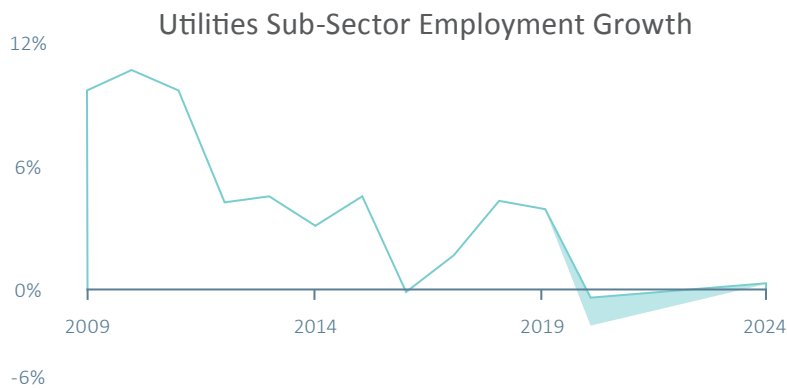
Utilities Sub-Sector Employment Growth

Source: Analysis of data from Central Bank of Nigeria (2020); verified by data from The World Bank (2020) and United Nations (2020)
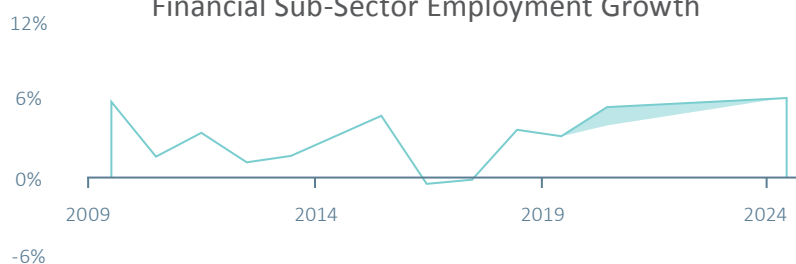
4.5 **Tertiary sector**

Of all sectors, the forecast model predicts that- due to its high historical growth- the financial sector will not decline drastically post COVID-2019:

Financial Sub-Sector RGDP Growth
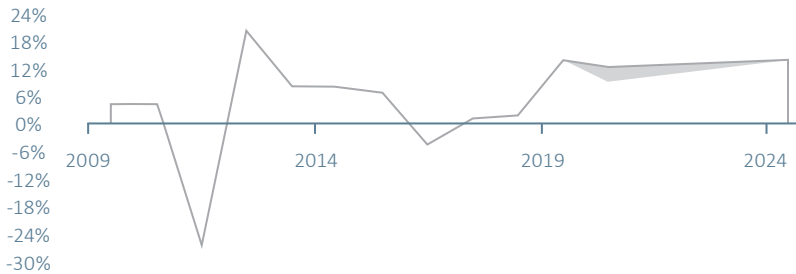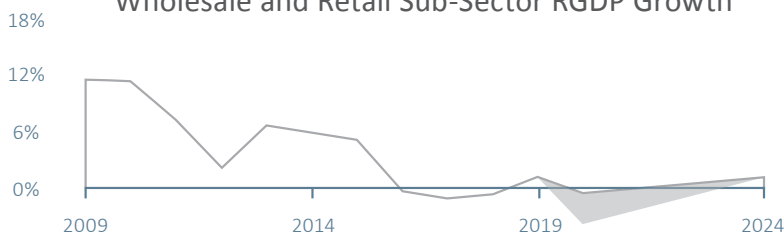

Financial Sub-Sector Employment Growth

- · Historically, real GDP was growing by close to 18%. Thus, the impact of COVID on real GDP in the sector would cut growth to between 8 and 12%, which is much lower than historically, but still extremely high.

- · This translates to an employment increase of between 4 and 6% in the sub-sector in 2020, which would have been higher in the event that COVID did not happen. In 2019, the sector employed 527 000 people.

Source : Analysis of data from Open Data for Africa (2020); verified by data from The World Bank (2020) and United Nations (2020)

The Wholesale and Retail sub-sector is, however, forecast to weaken:

Wholesale and Retail Sub-Sector RGDP Growth

Wholesale and Retail Sub-Sector Employment Growth

- · Real GDP is expected to drop by between 1% in the best-case scenario, and 4% in the worst-case COVID scenario for 2020.

- · Employment is forecast to worsen in 2020 by between 1 and 2% (roughly shedding 175 500 jobs in the process) due to the decline in sector output.

- · The sub-sector is expected to recover by 2021 in terms of real GDP, and 2022 in terms of employment. The sector employed some 12 million Nigerians in 2019.

Source: Analysis of data from Central Bank of Nigeria (2020); verified by data from The World Bank (2020) and United Nations (2020)

The forecast models also predict that the "other services" sub-sector (which employed roughly 5 million Nigerians in 2019) might not suffer extreme losses:

Other Services Sub-Sector RGDP Growth

Other Services Sub-Sector Employment Growth
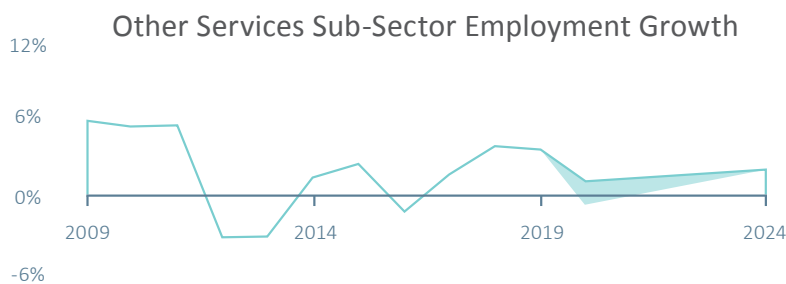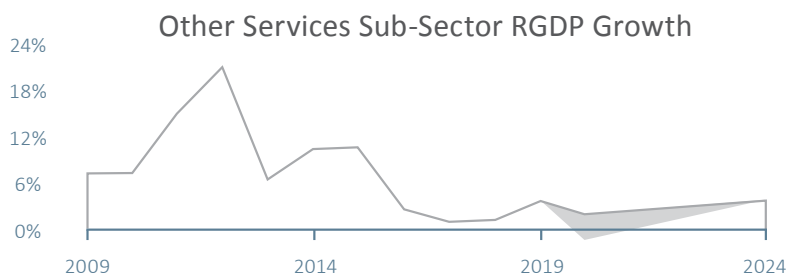
- Historically, real GDP was growing by close to 5%. Thus, real GDP would grow by up to 2% in the best case or decline by close to 1% in the worst case in 2020.

- In the best-case scenario, this translates to employment growth of around 1.5%, and a worst-case scenario of a 0.5% decline in employment in 2020 (roughly, 12 000 jobs shed in this worst case).

- If the worst-case scenario were to occur, it is likely that recovery would be partially achieved by 2021.

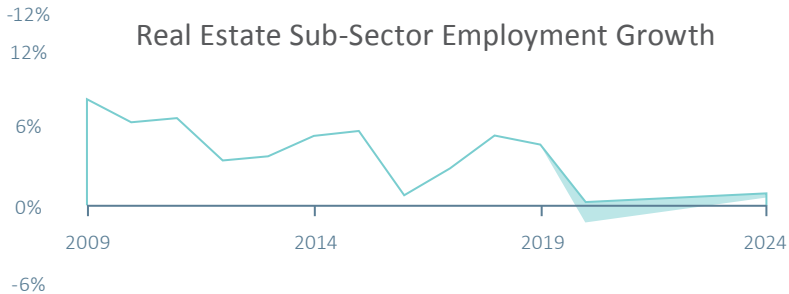*Source: Analysis of data from Central Bank of Nigeria (2020); verified by data from The World Bank (2020) and United Nations (2020)*

The Real Estate sub-sector- employing a total of 1.6 million Nigerians in 2019- is forecast to weaken post COVID as well:

Real Estate Sub-Sector RGDP Growth

Real Estate Sub-Sector Employment Growth

- Real GDP is expected to decline by up to 4%, or, at best, only grow by approximately a ¼ of a percent.

- Given the scenarios, employment is forecast to either grow slowly by up to 0.25% or worsen by up to 2% in 2020. This translates into approximately 32 000 job losses in the worst case.

- The sub-sector is expected to recover fully by 2022/2023 in the worst case.

Source: Analysis of data from Central Bank of Nigeria (2020); verified by data from The World Bank (2020) and United Nations (2020)
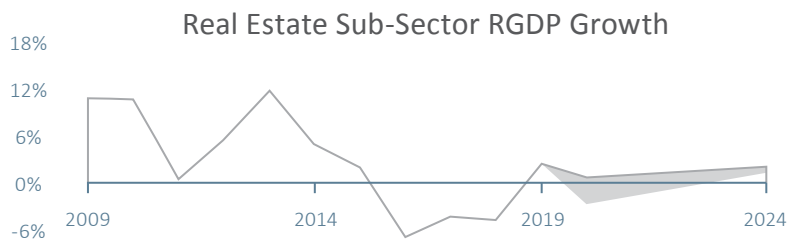
The transportation sub-sector (containing 3 million Nigerian employees in 2019) is expected to decline more in terms of real GDP than in terms of employment:

Transportation and Communication Sub-Sector RGDP Growth

- · The impact of COVID on real GDP will likely cut growth by between 1 and 4% in 2020, with a partial recovery occurring only by 2023/2024.

