Fitch Solutions

Q3 2019

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Nigeria

Pharmaceuticals & Healthcare Report

Includes 10-year forecasts to 2028

Contents

Key View

Key View: *In Sub-Saharan Africa, Nigeria will continue to be one of the more attractive markets for drugmakers despite it's elevated risk profile. Long-term opportunities are supported by robust fundamentals such as a large market size and expanding population. The implementation of governmental initiatives aim to drive growth in the sector over the coming years.*

Headline Expenditure Forecast

- **Pharmaceuticals:** NGN203.1bn (USD666mn) in 2018 to NGN223.6bn (USD727mn) in 2019; +10.1% in local currency terms and +8.6% in US dollar terms. *Forecast revised downyards from last quarter.*
- **Healthcare:** NGN4.66trn (USD15.3bn) in 2018 to NGN4.90trn (USD16.1bn) in 2019; +5.2% in local currency terms and +7.7% in US dollar terms. *Forecast revised downwards from last quarter.*

HEADLINE PHARMACEUTICALS & HEALTHCARE FORECASTS (NIGERIA 2017-2023)

Indicator	2017	2018	2019f	2020f	2021f	2022f	2023f
Pharmaceutical sales, USDbn	0.636	0.666	0.727	0.720	0.708	0.708	0.715
Pharmaceutical sales, % of GDP	0.17	0.15	0.15	0.13	0.12	0.11	0.11
Pharmaceutical sales, % of health expenditure	4.5	4.4	4.4	4.2	4.0	3.9	3.9
Health spending, USDbn	14.058	15.294	16.479	17.173	17.499	17.965	18.558

f = Fitch Solutions forecast. Source: World Health Organization (WHO), National Sources, Fitch Solutions

Latest Updates

- In May 2019, the Pharmaceutical Manufacturers Group of the Manufacturers Association of Nigeria (PMG-MAN) set forth a plan of strategic collaborations with local and international partners to reverse the trend of 70%:30% ratio of medicine importation against local manufacturing.
- In April 2019, the Pharmaceutical Society of Nigeria, PSN, called on the federal government to build pharmaceutical production plants in the country in an effort to attract innovation and produce more competition.
- In March 2019, Nigeria's polling agency, NOI Polls, in partnership with Nigerian Health Watch, published the results of a survey showing that 88% of the country's doctors are seeking job opportunities outside the country.
- In March 2019, it was revealed that none of the eight radiotherapy machines meant to treat over 100,000 cancer patients yearly in the country was functional, highlighting the issues facing the country's healthcare sector.

Risk/Reward Index

Nigeria's low per capita pharmaceutical expenditure limits the opportunities for innovative drugmakers, reflected in its score of 22.7 in our Innovative Pharmaceuticals Risk/Reward index. While the country's overall market size is significant, operational and political risks are elevated, dissuading foreign investment, while the regulatory environment is also highly challenging with a lack of patent respect.

Economic View

The proposed 2019 budget targets a reduction in the fiscal deficit to 1.3% of GDP, but this is unlikely to be attained. Although state oil revenues will be boosted by the start-up of key fields, the projected increase in oil revenues seems likely to be overly ambitious. Meanwhile rising current expenditure will drive the fiscal deficit to widen over the coming years.

Inflationary pressures will increase in 2019 on the back of continued high food prices and increased demand-side pressures, fuelled

by the planned 67.0% increase in the national minimum wage and a 50 basis point (bps) reduction in interest rates by the Central Bank of Nigeria (CBN) in March. However, the authorities will remain keen to bolster still muted economic growth and job creation, and we expect the CBN to maintain a neutral policy stance over the rest of 2019, before implementing another modest rate cut in 2020.

Political View

The victory of incumbent Muhammudu Buhari in February 2019 elections suggests little scope for structural reform in the years ahead, weighing on the economy's long-term growth prospects.

Buhari's economic campaign pledges focus on employment and infrastructural work, with the government slated to play the key role, underscoring his broadly statist mindset. There is little to suggest that the president will enact the reforms that would facilitate a substantial rise in foreign direct investment. Moreover, multiple security challenges are likely to act as further headwinds to reform.

SWOT

SWOT Analysis	
Strengths	• Nigeria is one of Africa's largest economies and possesses considerable oil reserves. • One of the more developed African-Anglophone pharmaceutical markets.
Weaknesses	• The pharmaceutical market remains vastly underdeveloped by Western standards. • Lack of meaningful patent legislation or pricing and reimbursement system.
Opportunities	• Import restrictions on certain drug items are encouraging the capacity utilisation of local drug manufacturers. • The government's focus on self-sufficiency in the pharmaceutical sector will benefit local drugmakers.
Threats	• The threat of further currency depreciation creates uncertainty for local drugmakers' ability to increase output and remain profitable without raising drug prices. • Slow uptake of health insurance schemes and a lack of government funds threatens long-term sustainability.

Industry Forecast

Pharmaceutical Market Forecast

Key View: *Nigeria's pharmaceutical sector presents an attractive long-term market for multinational investment, yet the near-term opportunities are marred by elevated operational risk and weak underlying foundations that restrict medicine sales. The sector is in dire need of further government support, with domestic drugmaker performance only likely to improve in line with a greater political will to develop the sector and secure medicine sustainability.*

Latest Updates

- In May 2019, the Pharmaceutical Manufacturers Group of the Manufacturers Association of Nigeria (PMG-MAN) set forth a plan of strategic collaborations with local and international partners to reverse the trend of 70%:30% ratio of medicine importation against local manufacturing.
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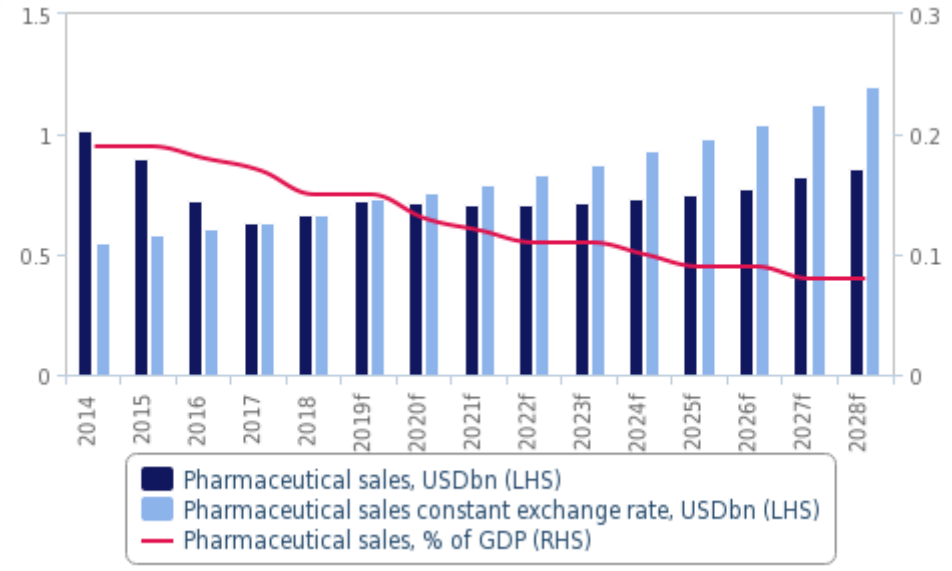
Pharmaceutical Market Forecast
2014-2028



f = Fitch Solutions forecast. Source: United Nations Comtrade Database DESA/UNSD, local news sources, domestic companies, Fitch Solutions

Structural Trends

In 2018, we estimate that Nigeria's pharmaceutical market reached NGN203.1bn (USD666mn). We forecast total medicines consumption to increase by 10.1% in 2019 in local currency terms, yielding a market size of NGN213.0bn (USD698mn). In 2023, we calculate Nigeria's pharmaceutical market to be worth NGN223.6bn (USD727mn), posting a five-year compound annual growth rate (CAGR) of 5.7% in local currency terms and 1.4% in US dollar terms. Over the extended 2018-2028 period, we calculate the market that will experience CAGRs of 6.1% and 2.5% in local currency and US dollar terms respectively, reaching NGN366.4bn (USD855mn). By this time, medicine spending will account for just 3.7% of health expenditure, down from 4.4% in 2018.

As is the case with a number of sectors in the Nigerian economy, the slow progress of enacting progressive reforms will continue to

weigh on the country's economic development, diversification efforts and self-sufficiency targets in the pharmaceutical sector. Posing upside risk is the expected significant increase in oil revenues over the coming years. In an environment of gradually rising oil prices, our Country Risk team is anticipating a cyclical upswing in the Nigerian economy, which will, in turn, boost the government's ability to support local industries over the long term. Local drugmakers will also be supported by the WHO, whose efforts to help more local drugmakers reach prequalification, will boost their competitiveness with foreign generic drugmakers.

We expect that local drugmakers will only realise the benefits of government intervention over the long term as the volatility of the macroeconomic environment provides an inherent risk to their financial support for the domestic industry. Moreover, although we expect Nigeria's economy will post a modest recovery over our short-term outlook, this does not necessarily translate into an immediate pickup for the pharmaceutical sector. While stronger oil production will increase foreign oil revenue, the government's ability to significantly support local drugmakers will only materialise over a longer timeframe. In addition to this, the uncertain situation surrounding Nigeria's currency and tariff controls for medicines will be a recurring theme for domestic drugmakers, which poses downside risk to their self-sufficiency goals over the coming years.

PHARMACEUTICAL SALES, HISTORICAL DATA AND FORECASTS (NIGERIA 2015-2023)

Indicator	2015	2016	2017	2018	2019f	2020f	2021f	2022f	2023f
Pharmaceutical sales, USDbn	0.904	0.722	0.636	0.666	0.727	0.720	0.708	0.708	0.715
Pharmaceutical sales, USDbn, % y-o-y	-11.10	-20.15	-11.87	4.67	9.25	-0.99	-1.63	-0.10	1.01
Pharmaceutical sales, NGNbn	178.729	185.742	193.989	203.054	223.636	230.415	240.816	253.303	267.299
Pharmaceutical sales, NGNbn, % y-o-y	6.45	3.92	4.44	4.67	10.14	3.03	4.51	5.19	5.53
Pharmaceutical sales constant exchange rate, USDbn	0.586	0.609	0.636	0.666	0.733	0.755	0.789	0.830	0.876
Pharmaceutical sales, USD per capita	5.0	3.9	3.3	3.4	3.6	3.5	3.3	3.3	3.2
Pharmaceutical sales, % of GDP	0.19	0.18	0.17	0.15	0.15	0.13	0.12	0.11	0.11
Pharmaceutical sales, % of health expenditure	5.1	4.7	4.5	4.4	4.4	4.2	4.0	3.9	3.9

f = Fitch Solutions forecast. Source: United Nations Comtrade Database DESA/UNSD, local news sources, domestic companies, Fitch Solutions

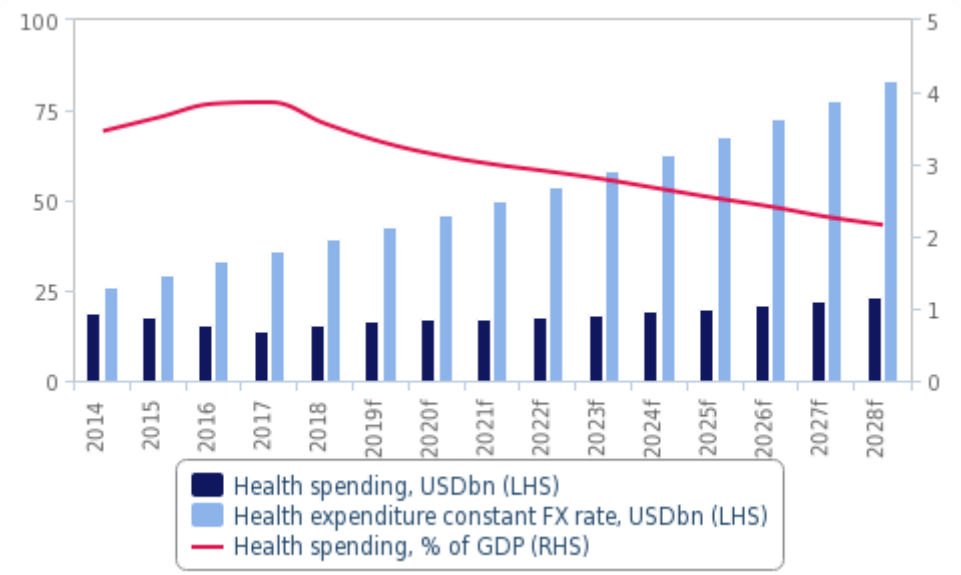
Healthcare Market Forecast

Key View: *Nigeria's healthcare market will remain large and underfunded. Opportunities for foreign drugmakers will continue to be stimulated by the size and wealth of the market, however, the lack of suitable infrastructure and support for the rural communities will ensure health-related outcomes remain severely limited.*

Latest Updates

- In May 2019, the Pharmaceutical Manufacturers Group of the Manufacturers Association of Nigeria (PMG-MAN) set forth a plan of strategic collaborations with local and international partners to reverse the trend of 70%:30% ratio of medicine importation against local manufacturing.
- In April 2019, the Pharmaceutical Society of Nigeria, PSN, called on the federal government to build pharmaceutical production plants in the country in an effort to attract innovation and produce more competition.

Healthcare Expenditure Forecast
2014-2028



f = Fitch Solutions' forecast. Source: World Health Organization (WHO), Fitch Solutions

Structural Trends

Healthcare spending in Nigeria reached a value of NGN4.67trn (USD15.3bn) or 3.6% of GDP in 2018. We forecast 2019 growth of 8.6% in local currency and US dollar terms to yield a market size of NGN5.00trn (USD16.5bn). We calculate per capita average expenditure on healthcare in 2018 at just USD78 per person. By 2023, we calculate that healthcare spending will reach NGN9.9trn (USD23.3bn), equating to a compound annual growth rate (CAGR) of 8.3% and 3.9% in local currency terms and in US dollar terms respectively. Over the extended period, health expenditure is estimated to grow by a local currency CAGR of 7.8% (4.2% in US dollar terms), reaching NGN9.9trn (USD23.1bn) by 2028.

We predict that due to the stratification of wealth, partly because of corruption among civil servants, Nigerian healthcare spending as a percentage of GDP will fall over the forecast period - especially given the slow uptake of the National Health Insurance Scheme (NHIS) in the private sector, and particularly if workers believe their contributions are being misused by civil servants. We forecast that the government share of the overall market size will continue to increase over the long term. Our forecast sees public healthcare spending as a percentage of total healthcare expenditure increasing from 23.5% in 2018 to 27.9% by 2028. This will

translate into a local currency CAGR of 9.7%, above of that expected for private expenditure (+7.3%).