- · This translates to an employment decline of between 1 and 2% in the sub-sector in 2020 (shedding up to 58 000 jobs), which would recover to growing positively by 2023.

Transportation and Communication Sub-Sector Employment Growth

Source: Analysis of data from Central Bank of Nigeria (2020); verified by data from The World Bank (2020) and United Nations (2020)

The Accommodation sub-sector (employing 1.9 million workers in 2019), whilst being identified in the literature as extremely vulnerable, is forecast to potentially decline slightly, before picking up once more by 2022:

Accommodation Sub-Sector RGDP Growth

- · Real GDP is expected to grow by up to 1% in the best-case scenario and decline by up to 1% in the worst-case COVID scenario for 2020.

- · Employment is forecast to worsen in 2020 by up to 2% (which translates to as many as 40000 job losses) due to the decline in sector output in the worst-case scenario.

Accommodation Sub-Sector Employment Growth

Source: Analysis of data from Central Bank of Nigeria (2020); verified by data from The World Bank (2020) and United Nations (2020)

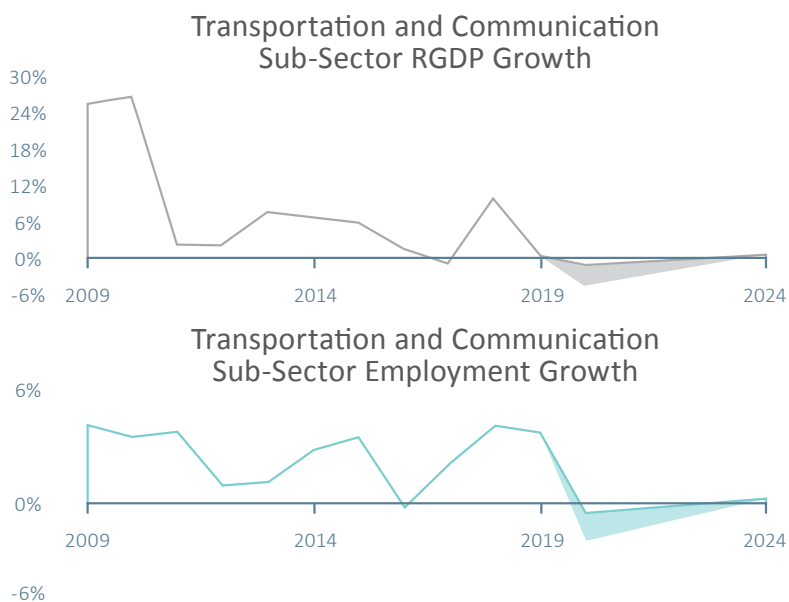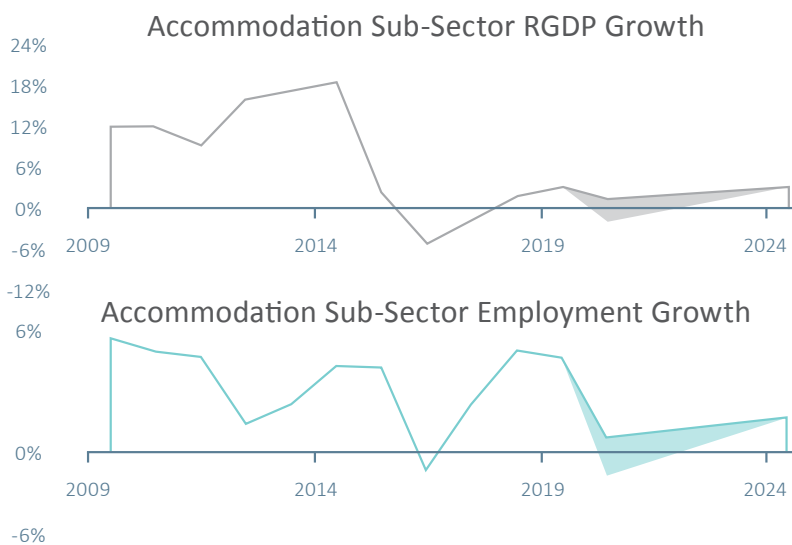Because the education sector provides a necessity, real GDP is only forecast to decline slightly, while employment is expected to decline more drastically:

Education Sub-Sector RGDP Growth

Education Sub-Sector Employment Growth

- · Real GDP is forecast to track growth of between 0.5% in the best-case scenario, and a decline of up to 1% in the worst-case scenario by 2020, with recovery expected by 2021.

- · This translates to employment which is either expected to decline by closer to 2% in the worst case, or increase by 1% in the best case in 2020. This translates to, at worst, 48 000 job losses.

- · Employment is expected to improve robustly by 2022, having previously employed some 2.5 million people in 2019.

Source: Analysis of data from Central Bank of Nigeria (2020); verified by data from The World Bank (2020) and United Nations (2020)

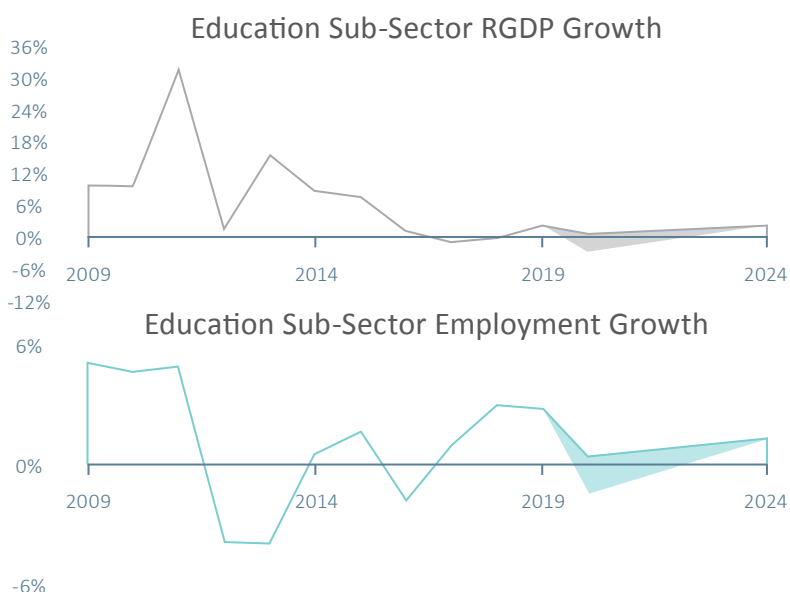Of all the sub-sectors, the public administration sub-sector (which employed roughly 2 million people in 2019) is expected to decline the most according to the forecast model:

Public Administration Sub-Sector RGDP Growth

Public Administration Sub-Sector Employment Growth
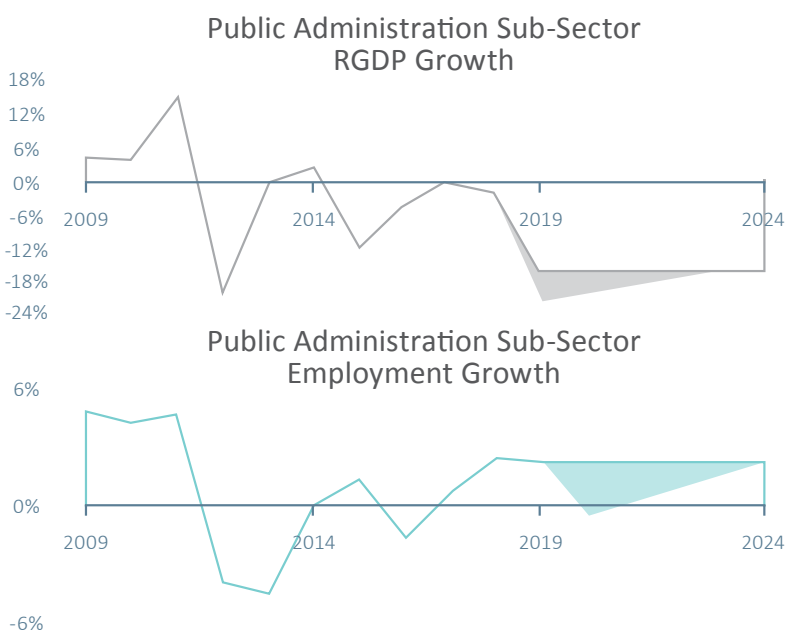
- · Real GDP is expected to drop by between 16% in the best-case scenario, and 19% in the worst-case COVID scenario for 2020. This is potentially due to the historical down-turn in the sub-sector.

- · Employment is forecast to worsen in 2020 by between 1 and 1.5% accordingly (translating, at worst, to 31 000 jobs being lost).

- · In the case of real GDP, no positive growth recovery over the short term is forecast.