Failure To Meet Targets.

The country's proposed national budget for 2018 includes a NGN340.5bn (USD945.7mn) allocation for the healthcare sector. Within this, NGN269.3bn (USD748.1mn) has been earmarked for recurrent expenditure and NGN71.1bn (USD197.5mn) for capital expenditure. This equates to about 3.9% of the overall spending allocation, budgeted at NGN8.6trn (USD23.9bn) - up 16% from 2017 at NGN7.4trn (USD20.5bn). While this corresponds to a slightly greater health budget than 2017 in value terms, the budgeted allocation corresponds to a smaller contribution than 2017 in percentage terms (4.2%). Moreover, the pace of budgeted expenditure for the healthcare sector has been relatively weak compared to Nigeria's national budget itself. Nigeria's 2018 national budget has increased by nearly 92% since 2015, yet the healthcare budget has grown by a notably smaller 31%.

Despite this expenditure growth, it is unlikely to correlate to an improvement in healthcare-related outcomes for the Nigerian population. As such, Nigeria is ranked 187th out of 191 countries in terms of healthcare delivery, according to the WHO. The organisation reports that around one-third of more than 700 health facilities have been demolished in the country and 3.7mn people are in need of health assistance. The combination of underfunding, low per capita healthcare expenditure and a highly corrupt business environment will continue to challenge healthcare delivery in Nigeria.

HEALTHCARE EXPENDITURE TRENDS, HISTORICAL DATA AND FORECASTS (NIGERIA 2015-2023)

Indicator	2015	2016	2017	2018	2019f	2020f	2021f	2022f	2023f
Health spending, USDbn	17.562	15.289	14.058	15.294	16.479	17.173	17.499	17.965	18.558
Health spending, USDbn, % y-o-y	-7.07	-12.95	-8.05	8.79	7.75	4.21	1.90	2.66	3.30
Health spending, NGNbn	3,473.514	3,935.358	4,288.110	4,665.144	5,067.287	5,495.282	5,949.798	6,431.434	6,940.743
Health spending, NGNbn, % y-o-y	11.28	13.30	8.96	8.79	8.62	8.45	8.27	8.10	7.92
Health expenditure constant FX rate, USDbn	29.193	33.074	36.039	39.207	42.587	46.184	50.004	54.052	58.332
Health spending, USD per capita	96.9	82.2	73.6	78.1	82.0	83.3	82.8	82.8	83.5
Health spending, % of GDP	3.65	3.84	3.86	3.56	3.31	3.13	3.00	2.90	2.79

f = Fitch Solutions' forecast. Source: World Health Organization (WHO), Fitch Solutions

GOVERNMENT HEALTHCARE EXPENDITURE TRENDS, HISTORICAL DATA AND FORECASTS (NIGERIA 2015-2023)

Indicator	2015	2016	2017	2018	2019f	2020f	2021f	2022f	2023f
Govt. health spend, USDbn	3.692	3.042	2.908	3.279	3.650	3.917	4.097	4.303	4.531
Govt. health spend, USDbn, % y-o-y	-16.45	-17.60	-4.42	12.75	11.32	7.32	4.59	5.02	5.31
Govt. health spend, NGNbn	730.232	783.134	887.058	1,000.186	1,122.425	1,253.515	1,393.020	1,540.328	1,694.656
Govt. health spend, NGNbn, % y-o-y	0.05	7.24	13.27	12.75	12.22	11.68	11.13	10.57	10.02
Govt. health spend, % total health spend	21.02	19.90	20.69	21.44	22.15	22.81	23.41	23.95	24.42

f = Fitch Solutions' forecast. Source: World Health Organization (WHO), Fitch Solutions

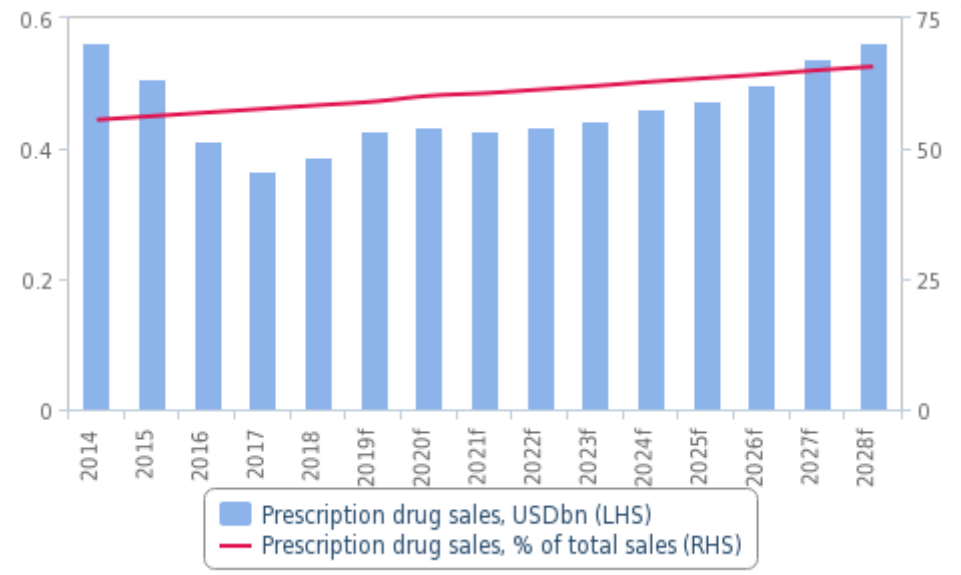
PRIVATE HEALTHCARE EXPENDITURE TRENDS, HISTORICAL DATA AND FORECASTS (NIGERIA 2015-2023)									
Indicator	**2015**	**2016**	**2017**	**2018**	**2019f**	**2020f**	**2021f**	**2022f**	**2023f**
Private health spend, USDbn	13.870	12.246	11.150	12.015	12.829	13.256	13.402	13.662	14.027
Private health spend, USDbn, % y-o-y	-4.21	-11.71	-8.95	7.76	6.77	3.33	1.11	1.94	2.67
Private health spend, NGNbn	2,743.281	3,152.224	3,401.052	3,664.958	3,944.861	4,241.767	4,556.778	4,891.107	5,246.087
Private health spend, NGNbn, % y-o-y	14.70	14.91	7.89	7.76	7.64	7.53	7.43	7.34	7.26
Private health spend, % total health expenditure	78.98	80.10	79.31	78.56	77.85	77.19	76.59	76.05	75.58

f = Fitch Solutions' forecast. Source: World Health Organization (WHO), Fitch Solutions

Prescription Drug Market Forecast

Key View: *Prescription drug spending in Nigeria will be supported by the rising dominance of chronic conditions and the involvement of foreign drugmakers in the nation's pharmaceutical industry. While the continued expansion of universal healthcare in the country bodes well for prescription spending, expenditure is inhibited by low GDP per capita and an abundance of counterfeit drugs in circulation.*

Prescription Drug Market Forecast
2014-2028



f = Fitch Solutions forecast. Source: United Nations Comtrade Database DESA/UNSD, local news sources, domestic companies, Fitch Solutions

Structural Trends

We calculate Nigeria's prescription drug market to be valued at NGN118.4bn (USD388mn) in 2018. In 2019, the sector is forecast to grow by 11.4% in local currency and 10.5% in US dollar terms to NGN131.9bn (USD429mn). We expect the sector to post a five-year compound annual growth rate (CAGR) of 7.0% in local currency terms (2.7% US dollar terms) to yield a market value of NGN165.8bn (USD443mn) in 2023. Over the 10-year period, we expect the prescription drug sector to achieve a local currency CAGR of 7.4% (3.8% US dollar terms), with the segment's value reaching NGN240.6bn (USD562mn) by 2028. We forecast prescription drug spending to represent a larger proportion of overall spending over the next decade, increasing from 58.3% in 2018 to 65.7% by 2028, as the country's chronic disease burden rises and there is a swifter uptake of generic medicines.

Owing to counterfeiting and the poor regulations within pharmacies, prescription drugs can be sold without a prescription, which undermines the real value of the drug market. Improvements in this area are expected over the longer term, boosted by the National Health Insurance Scheme (NHIS) and gradual improvement of the regulatory, drug distribution and retail environments, as well as efforts by the National Agency for Food and Drug Administration and Control (NAFDAC) to combat the trade.

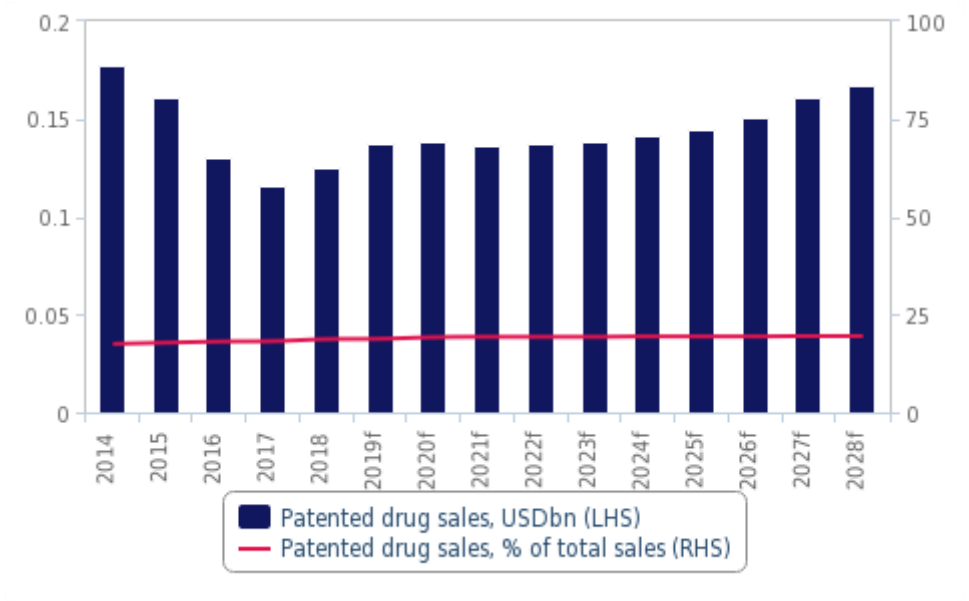
PRESCRIPTION DRUG MARKET INDICATORS, HISTORICAL DATA AND FORECASTS (NIGERIA 2015-2023)									
Indicator	**2015**	**2016**	**2017**	**2018**	**2019f**	**2020f**	**2021f**	**2022f**	**2023f**
Prescription drug sales, USDbn	0.508	0.411	0.366	0.388	0.429	0.433	0.429	0.434	0.443
Prescription drug sales, USDbn, % y-o-y	-9.94	-19.13	-10.78	5.93	10.53	0.86	-0.86	1.10	2.21
Prescription drug sales, NGNbn	100.452	105.720	111.778	118.408	131.936	138.479	145.862	155.275	165.805
Prescription drug sales, NGNbn, % y-o-y	7.84	5.24	5.73	5.93	11.43	4.96	5.33	6.45	6.78
Prescription drug sales, % of total sales	56.2	56.9	57.6	58.3	59.0	60.1	60.6	61.3	62.0

f = Fitch Solutions forecast. Source: United Nations Comtrade Database DESA/UNSD, local news sources, domestic companies, Fitch Solutions

Patented Drug Market Forecast

Key View: *Nigeria has strong commercial potential for the launch of patented medicines in urban city centres. A rapidly increasing chronic disease burden and relative level of economic development bode well for the market's growth potential. Nevertheless, it remains a highly challenging market for firms to operate in and commercial opportunities are limited as weak patent enforcement and generic substitution remain prominent themes.*

Patented Drug Market Forecast
2014-2028



f = Fitch Solutions forecast. Source: United Nations Comtrade Database DESA/UNSD, local news sources, domestic companies, Fitch Solutions

Structural Trends

We estimate that patented drugs sales reached a value of NGN38.0bn (USD125mn) in 2018, representing 32.1% of prescription sales. The sub-sector is expected to grow in local currency terms by 10.6% in 2019, reaching NGN42.0bn (USD137mn). Over the next five years, we calculate that patented medicines consumption will reach a value of NGN51.7bn (USD138mn) by 2023, equating to a compound annual growth rate (CAGR) of 6.3% in local currency terms and 2.1% in US dollar terms. By 2028, we expect the sector to reach a value of NGN71.4bn (USD167mn), equating to local and US dollar CAGRs of 6.5% and 2.9% respectively.

Growth will be driven by the wealthy, urban class occupying cities. Also, the new trend towards heavy discounting for leading patented drugs should increase volume sales, which will ultimately boost market value. The main hindrance to growth in spending levels on patented drugs is that the government has been slow to roll out the national health insurance scheme. Therefore, a doctor's consultation is still largely unaffordable for many people. While we mentioned previously that prescription drugs can be purchased without a prescription (whether genuine or counterfeit), it is more likely that patients will opt for the cheapest possible option. Conversely, it is in pharmacists' interests to recommend the patented version, leaving growth in this segment limited until proper regulatory standards can be enforced.

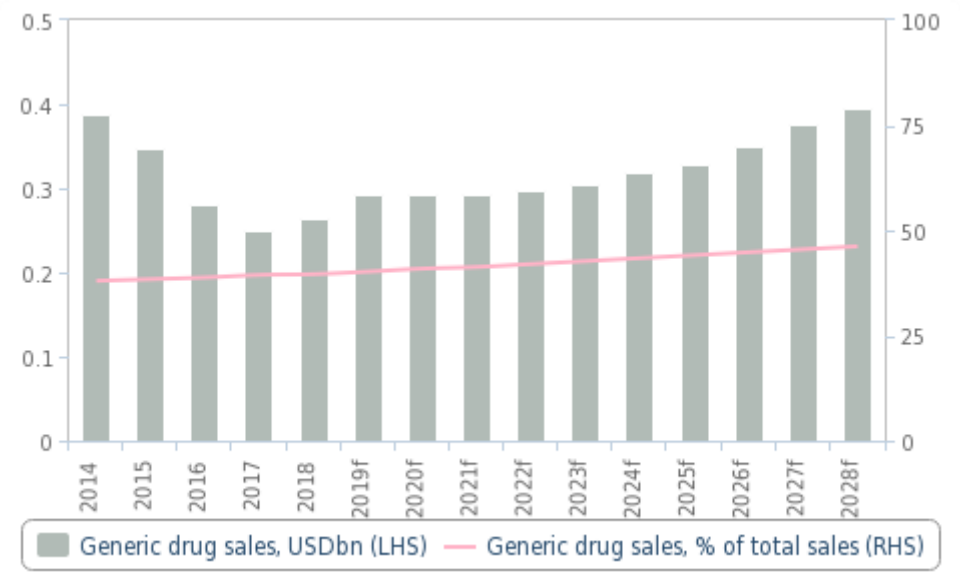
PATENTED DRUG MARKET INDICATORS, HISTORICAL DATA AND FORECASTS (NIGERIA 2015-2023)									
Indicator	**2015**	**2016**	**2017**	**2018**	**2019f**	**2020f**	**2021f**	**2022f**	**2023f**
Patented drug sales, USDbn	0.161	0.130	0.116	0.125	0.137	0.138	0.136	0.137	0.138
Patented drug sales, USDbn, % y-o-y	-9.22	-19.04	-11.27	7.66	9.73	1.13	-1.28	0.05	1.17
Patented drug sales, NGNbn	31.857	33.567	35.295	37.998	42.035	44.240	46.405	48.888	51.669
Patented drug sales, NGNbn, % y-o-y	8.70	5.37	5.15	7.66	10.62	5.25	4.90	5.35	5.69
Patented drug sales, % of prescription sales	31.7	31.8	31.6	32.1	31.9	31.9	31.8	31.5	31.2
Patented drug sales, % of total sales	17.8	18.1	18.2	18.7	18.8	19.2	19.3	19.3	19.3