Source: Analysis of data from Central Bank of Nigeria (2020); verified by data from The World Bank (2020) and United Nations (2020)

The transportation sub-sector (which employed 3 million Nigerians in 2019) is expected to decline more in terms of real GDP than in terms of employment:
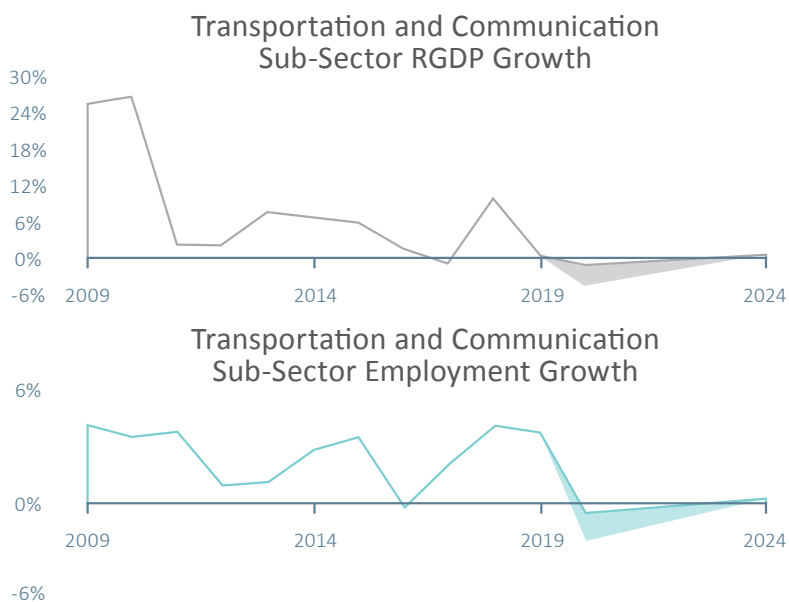
Transportation and Communication Sub-Sector RGDP Growth

- · The impact of COVID on real GDP will likely cut growth by between 1 and 4% in 2020, with a partial recovery occurring only by 2023/2024.

Transportation and Communication Sub-Sector Employment Growth

- · This translates to an employment decline of between 1 and 2% in the sub-sector in 2020 (shedding up to 58 000 jobs), which would recover to growing positively by 2023.

Source: Analysis of data from Central Bank of Nigeria (2020); verified by data from The World Bank (2020) and United Nations (2020)

The Accommodation sub-sector (employing 1.9 million workers in 2019), whilst being identified in the literature as extremely vulnerable, is forecast to potentially decline slightly, before picking up once more by 2022:

Accommodation Sub-Sector RGDP Growth

- · Real GDP is expected to grow by up to 1% in the best-case scenario and decline by up to 1% in the worst-case COVID scenario for 2020.

Accommodation Sub-Sector Employment Growth

- · Employment is forecast to worsen in 2020 by up to 2% (which translates to as many as 40 000 job losses) due to the decline in sector output in the worst-case scenario.

Source: Analysis of data from Central Bank of Nigeria (2020); verified by data from The World Bank (2020) and United Nations (2020)

Human Health and Social Work Sub-Sector RGDP Growth
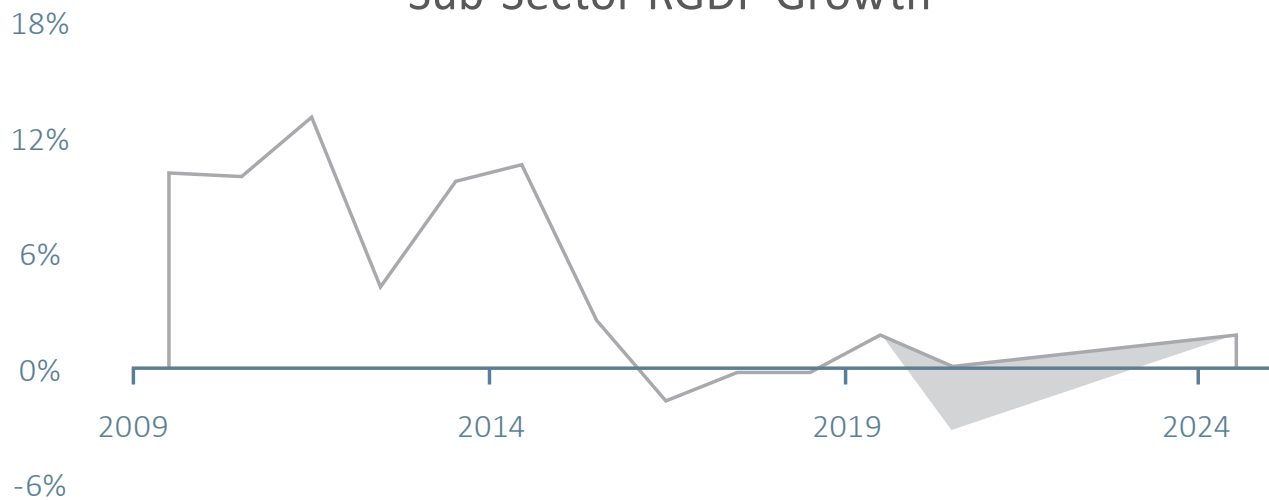
Human Health and Social Work Sub-Sector Employment Growth

Source: Analysis of data from Central Bank of Nigeria (2020); verified by data from The World Bank (2020) and United Nations (2020)

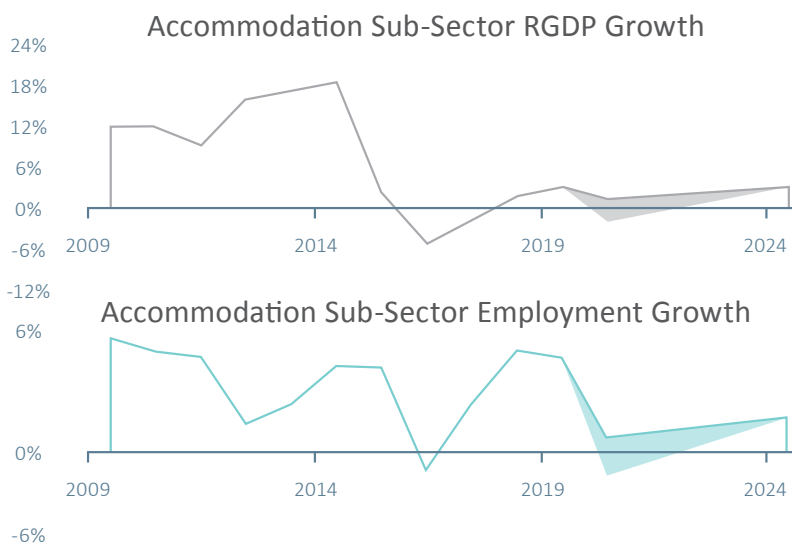In terms of the last sub-sector (which employed 1.1 million Nigerians in 2019), the following trends are forecast:

· It is clear that both employment and real GDP are expected to decrease in 2020, although real GDP is expected to decrease by more than employment:

- In the best-case scenario, GDP growth is expected to maintain 0% growth in 2020. In the worst case, the sector is expected to shrink by up to 4%.

- Employment is expected to decline slowly in comparison, by up to 0.5% in 2020 at worst. This translates to approximately 5 500 jobs being lost in the sector.

The sub-sector is expected to recover in the worst-case scenario by 2022/2023.

5 Labour supply analysis

The Nigerian labour market is, in itself, extremely complex. On the one hand, the vast number of people in the country with university-based tertiary qualifications might create co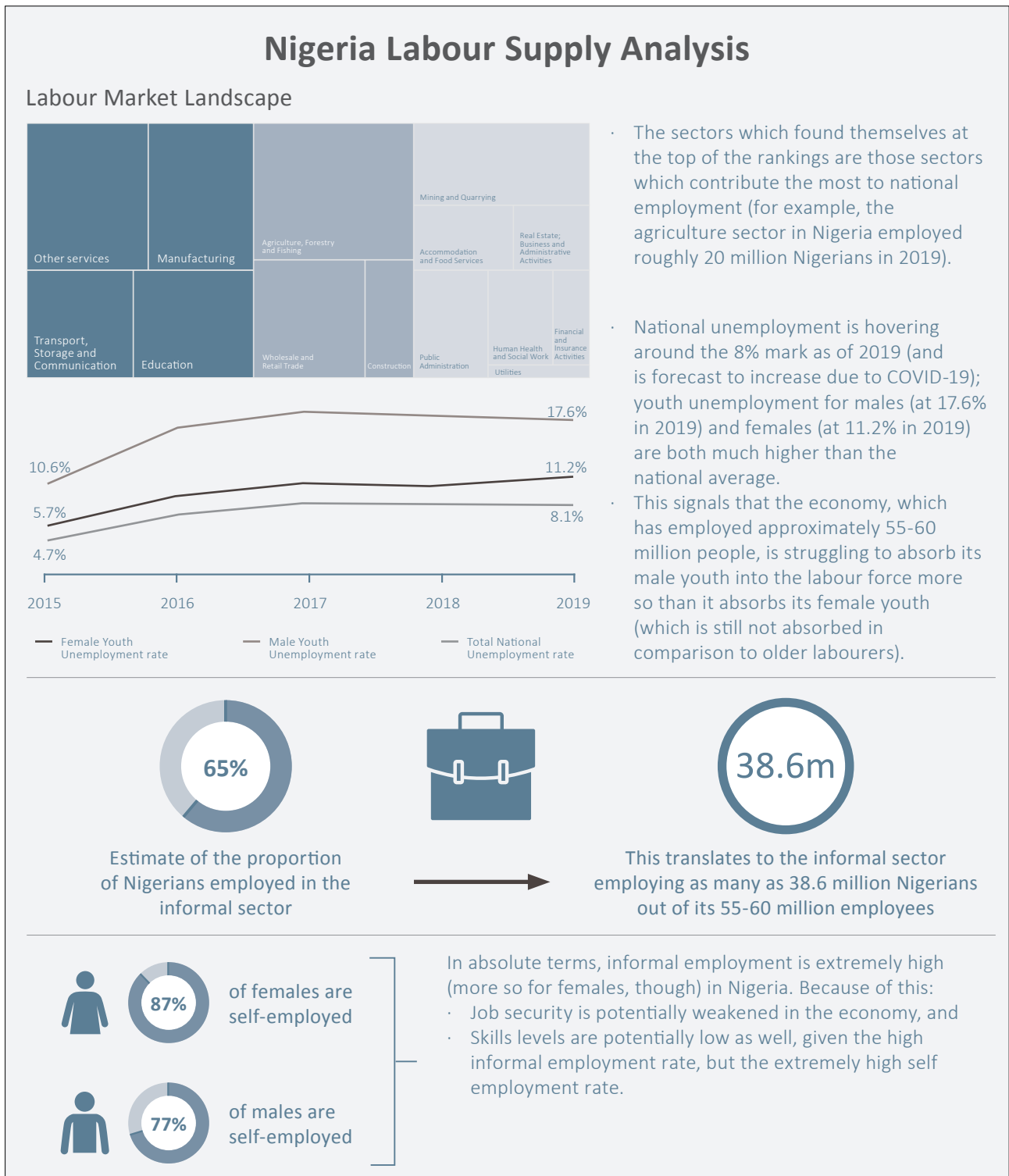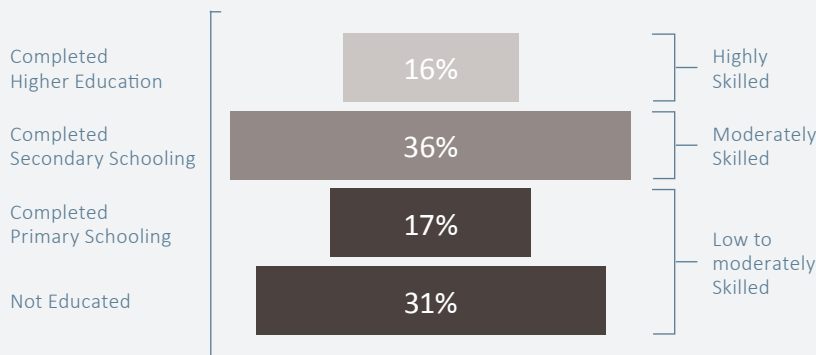mpetitiveness at a high-skill level, as is evidenced by the fact that as few as 1 in 7 university graduates is fully employed by the Nigerian system. On the other hand, a lack of adequate technical skills for the moderately qualified, mixed with an "unemployment time bomb" set to continue to expand creates pressures in the labour market which need redress. As such, the analysis below brings together some literature which assesses the challenges faced by the Nigerian labour supply:

Box 5: Labour Supply Snapshot in Nigeria

Nigeria Labour Supply Analysis

Labour Market Landscape

- The sectors which found themselves at the top of the rankings are those sectors which contribute the most to national employment (for example, the agriculture sector in Nigeria employed roughly 20 million Nigerians in 2019).

- National unemployment is hovering around the 8% mark as of 2019 (and is forecast to increase due to COVID-19); youth unemployment for males (at 17.6% in 2019) and females (at 11.2% in 2019) are both much higher than the national average.

- This signals that the economy, which has employed approximately 55-60 million people, is struggling to absorb its male youth into the labour force more so than it absorbs its female youth (which is still not absorbed in comparison to older labourers).

65% — Estimate of the proportion of Nigerians employed in the informal sector

38.6m — This translates to the informal sector employing as many as 38.6 million Nigerians out of its 55-60 million employees

87% of females are self-employed

77% of males are self-employed

In absolute terms, informal employment is extremely high (more so for females, though) in Nigeria. Because of this:
- Job security is potentially weakened in the economy, and
- Skills levels are potentially low as well, given the high informal employment rate, but the extremely high self employment rate.

Education and Training Profile

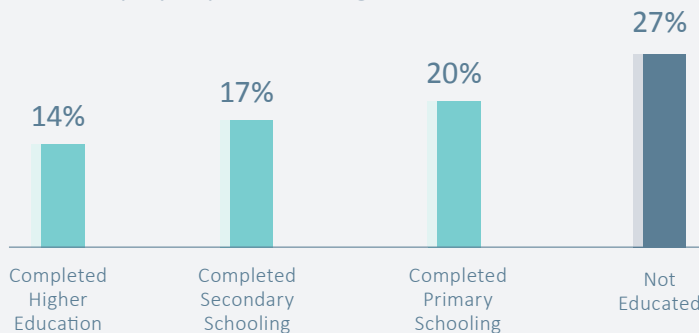| Completed Higher Education | 16% | Highly Skilled |
Completed Secondary Schooling	36%	Moderately Skilled
Completed Primary Schooling	17%	Low to moderately Skilled
Not Educated	31%	

- In Nigeria, as of 2018, our estimates suggest that 31% of the population had not completed any form of education or were not catergorised
- Roughly 52% of the working population is moderately to highly skilled, with the remaining 48% possessing lower skills bases
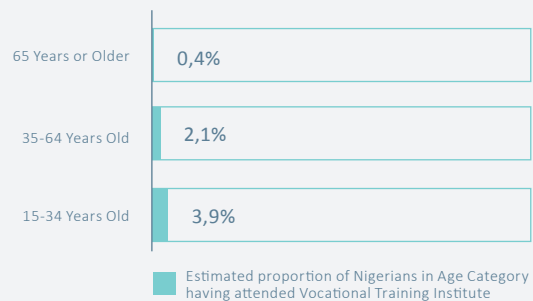
Proportion of Employed Nigerians who are Underemployed per Schooling level

Completed Higher Education	Completed Secondary Schooling	Completed Primary Schooling	Not Educated
14%	17%	20%	27%

Nigerian estimates suggest that, while relatively fewer of the highly skilled parties in the country are underemployed (i.e., are either overqualified for the work that they do or could work more time but are not given the chance to). However, 27% of individuals with no education are underemployed

6 400 000

An estimate of the number of Nigerians who have completed some form of TVET qualification by 2017

65 Years or Older	0,4%
35-64 Years Old	2,1%
15-34 Years Old	3,9%

Estimated proportion of Nigerians in Age Category having attended Vocational Training Institute

A 2017 analysis of skills and knowledge gaps in Nigeria related to:

- The manufacturing sector (specifically, skills relating to either the creation of textiles and clothing, the manufacture and creation of automobile parts, or the creation of oil-related products)

- The construction sector (with relation to housing creation the most)

- The wholesale and retail trade sector (which relates to a lack of innovation in the sector, and the way in which technology is able to manifest many benefits for the sector as well)

This same report also points out that, of all priority sectors outlined by the Nigerian government in their strategic development plans, the most pressing knowledge gaps relate to a workforce which is not technologically savvy (with low IT proficiency), and which lacks in soft skills like team work and team management. Overwhelmongly, though, the lack of technical expertise in the country is most problematic, and forces a clear divide between what employers in the country might need versus what workers in the economy are able to provide.

From this, a few key findings can be pointed out:

· Unemployment in Nigeria is increasing more so for youth unemployment than for unemployment among the older population.
As per the UNIDP (2017), this is likely due to:

- A need for specific skills in priority sectors within the country that is not met by the supply of learners and graduates from various institutes of higher or technical learning, and

- A job market which is currently struggling to expand because of relatively slow economic growth in the country.

· It has been seen that the major knowledge gap in the country is directly related to employees and their ability to use technology (in the event of manufacturing and other process-driven occupations) or a lack of basic or advanced IT know-how (with this latter problem even extending to well-qualified individuals).

- In terms of labour supply, this indicates that the schools, TVET[6] institutions and universities are sometimes not equipping their students with practical knowledge, especially relating to the integration of technological advancements into their every-day work life.

· This is all true in a context where underemployment is an extreme issue in the country, from those with higher education qualifications to those who have no education. This means that a large portion of the working class in Nigeria (i.e., those that rely on wage labour as their main source of income, irrespective of qualification) are currently either not being employed for the number of hours that they could work or are working in an occupation unsuited to their qualification.

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[6]According to UNESCO and the ILO (2001), TVET refers to "aspects of the educational process involving, in addition to general education, the study of technologies and related sciences, and the acquisition of practical skills, attitudes, understanding and knowledge relating to occupants in various sectors of economic and social life". Of course, there are differences between TVET systems across the globe, across countries and even across TVET institutions within the same country, but for the extents and purposes of this report even though qualification levels may vary, a TVET qualification of any form is still classified as providing high levels of competency or skill.

6 Sub-sectors deep dive

6.1 Sub-Sector Choice

In order to choose which sub-sectors to focus on, it is first important to place each sub-sector into a matrix which summarizes their position within the Nigerian economy. As such, we employ a similar sort of analysis as found in FG Consulting (2019), by using an employment-output growth matrix for both the historical and the forecasted period. The size of the bubble relates directly to the contribution of that sub-sector to real GDP[7].