f = Fitch Solutions forecast. Source: United Nations Comtrade Database DESA/UNSD, local news sources, domestic companies, Fitch Solutions

Generic Drug Market Forecast

Key View: *Generic medicines will gradually gain a larger market share in Nigeria over the long term. Market growth will be driven by increased government spending directed towards locally produced non-patented drugs, together with the challenge of finding a cost-minimising solution to combat the country's rising chronic disease burden.*

Generic Drug Market Forecast
(2014-2028)



f = Fitch Solutions forecast. Source: United Nations Comtrade Database DESA/UNSD, local news sources, domestic companies, Fitch Solutions

Structural Trends

We calculate generic drug sales at NGN80.4bn (USD264mn) in 2018, accounting for 67.9% of prescription sales and 39.6% of the total market. In 2019, we expect the sub-sector to grow by 11.8% in local currency terms and 10.9% in US dollar terms. By 2023, we estimate that the market will be worth NGN114.4bn (USD305mn), experiencing a five-year compound annual growth rate (CAGR) of 7.3% and 3.0% in local currency and US dollar terms respectively. Over the 10-year period, growth in generic drug spending is expected to increase to a local currency CAGR of 7.7% (3.4% in US dollar terms), reaching a value of NGN169.3bn (USD395mn). By this time, generic medicines will represent 70.3% of prescription sales and 46.2% of the total market.

The generic sub-sector in Nigeria will continue to grow over our multi-year forecast period, driven by increased government spending directed towards non-patented drugs produced locally, and by efforts to combat the country's rising non-communicable disease burden while keeping costs low.

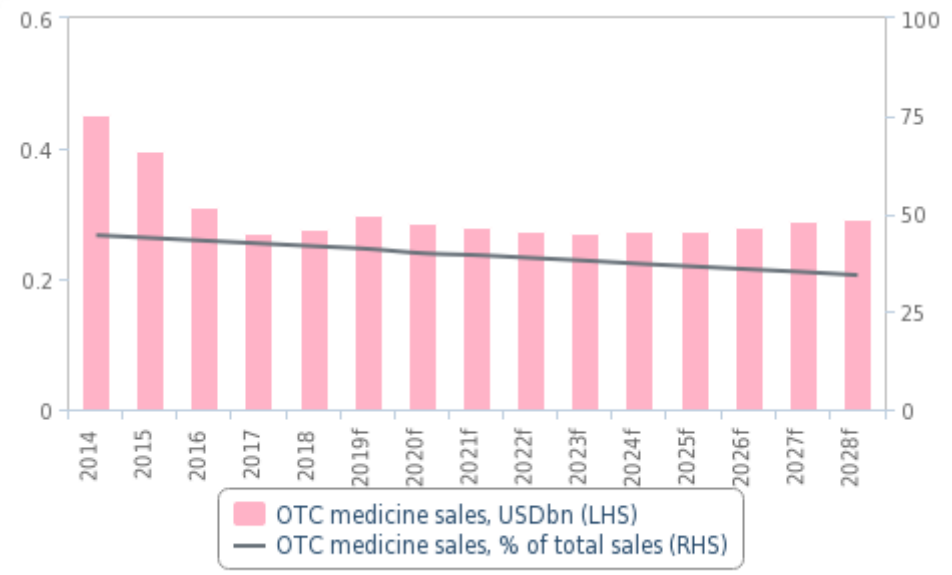
GENERIC DRUG MARKET INDICATORS, HISTORICAL DATA AND FORECASTS (NIGERIA 2015-2023)									
Indicator	**2015**	**2016**	**2017**	**2018**	**2019f**	**2020f**	**2021f**	**2022f**	**2023f**
Generic drug sales, USDbn	0.347	0.280	0.251	0.264	0.292	0.294	0.293	0.297	0.305
Generic drug sales, USDbn, % y-o-y	-10.27	-19.18	-10.55	5.13	10.91	0.73	-0.67	1.59	2.69
Generic drug sales, NGNbn	68.596	72.152	76.483	80.410	89.902	94.240	99.457	106.387	114.137
Generic drug sales, NGNbn, % y-o-y	7.44	5.19	6.00	5.13	11.80	4.83	5.54	6.97	7.28
Generic drug sales, % of prescription sales	68.3	68.2	68.4	67.9	68.1	68.1	68.2	68.5	68.8
Generic drug sales, % of total sales	38.4	38.8	39.4	39.6	40.2	40.9	41.3	42.0	42.7

f = Fitch Solutions forecast. Source: United Nations Comtrade Database DESA/UNSD, local news sources, domestic companies, Fitch Solutions

OTC Medicine Market Forecast

***Key View**: Key factors driving Nigeria's OTC sector include greater health awareness and willingness to self-medicate. While the government has imposed regulatory bias against imported pharmaceuticals, some foreign firms stand to benefit from having a manufacturing presence in Nigeria. That said, the influx of generic drugs and the country's rising chronic disease burden will see the OTC sector's share of the overall market fall over the long term.*

OTC Medicine Market Forecast
2014-2028



f = Fitch Solutions forecast. Source: United Nations Comtrade Database DESA/UNSD, local news sources, domestic companies, Fitch Solutions

Structural Trends

Total consumption of over-the-counter (OTC) medicines was calculated at NGN84.7bn (USD278mn) in 2018, accounting for 41.7% of the total value of the market. In 2019, we expect the segment to grow by 8.3% in local currency and and 7.5% in US dollar terms, reaching NGN91.7bn (USD298mn). By 2023, we forecast that the OTC medicines market will be worth NGN101.5bn (USD271mn), experiencing a five-year compound annual growth rate (CAGR) of 3.7% in local currency terms and -0.4% in US dollar terms.

Over the extended period, growth in OTC medicines consumption will improve slightly with a 10-year CAGR of 4.0% in local currency terms and 0.6% in US dollar terms, yielding a total market value of NGN126bn (USD293mn) by 2028. We believe that in light of the country's increasing burden of chronic diseases, an influx of Indian generic drugmakers and the implementation of the National Health Insurance Scheme, spending on OTC medicines will become a smaller proportion of overall spending, decreasing to 34.3% by the end of our forecast period.

Currently, the high percentage and strong growth rate of the OTC market are indicative of the regulatory issues in Nigeria's healthcare industry. Patients preferentially self-medicate, with the most popular OTC drugs being analgesics. Multinational drugmakers have undertaken marketing campaigns to raise the profile of their OTC drug, with some success. Due to their popularity, OTCs are also a key target for counterfeiting and, therefore, we believe the true value of this market is potentially much higher. In addition, due to the high cost of medical treatment, many people use these products as a way of preventing illness. The ageing population in the country also has an impact, as well as the increase in advertising by OTC healthcare companies and the growing health awareness among consumers.

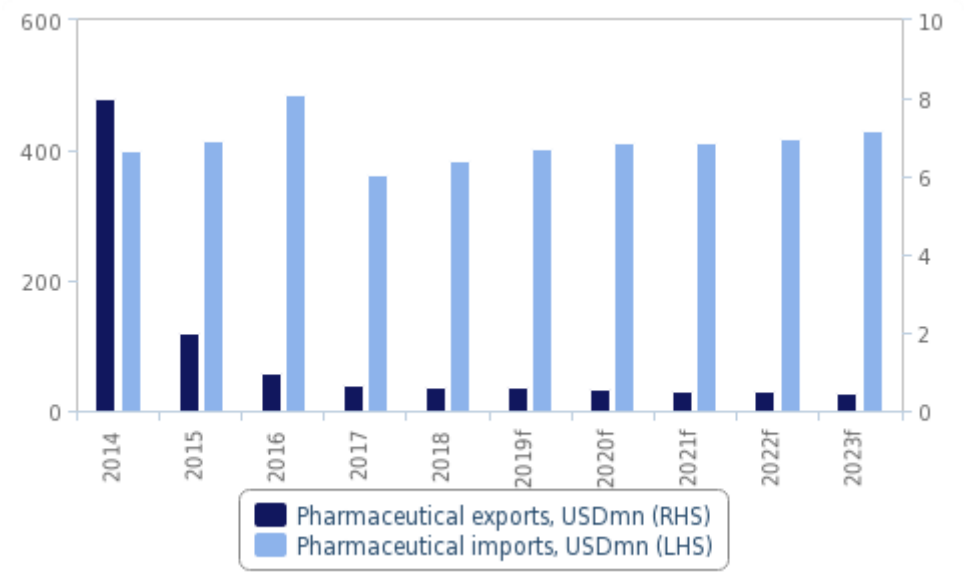
OVER-THE-COUNTER (OTC) MEDICINE MARKET INDICATORS, HISTORICAL DATA AND FORECASTS (NIGERIA 2015-2023)									
Indicator	**2015**	**2016**	**2017**	**2018**	**2019f**	**2020f**	**2021f**	**2022f**	**2023f**
OTC medicine sales, USDbn	0.396	0.311	0.270	0.278	0.298	0.287	0.279	0.274	0.271
OTC medicine sales, USDbn, % y-o-y	-12.55	-21.45	-13.31	2.96	7.46	-3.66	-2.79	-1.95	-0.89
OTC medicine sales, NGNbn	78.277	80.022	82.211	84.647	91.700	91.936	94.954	98.028	101.493
OTC medicine sales, NGNbn, % y-o-y	4.72	2.23	2.74	2.96	8.33	0.26	3.28	3.24	3.53
Over-the-counter (OTC) medicine sales, % of total sales	43.8	43.1	42.4	41.7	41.0	39.9	39.4	38.7	38.0

f = Fitch Solutions forecast. Source: United Nations Comtrade Database DESA/UNSD, local news sources, domestic companies, Fitch Solutions

Pharmaceutical Trade Forecast

Key View: *The lack of diversity in the Nigerian economy means that the country's businesses are heavily dependent on imports to supply inputs for manufacturing and meet consumer demand. This is particularly true for the highly import-reliant pharmaceutical industry, which has suffered as a consequence of the downturn in economic growth and currency issues. We expect that local drugmakers' performance will improve in line with increasing government support, although the benefits are unlikely to be realised over the short term. As a result, Nigeria's negative balance of pharmaceutical trade will persist.*

Pharmaceutical Trade Forecast
2014-2023



f = Fitch Solutions forecast. Source: United Nations Comtrade Database DESA/UNSD, Fitch Solutions

Structural Trends

Pharmaceutical exports, valuing NGN196mn (USD0.64mn) in 2018, are expected to experience a five-year compound annual growth rate (CAGR) of -2.0% and -5.9% in local currency and US dollar terms respectively to reach NGN177.2mn (USD0.47mn) by 2023. Exports are heavily hindered by the lack of good manufacturing practice certification which, if approved across more local firms, would expose Nigeria to more lucrative trade partners; in addition to unreliable energy supplies and that Nigerian pharmaceuticals are synonymous with counterfeiting in West Africa.

The key to attracting multinational investment would be a radical improvement of the national infrastructure and/or the establishment of a zone where manufacturing could be concentrated. Imports will, therefore, remain key to meeting growing local demand for medicines. Pharmaceutical imports, which reached a value of NGN117.1bn (USD384mn) in 2018, are expected to grow by CAGRs of 6.6% and 2.3% in local currency and US dollar terms respectively to reach NGN161bn (USD430.4mn) by 2023. Like the majority of African countries, Nigeria's pharmaceutical market is extremely reliant on importing its medicines, particularly those at the innovative end of the scale that cannot be manufactured locally due to technological limitations and a lack of expertise. Nigeria's key pharmaceutical import partners include India, China and the US.

Improved Support For Local Drugmakers

Proposals to boost local drugmakers' manufacturing capabilities in Nigeria will be supported by a gradual recovery in oil prices and a more proactive stance on improving the supply of local medicines. With foreign revenues set to increase over the coming years, our Country Risk team believes the operating environment will gradually improve - encouraging a steady increase in domestic investment. This will be crucial if the government is to make any progress in diversifying the economy away from hydrocarbon dependence as stipulated in the 'Economic Recovery And Growth Plan'. For local drugmakers, we expect that their performance will improve in line with increasing government support, although the benefits are unlikely to be realised over the short-term.

PHARMACEUTICAL TRADE DATA AND FORECASTS (NIGERIA 2017-2023)

Indicator	2017	2018	2019f	2020f	2021f	2022f	2023f
Pharmaceutical exports, USDmn	0.68	0.64	0.61	0.57	0.53	0.49	0.47
Pharmaceutical exports, USDmn, % y-o-y	-30.55	-4.97	-4.74	-6.83	-7.77	-5.99	-4.23
Pharmaceutical imports, USDmn	363.62	383.89	403.27	412.17	413.68	419.87	430.42
Pharmaceutical imports, USDmn, % y-o-y	-25.05	5.57	5.05	2.21	0.37	1.50	2.51
Pharmaceutical trade balance, USDmn	-362.95	-383.25	-402.66	-411.60	-413.16	-419.38	-429.94

f = Fitch Solutions forecast. Source: United Nations Comtrade Database DESA/UNSD, Fitch Solutions

PHARMACEUTICAL TRADE DATA AND FORECASTS LOCAL CURRENCY (NIGERIA 2017-2023)