Figure 4: GDP and Employment Growth Matrix for all Sub-Sectors in Nigeria (Averaged from 2008-2019)
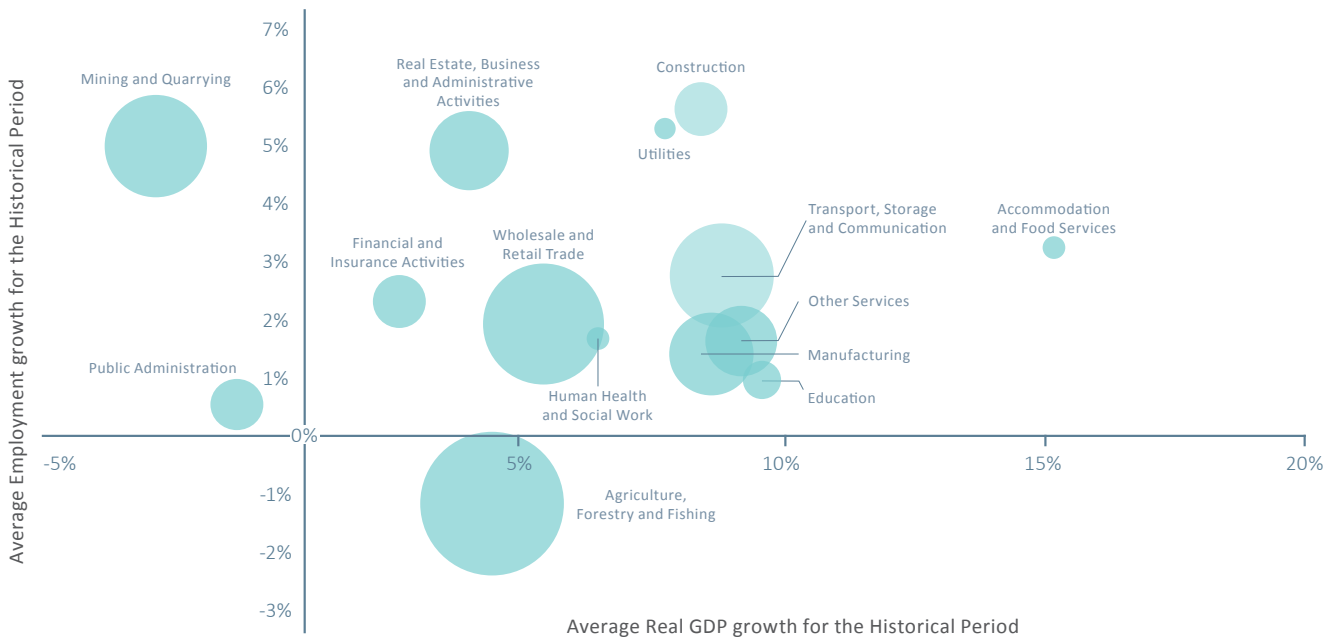
Source: Analysis of data from Central Bank of Nigeria (2020); verified by data from The World Bank (2020) and United Nations (2020)

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[7]As the bubble gets larger, so too does a sector's contribution to national real GDP within that time period on average.
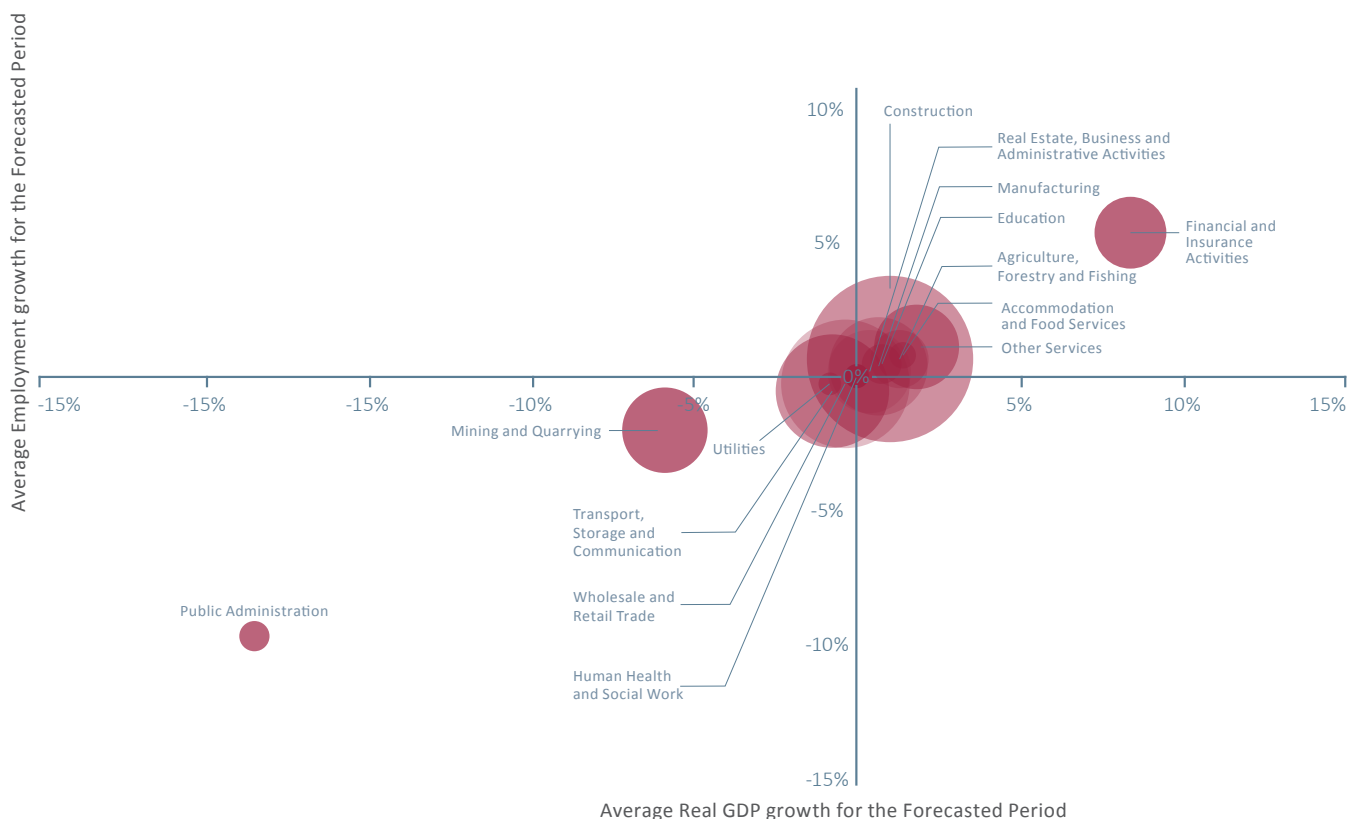
Figure 5: GDP and Employment Growth Matrix for all Sub-Sectors in Nigeria (Averaged from 2020-2024)

Source: Analysis of data from Central Bank of Nigeria (2020); verified by data from The World Bank (2020) and United Nations (2020)

More than anything these graphics only summarize the analysis done before, and feed into the methodology to obtain priority sectors based on those sectors real GDP trends, employment trends, sizes, gender equitability, and the impact of COVID-19 on those sectors (as outlined in the methodology).

Given these bubble summaries, most sub-sectors are expected to shrink or weaken in terms of employment and real GDP quite dramatically:

· Most sub-sectors are expected to collect in the middle of the forecast graph. That implies that, over the forecasted period (2020-2024), employment and real GDP are expected to track 0% growth in some cases, and decline by up to 1% on average post COVID-19. This is the case except for 3 sectors:

- It is expected that the finance and insurance sub sector will be the only sub-sector to grow in terms of output and employment in the forecasted period. This is likely due to the fact that historical growth in the sub-sector was quite high, and that COVID might only cut into some, and not all, of those historical gains.

- It is also forecast that the mining and quarrying, and public administration sub-sectors are expected to decline the most. This is, however, due to historically weak growth prospects in each sub-sector, and not due to the fact that they are incredibly susceptible to the economic impact of COVID per se.

6.2 **Sub-Sector Ranking**

Given all previous evidence, we use Principal Components Analysis (PCA[8]) to rank the sub-sectors. Weighting is based off of the following indicators:

· Historical employment and GDP growth,

· Forecasted employment and GDP growth taking into account the potential impact of COVID-19,

· Employment elasticity of output,

· A sub-sector's prevalence in the literature surrounding government priority,

· A sub-sector's susceptibility to COVID-19 as found in the literature,

· The persistence of an economic shock of the COVID-19 type at a sub-sector level (i.e., how long it takes for a sector to at least slightly recover from an economic shock), and

· Whether the sub-sector is gender-equitable by means of either:
- An increasing trend of female employment between the historical and forecasted periods, or
- Employing a female-majority workforce.

Prior to COVID-19, the sub-sectors were ranked according to the relevant indicators, and the following ranking was obtained:

Figure 6: Pre-COVID Labour Demand Index Rankings
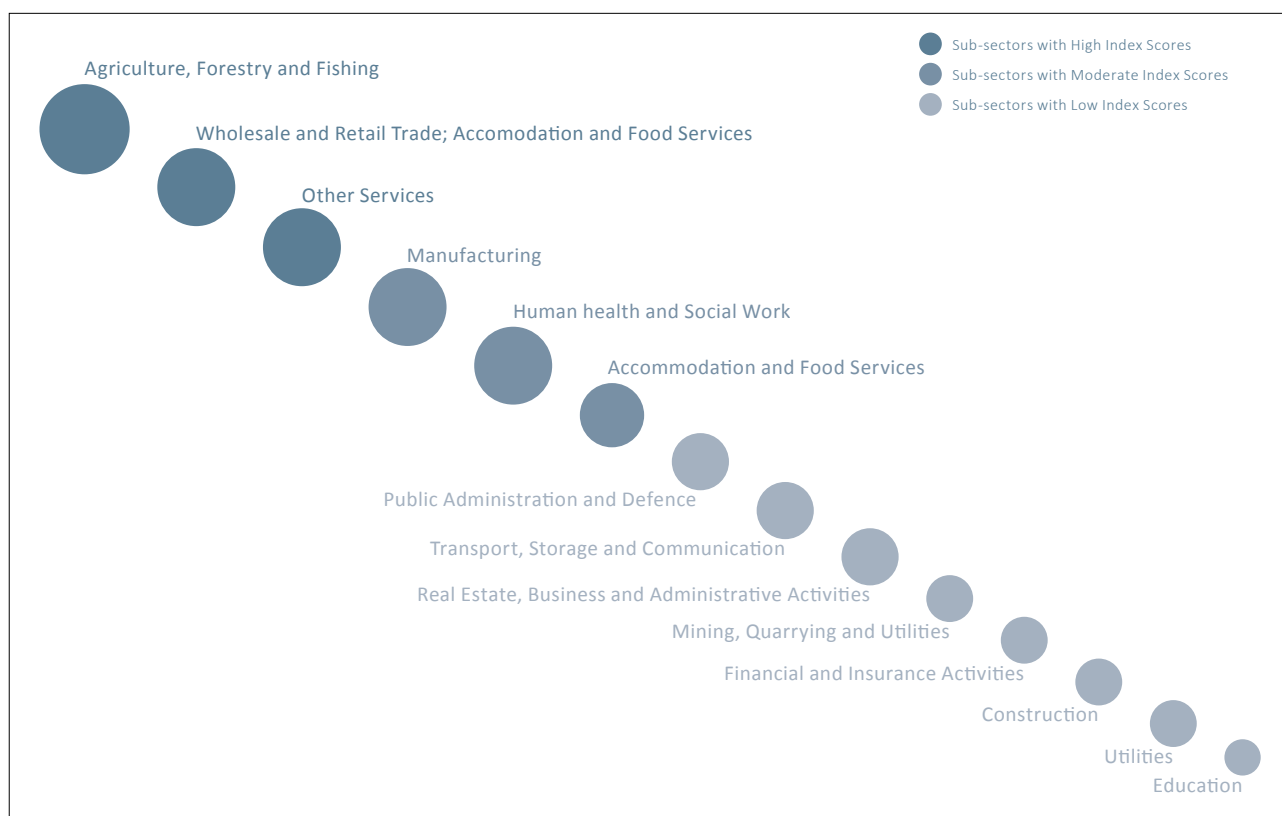
Source: Analysis of data from Central Bank of Nigeria (2020); verified by data from The World Bank (2020) and United Nations (2020)

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[8]PCA is a weighting technique which attributes weight based on total variation of a particular indicator across time and across dimensions. It attempts to decompose each indicator, relative to all the others, into its core components. This method corrects for things like the relationships between the indicators which are meant to be weighted (for instance, output and employment are related).

This ranking, inclusive of the expected impact of COVID, is summarized on the below[9]:

Figure 7: Post-COVID Labour Demand Index Rankings

- Sub-sectors with High Index Scores
- Sub-sectors with Moderate Index Scores
- Sub-sectors with Low Index Scores

Agriculture, Forestry and Fishing
Wholesale and Retail Trade
Construction
Manufacturing
Education
Transport, Storage and Communication
Other Services
Utilities
Human health and Social Work
Real Estate, Business and Administrative Activities
Mining, Quarrying and Utilities
Public Administration and Defence
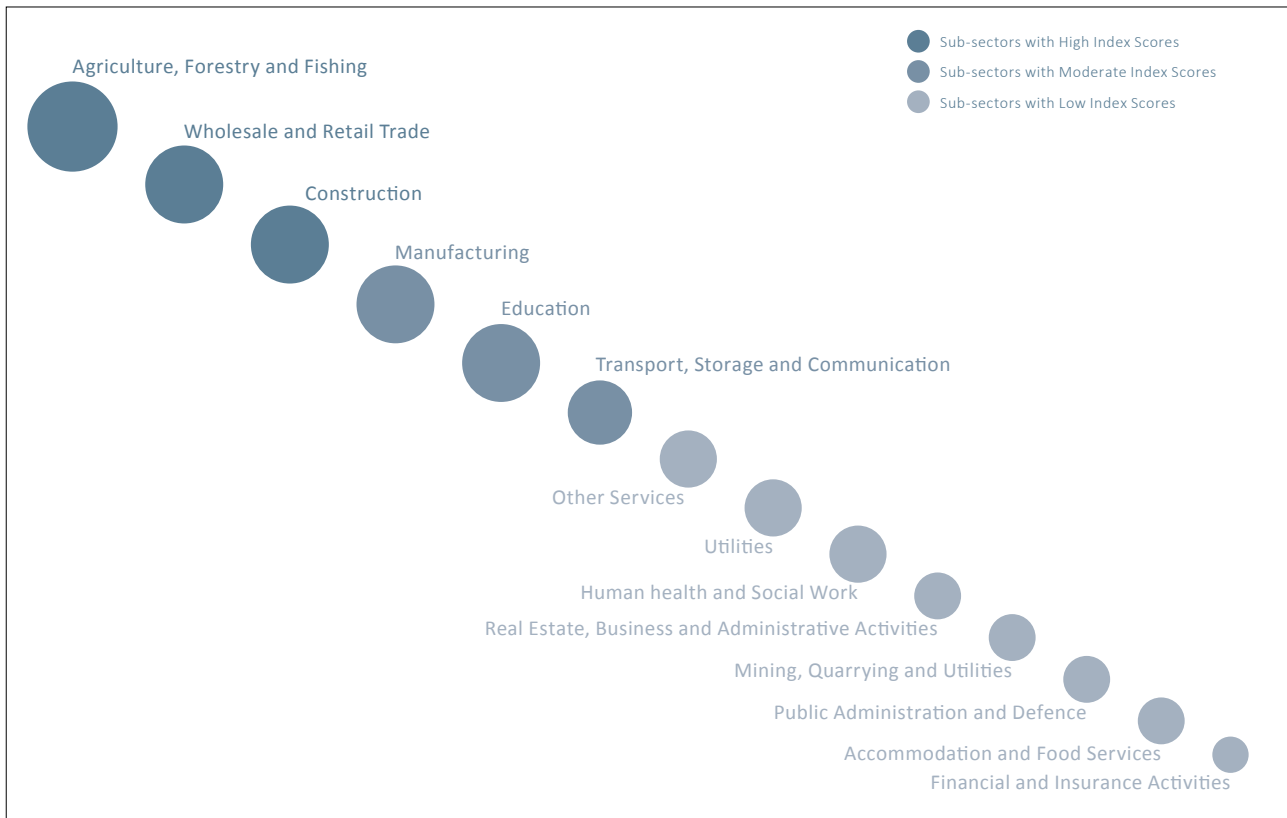Accommodation and Food Services
Financial and Insurance Activities

Source: Analysis of data from Central Bank of Nigeria (2020); verified by data from The World Bank (2020) and United Nations (2020)

Considering all of the evidence, the following sub-sectors are prioritized to be focused on:

1. The Agriculture sub-sector,
2. The Wholesale and Retail sub-sector, and
3. The Construction sub-sector

These are the sub-sectors which, across dimensions, tend to perform the most robustly. That is not to say that each sub-sector is best performing across all dimensions (i.e., real GDP growth in the agriculture sector is not forecast to be the highest). Instead, it is these sub-sectors that simultaneously have:

· Relatively strong economic prospects,
· Relatively gender-equitable employment prospects,
· A place in the literature as a strategic priority, and
· A relative susceptibility to COVID-19 and its prospective economic impact.

In a bid to steer away from dependence on oil and related trade, the Nigerian National Development plan aims to develop infrastructure, implying that the construction sector is pivotal to progress (as pointed out by this analysis as well). Embedded in this Development Plan is also a country faced with relatively low levels of skills, and high poverty rates, implying that lower skills sectors (like agriculture and wholesale/retail) are also to be focused on as a means to bridge the poverty gap, making the priority sectors outlined in this analysis relatively well-matched to Nigeria's vision for the future.

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[9]The size of each bubble is directly related to the index score for each sub-sector. Those sub-sectors that are highlighted in the lightest shade of blue fall below the average index score, while those in darker shades of blue fall above the average index score.

7 **Sector deep dive analysis**

DNA Economics sent out a survey to 22 individuals (with valid email addresses) in Nigeria with a vested interest in skills levels and skills development within the 3 sub-sectors identified as showing strong signs of labour demand in the near future. Of the individuals contacted, 9 survey responses were collated. While this is by no means representative, these surveys provide a window into the potential skills deficiencies occurring in Nigeria currently and in light of the COVID-19 pandemic.