Indicator	2017	2018	2019f	2020f	2021f	2022f	2023f
Pharmaceutical exports, NGNmn	206.35	196.10	188.33	182.60	178.93	177.13	177.21
Pharmaceutical exports, NGNmn, % y-o-y	-17.70	-4.97	-3.97	-3.04	-2.01	-1.01	0.05
Pharmaceutical imports, NGNmn	110,914.36	117,095.79	124,006.95	131,895.16	140,651.78	150,314.65	160,975.33
Pharmaceutical imports, NGNmn, % y-o-y	-11.18	5.57	5.90	6.36	6.64	6.87	7.09
Pharmaceutical trade balance, NGNmn	-110,708.00	-116,899.68	-123,818.62	-131,712.56	-140,472.85	-150,137.52	-160,798.11

f = Fitch Solutions forecast. Source: United Nations Comtrade Database DESA/UNSD, Fitch Solutions

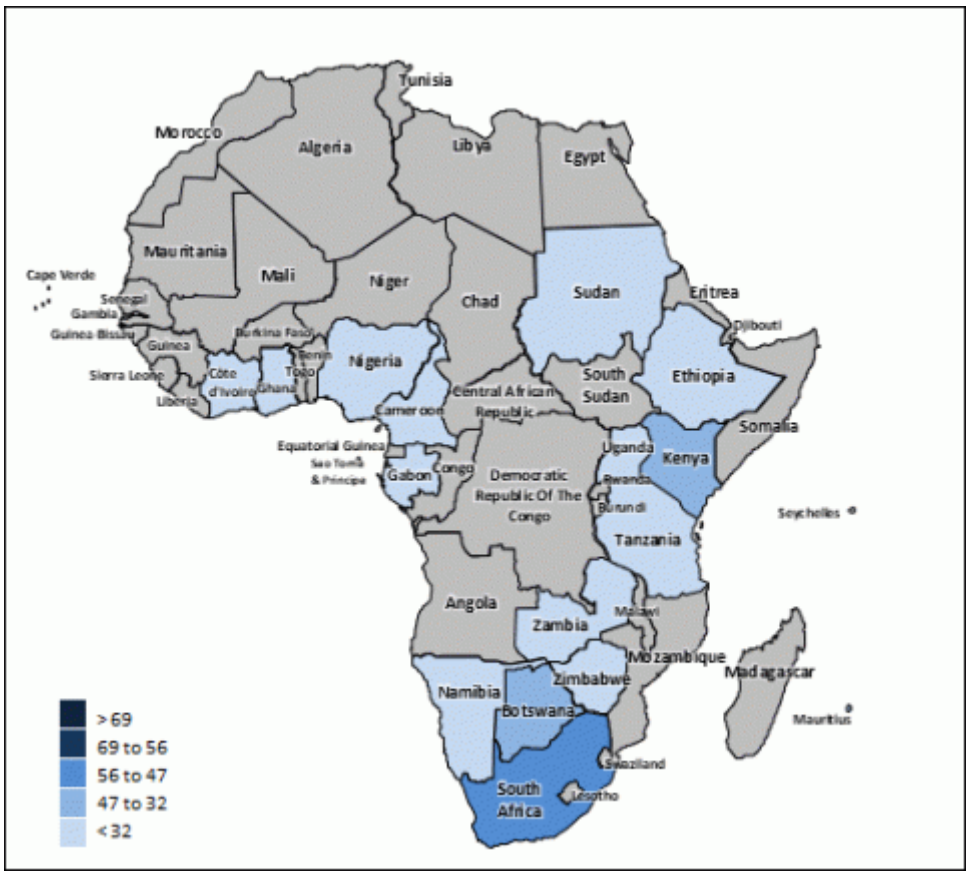
Industry Risk/Reward Index

Sub-Saharan Africa Innovative Pharmaceuticals Risk/Reward Index

Key View: Sub-Saharan Africa's pharmaceutical markets present a challenging environment for multinational drugmakers. Cooperative agreements with international firms will provide opportunities for domestic firms to expand their manufacturing capacities. It is vital that companies appreciate the varying levels of investment risks and rewards that are present in the markets in Sub-Saharan Africa. Fitch Solutions' Innovative Pharmaceuticals Risk/Reward Index tool, which provides a globally comparative and numerically based assessment of a market's attractiveness for companies looking to launch a high-value drug, was established to address this.

Sub-Saharan Africa: High Risks For Innovative Drugmakers

Sub-Saharan Africa Innovative Pharmaceuticals Risk/Reward Index



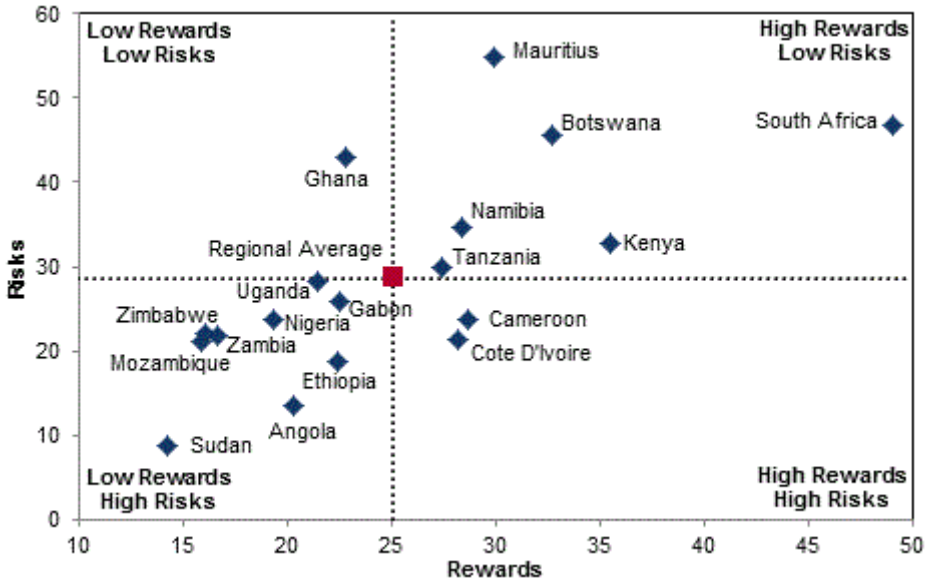
Note: Scores out of 100; higher score = lower risk. Source: Fitch Solutions' Innovative Pharmaceuticals Risk/Reward Index

Main Regional Features And Latest Updates

- The Sub-Saharan Africa average in our Innovative Pharmaceuticals Risk/Reward Index (RRI) significantly underperforms the global average. The sub-region is ranked at the bottom of our index for both rewards and risks compared to all other sub-regions globally. This is because the region comprises the majority of the world's 'third-world' countries, translating in some of the world's smallest pharmaceutical markets. Despite the presence of larger markets such as South Africa, Nigeria and Kenya, a number of significantly underdeveloped markets with low affordability levels, poor access to healthcare services and elevated industry- and country-specific risks keep the regional score well below the global average.
- With regard to assessing rewards, the RRI identifies industry-specific factors, such as the size of the pharmaceutical market, and country-specific factors, such as the size of the pensionable population, which represent opportunities for potential investors. South Africa scores the highest for the Rewards component of the Sub-Saharan Africa index by a considerable margin due to its large medicine market, relatively high per capita medicine spending and level of urbanisation. Sudan scores the lowest in the region.
- With regard to assessing risks, we identify industry-specific dangers, such as a country's pricing regime, and risks emanating from the state's political and economic profile which call into question the likelihood of anticipated returns being realised over the assessed time period. Sudan scored the lowest in the Risk component among the Sub-Saharan Africa markets due to low levels of patent respect, which are further exacerbated by the significant long- and short-term political and economic risks in comparison to the regional average. Mauritius scores the highest in this indicator.