From the Agricultural perspective, respondents to the survey stated that the following areas of study tended to be the most popular among students:

Figure 8: Proportion of Respondents Stating the Most Popular Study Choices in TVET Institutions in Nigeria
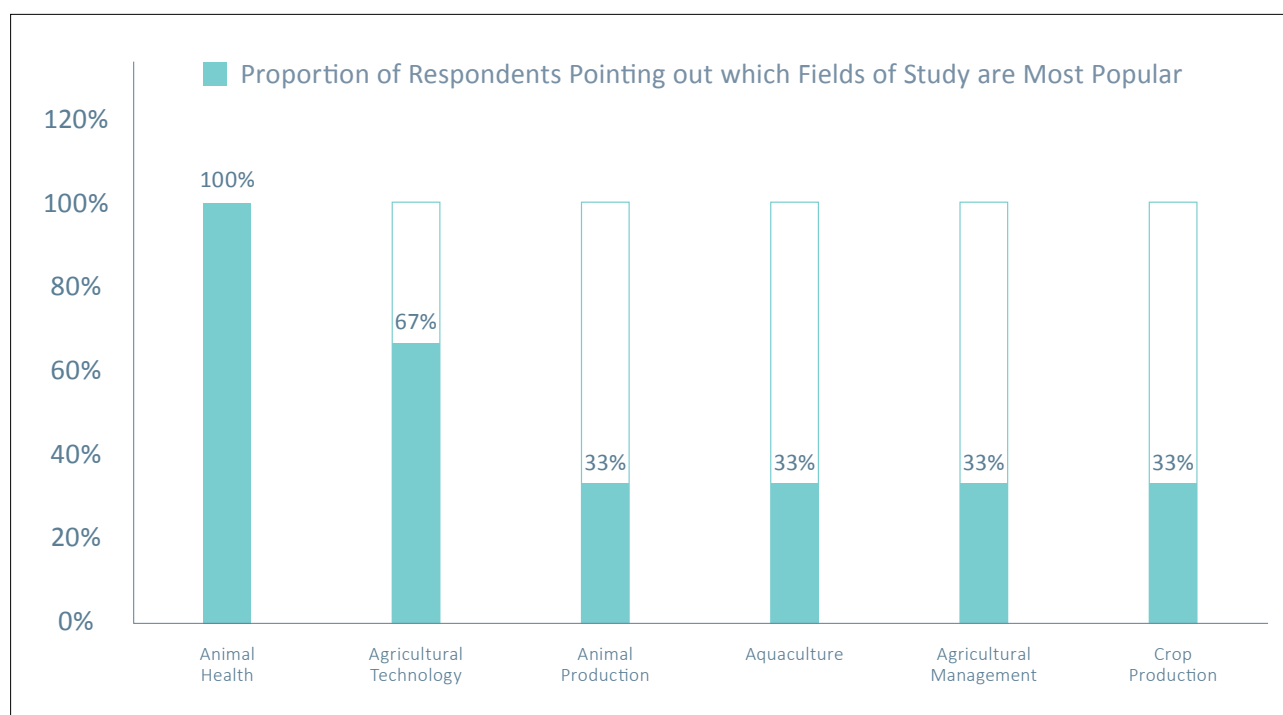
Clearly, the fields of animal health and agricultural technology are most popular among students. However, other courses in animal production, aquaculture, agricultural management, and crop production were also somewhat popular among students. The respondents stated that:
· Courses in animal sciences and aquaculture specifically were in high demand in the labour market.
  This relates to better pay for individuals with these qualifications.
· The courses in question also aided individuals to employ themselves- a viable option for the youth in Nigeria.
· The value chain associated with the intake from these courses was well developed, ensuring at least some
 form of formal employment.

The development of these curricula is dependent on:
1. Technology trends, which dictate which courses need to be offered and which courses should be marketed
   more aggressively
2. Government mandates, and
3. Private sector necessity.

Therefore, it is likely that studies in these areas (especially animal production, animal health and aquaculture) will yield higher potential employability in Nigeria than other studies. This is especially true, as The United Nations Industrial Development Organization (2017) points out, and will be most effective when the skills base in these areas is augmented to utilise cutting edge technology.

On the other hand, courses in the following spaces were severely undersubscribed:

Figure 9: Proportion of Respondents Stating Undersubscribed Study Choices in TVET Institutions in Nigeria
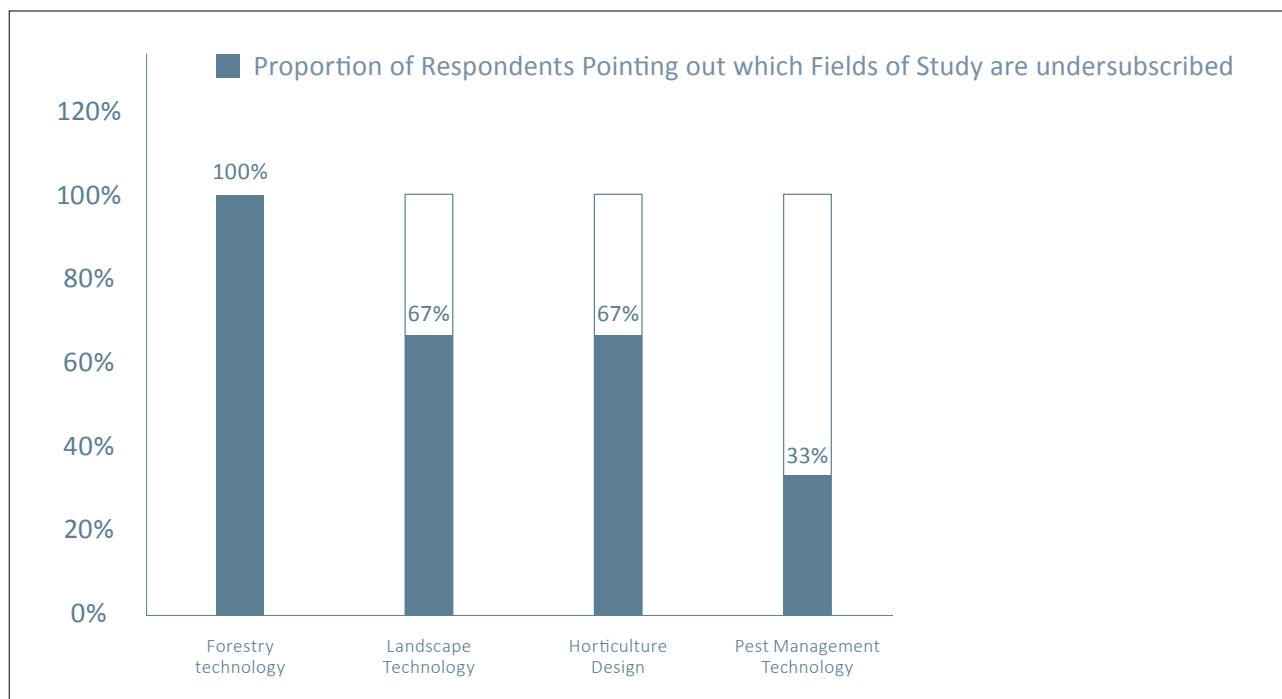
Source: Analysis of Survey Data Collected by DNA Economics

These courses are apparently undersubscribed because, according to one respondent, obtaining qualifications in the field of forestry, landscape, horticulture, and pest management showed restricted employment and livelihood opportunities.

It is courses in these areas which the respondents alluded to as not being in high demand by the industry, which might not warrant that much focus from a SIFA perspective.

From the perspective of construction, an extremely interesting response to the survey stated that:

> All qualifications in construction have great potential for high intake due to the value chain in the construction industry. In a single building project, not less than ten jobs will be created

While this implies that any intervention in the construction space will prove valuable, the survey also pointed out that the following artisanal skills tended to be most critical:
· Welding,
· Fabrication,
· Plumbing,
· Pipe-fitting,
· Building finishing (flooring, tiling, and roofing) and
· Masonry.

While not a representative sample of individuals, these artisanal skills (especially in residential construction) are also identified as being in extremely high demand according to both The United Nations Industrial Development Organization (2017) and more recently Olusola (2019). Because the government is a key employer in the construction space, and will continue to act as a key driver of infrastructure development in Nigeria, it is also likely that professionally skilled individuals in draughting and technical drawing will also need to be developed in the country given their current shortage.

However, respondents to the survey in the private sector aired concerns about artisinal qualifications in Nigeria from the TVET perspective. Specifically, it was felt that TVET education in Nigeria pertaining to construction work was far too theoretical for individuals to be absorbed into the labour market before being reskilled by the private sector. This is made evident by the construction sector in Nigeria currently hiring foreign workers, implying that the supply of domestic skills is not sufficient to meet the demands of employers[10].

Therefore, any intervention in the construction space should also attempt to, at least, make studies more practical. In the best-case scenario, because the private sector has a keen understanding of the skills mismatches in the construction space, it would also be advisable to link TVET graduates to private sector companies to provide learnerships in artisinal trades, draughting or technical drawing.

Finally, only two respondents stated that the institution that she/he worked for offered any form of training in the wholesale and retail space. This individual stated that the most popular courses offered in the wholesale and retail space dealt with aspects of E-Commerce, entrepreneurship, and customer relations training.

None of the literature reviewed indicates that there is a shortage of soft skills in customer relations or entrepreneurship. In fact, these studies are enablers that assist an individual to land a job in various sub-sectors above and beyond wholesale or retail. Instead, it is clear that Nigeria- being one of the largest economies in the world, and the largest in Africa- has clear opportunities in the E-Commerce space. This is especially true given the country's transition to a cashless economy[11].

Considering that the country is moving rapidly towards the fourth industrial revolution, up-and-coming skills are required in the space and relate to:
· The development of applications in the e-commerce space,
· The logistical oversight of e-commerce purchases, and
· The sale of raw and processed agricultural products through mobile applications.

This provides a wide berth of skills initiatives which could be aimed at developing software or applications (very appealing to the youth), creating skills in logistical management, or simply bolstering agricultural production. Beyond this, though, it is clear that, with more and more competitors in the e-commerce industry in Nigeria, marketing and market analysis skills (which directly relate to the wholesale and retail sub-sector) are also expected to be in high demand in the foreseeable future.

8 Labour demand and Labour supply conclusions

The Nigerian economy is a mix of informal and formal, skilled and unskilled, self-employed and privately employed labour. This makes it extremely difficult to create an intervention that is able to uplift the labour market in its entirety.

However, the forecast analysis (which really looks at understanding whether there will be any demand for labour in the coming years based on quantitative findings at a sector level) suggests that 3 sub-sectors can be prioritized in Nigeria as showing strong signs of labour demand.

First and foremost, due to the vast size of the sub-sector and the amount of people which it employs and self-employs, it is likely that prioritizing the agriculture sector in Nigeria will be extremely valuable going forward. Not only can these skills be home-grown (as there is currently very little evidence that skills or knowledge gaps in Nigeria relate to the agriculture sector) through various training programmes, but also, the agriculture sector is able to absorb workers with varying degrees of skills. Specifically, a handful of focal areas might prove useful for a skills intervention:

· Because COVID-19 is likely to have a large impact on employment for the low to moderately skilled in the economy, it is possible to reallocate some of those individuals to the agriculture sector with minimal training.
· In order for the Nigerian economy to recover relatively quickly from the ensuing financial crisis brought about by COVID-19, it is also likely that the agriculture sector will need to expand more dramatically. In order to do this, innovation is necessary, and those with high levels of skills and education who are rendered unemployed by COVID-19 should potentially be re-skilled to assist in

downstream operations on the value addition aspect of agriculture.

From the agricultural standpoint, it is clear that jobs in the following spaces provide strong employment opportunities in the country and will continue to do so in the future:
· Animal sciences
  - This is especially in the sub-areas of animal health (veterinary nursing or veterinary technologists) and animal production (animal husbandry and optimal animal feeding),
· Aquaculture,
· Agricultural management and technology, and
· Crop production

The next sector expected to have an increased demand for labour is the wholesale and retail sector. Literature suggests that soft skills like team-work, good communication, and management are all issues across the board in the country. As such, and in order to prop up the sector which will be heavily relied upon due to the impact of COVID-19, TVET interventions aimed specifically at improving communication and management might prove useful. This will likely streamline the sub-sector, and unlock efficiencies which it is currently lacking. It will also be able to assist in the expansion of the sector, which is easily able to absorb some of the underemployed low and moderately skilled workers in the country currently, as well as those low and moderately skilled workers without employment due to COVID-19.

Beyond these soft skillsets, the Nigerian Wholesale and Retail sub-sector is quickly becoming a global presence in the e-commerce space. Because of the surge in e-commerce platforms in the country, the TVET system

could be leveraged to create:

· E-commerce application developers or stress testers,

· Marketers and market analysts

· Individuals with suitable transportation and storage expertise to provide delivery services, and

· Individuals with the ability to sell raw and processed agricultural products to consumers directly (a large gap identified in the survey analysis which will assist the country in diversifying away from importing food).

Finally, the construction sub-sector has also been identified in the literature as being a sector where employer needs, and employee skills are mismatched. This is specifically true for the construction of houses. In order to leverage off of this sub-sector's relatively strong demand to employ more people past 2023/2024, it is possible to aim interventions at studying technical aspects of house-building (construction sciences, construction economics, drafting, and/or technical drawing). However, at the more technical end of the skills spectrum, it is clear that the Nigerian TVET system is producing an insufficient number of artisans. This is true in the following spaces:

· Welding,

· Fabrication,

· Plumbing,

· Pipe-fitting,

· Building finishing (flooring, tiling, and roofing) and

· Masonry.

While the government is the mainstay employer in the construction sub-sector in Nigeria, some private sector stakeholders believe that artisans in the country have insufficient practical training. This leaves room for private sector partnerships in the construction-artisan field, considering the effectiveness of "on-the-job training" and the private sector's access to cutting edge technology.

In focusing on these key sectors, and on providing training for the above-mentioned occupations, especially during the economic hardships which are expected post-COVID, a spurt in infrastructure development, agricultural production and wholesale/retail output aligns with Nigerian priority areas to pave the way for an economic recovery with moderate job losses after COVID-19, and job gains thereafter.

Appendix 1 **Validation Cliff Notes**

The following is a summary of the minutes taken during the validation meeting with stakeholders in Nigeria:

Minutes SIFA Macroeconomic and Labour Market Sector Analysis Study Validation Workshop Nigeria

Date: 22 July 2020 | Presentation: Michele Capazario (DNA Economics) | Facilitation: Erick Sile (SIFA)

Participants in attendance:

1. William Alo (Permanent Secretary, Federal Ministry of Labor and Employment)
2. Martina Nwordu (Director, Federal Ministry of Labor and Employment)
3. Aso Vakporaye (Director, Economic Growth, Ministry of Finance)
4. Chinonso Obodo (Federal Ministry of Labor and Employment)
5. Eng. Muhammad (SIFA FC)
6. Kanayo Iwuchukwu (Manufacturers Association of Nigeria)
7. Musa Joseph Bahago (Federal Ministry of Industry, Trade and Investment)
8. Nnana L. Orji (Federal Ministry Women Affairs and Social Development)
9. Tolulase Oyemomi
10. Zachaeus
11. Andre Marie Taptue (AfDB)
12. Tshapela Zipho (SIFA)
13. Andreas Meyn (GIZ)
14. Patricia Kormawa (SIFA)
15. Detlef Barth (GIZ)
16. Simon Frank (GIZ)
17. Ifeoma Okoye (NEPAD Nigeria)
18. Opeyami Alaran
19. Unami Mpofu (AUDA-NEPAD)
20. Erick Sile (SIFA)
21. Sabine Klaus (SIFA)
22. Zarina Khan (SIFA)
23. Tiego Legodi (SIFA)
24. Michele Capazario (DNA Economics)

PURPOSE

Initially planned to take place in Nigeria, this workshop was organized virtually on 22 July 2020 because of the current pandemic which makes traveling across borders impossible. To finalize the draft reports shared with stakeholders, this workshop sought to gather the following information for the finalization of the report:

1. Validation of assumptions made by Researchers;
2. The report's meaning and usefulness in relation to the National Development Plan and what is seen in the field;
3. Likeliness of the priority sectors highlighted in the report to enhance employability in a post COVID-19 environment;
4. Skills needed at country level in the identified priority sectors.

PRESENTATION

The consultant presented the methodology used to rank the sub-sectors. The projection of GDP growth and employment growth relied on economic data over the last 10 years, up to 2018. This data, obtained mostly from the National Bureau of Statistics and other international organizations such as ILO and The World Bank, went through an initial validation process at country level. The economic model utilised to rank the sub-sectors used a weighing system relying on the following indicators:

· Historical employment and GDP growth;
· Forecasted employment and GDP growth taking into account the potential impact of COVID-19;
· Employment elasticity of output;
· A sub-sector's prevalence in the literature with regards to government priorities;
· A sub-sector's susceptibility to COVID-19 as found in the literature,
· The persistence of an economic shock of the COVID-19 type at a sub-sector level (i.e., how long it takes for a sector to at least slightly recover from an economic shock), and
· Whether the sub-sector is gender-equitable by means of either:
  - An increasing trend of female employment between the historical and forecasted periods, or
  - Employing a female-majority workforce.
· According to the forecasting model, the following three sub-sectors are likely to benefit most from interventions aimed at improving labour market prospects for those entering the labour market:
1. Agriculture, Forestry and Fishing;
2. Wholesale and Retail Trade;
3. Construction

Discussions

Most participants agree with the conclusions and recommendations of the study, although unemployment data is believed to be much higher, based on what is seen and observed. However, the data used in the analysis comes from the Nigeria National Bureau of Statistics.

As Nigeria tries to diversify its economy, some participants expected mining to show as a priority sub-sector. Despite the consideration of mining as a national strategic sub-sector, it remains small in size, to attract significant number of jobs. Moreover, with oil prices shocked by COVID-19, the mining and quarrying sub-sector is at risk of further declining both in terms of employment and real GDP growth.

The potential effects of emerging issues around import restrictions and the African Continental Free Trade Area (AfCFTA) may be harmful to the wholesale and retail sub-sector, which traditionally relies on imported products and goods. However, the synergy with a growing manufacturing sub-sector would result in more employment in the wholesale and retail sector. Also, the increasing importance of manufacturing might lead to import substitution as well.

The report noted that despite an estimated 6.4 million Nigerians completing TVET by 2017, unemployment remains high for graduates of TVETs. The reason might be inadequacy between the training delivered in TVETs and the needs of the employers. In general, TVET training is theoretical. There should be increased efforts to match training with practice, through apprenticeship, internship, and work-based learning.

Way forward

1. NEPAD Nigeria got the report late and will provide detailed feedback on the document at a later stage. This input will be used to finalize the report;
2. To strengthen the supply side information, a sub-sector deep dive is envisaged to provide specific skills needed to match the needs of the industry;
3. A workshop on employment elasticities will be organized to meet a specific request from the Federal Ministry of Labour and Employment;

The report will be updated with supply-side information, along with other potential sectoral analysis shared by experts.

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