Sub-Saharan Africa: Risks Skewed To The Downside

Sub-Saharan Africa Innovative Pharmaceuticals Risk/Reward Index



Note: Scores out of 100; higher score = lower risk. Source: Fitch Solutions' Innovative Pharmaceuticals Risk/Reward Index

Outperformers: High-Reward And Low-Risk Markets

Sub-Saharan African markets are among the least attractive globally for companies looking to launch innovative pharmaceuticals. South Africa, which ranks first in the Sub-Saharan Africa RRI, is ranked 58th globally, while the region's second-ranked country, Mauritius, is ranked 75th - reflecting the gap between the two markets. The Innovative Pharmaceuticals RRI favours larger markets with greater sales potential for multinationals. While the larger markets of South Africa and Nigeria present sizeable commercial opportunities within the Sub-Saharan Africa region, none can compete with the high per capita expenditure or absolute market size of the more Westernised global markets. Indicative of this are their respective scores on a global scale - far weaker than their

regional positions.

South Africa's pharmaceutical market will remain the largest and most developed in the region and will continue to attract multinational drugmakers looking to develop a foothold in the wider region. Both South Africa and Mauritius have relatively high per capita medicine spending and favourable demographics in their own right. South Africa boasts a favourable urban/rural split, while Mauritius has a moderately high pensionable population - although this is partly on account of its small population. In South Africa, high per capita spending on medicines and an overall large pharmaceutical market will continue to be the largest draw for drugmakers looking to launch innovative medicines. This will be targeted in urban cities with greater spending power, infrastructure, sales and distribution channels. However, the unsustainable supply-demand gap for medicines has incentivised authorities in many Sub-Saharan African countries to introduce cost controls. A reformed intellectual property policy and proposals for a National Health Insurance Scheme (NHIS), in South Africa will increasingly benefit generic medicines over their patented counterparts, although the full outcomes remain unclear.

- The South African Department of Trade and Industry (DTI) introduced a new intellectual property policy in May 2018, which aims to stimulate greater competition among generic drugmakers and ensure a more rigorous procedure for granting patents to innovative firms. Despite this, the evolving demand for more niche medicines will continue to facilitate the consumption of innovative medicine in South Africa. The government is also in the stage of implementing a National Health Insurance (NHI) scheme, which is designed to create a single compulsory medical scheme for the population. The NHI bill was approved by cabinet in 2017 and is gradually being rolled out in three phases to 2025 across each district – starting with sites across the Eastern and Western Cape. Extra funding for the scheme from the latest budget announcement will be partially financed by a health promotion tax, implemented in April 2018.
- As part of the Mauritian healthcare sector strategy, the Ministry of Health has outlined the priority areas and projects being planned for the pharmaceutical and healthcare sector over the coming years. Improvements to the regulatory environment, combined with plans to establish a new cancer centre and boost medical tourism numbers, will make the Mauritian pharmaceutical market more attractive to foreign drugmakers. While the new introductions are likely to greatly improve healthcare accessibility, there will inevitably be pressures placed on funding over the long term. The government maintains a cost-conscious drug procurement policy, which calls into question the likelihood of anticipated returns for innovative drugmakers over the long term.

Underperformers: Low-Reward And High-Risk Markets

Mozambique and Sudan sit at the bottom of the Sub-Saharan Africa Innovative Pharmaceuticals RRI. Both countries are characterised as low-reward, high-risk markets.

- Reflective of its United Nations (UN) Least Developed Country (LDC) status, Mozambique ranks 108th out of the 109 markets in the global Innovative Pharmaceutical RRI. Mozambique's small pharmaceutical market and restricted growth opportunities depress the rewards for innovative drugmakers. Furthermore, a lack of clear regulation and policy frameworks, the absence of a public register for drugs and a poor legal framework for combating counterfeit drugs or protecting patented medicines are major deterrents for innovative drugmakers.
- Of the 109 markets in the Innovative Pharmaceutical Risk/Reward Index, Sudan ranks 108th. A series of sharp currency devaluations to the Sudanese pound has reduced the country's pharmaceutical market size in US dollar terms, which is a significant drag on Sudan's rewards score in our pharmaceuticals RRI. Sudan's unfavourable reference pricing system is a deterrent to innovative drugmakers. Another major area of concern for drugmakers is that Sudan is not a member of the WTO. Sudan's pharmaceutical expenditure on a per capita basis is significantly low, thereby limiting the demand for high-value medicines. Given this underdevelopment of the market, Sudan has the potential for robust growth over the coming years, although we do not expect this to be met with a corresponding uptick in investment from foreign drugmakers and, in particular, innovative drugmakers.

REWARDS AND RISKS SCORES

Rewards	Industry Rewards	Country Rewards	Rewards	Industry Risks	Country Risks	Risks	RRI	Regional Rank	Global Rank
South Africa	51.3	42.4	49.1	50.3	41.7	46.9	48.3	1	59
Mauritius	26.8	39.4	29.9	50.3	61.5	54.8	38.6	2	73
Botswana	28.8	44.4	32.7	42.5	50.1	45.5	37.2	3	76
Kenya	38.2	27.3	35.5	38.4	24.4	32.8	34.6	4	83
Namibia	25.7	36.1	28.3	38.4	29.1	34.7	30.6	5	87
Ghana	18.1	36.8	22.8	42.5	43.8	43.0	29.9	6	89
Tanzania	25.9	31.7	27.4	33.7	24.2	29.9	28.3	7	93
Cameroon	26.0	36.8	28.7	29.7	15.0	23.8	27.0	8	94
Cote D'Ivoire	26.7	32.9	28.2	20.4	22.7	21.3	25.8	9	96
Uganda	19.8	26.4	21.5	33.7	19.8	28.1	23.8	10	97
Gabon	11.9	54.2	22.5	29.7	20.4	26.0	23.7	11	98
Nigeria	19.3	31.9	22.4	20.4	16.4	18.8	21.2	12	102
Ethiopia	15.7	30.1	19.3	33.7	8.8	23.7	20.9	13	103
Angola	9.5	38.0	16.6	24.1	18.4	21.8	18.5	14	105
Zambia	11.4	30.1	16.1	28.1	12.7	22.0	18.1	15	106
Zimbabwe	18.2	26.4	20.3	20.4	3.5	13.6	18.0	16	107
Mozambique	10.3	32.9	15.9	29.7	8.0	21.0	17.7	17	108
Sudan	8.1	32.6	14.2	14.4	0.6	8.9	12.3	18	109
Global Average	50.0	50.0	50.0	50.0	50.0	50.0	50.0	~	~
Regional Average	21.8	35.0	25.1	32.3	23.4	28.7	26.3	~	~

Note: Scores out of 100; higher score = lower risk. Source: Fitch Solutions' Innovative Pharmaceuticals Risk/Reward Index

INDUSTRY REWARD SCORES					
Rewards	**Market Expenditure, USDbn**	**Spending Per Capita, USD**	**Sector Value Growth, %**	**Industry Rewards**	**Rewards**
South Africa	62.0	29.6	51.9	51.3	49.1
Mauritius	7.4	58.3	48.1	26.8	29.9
Botswana	11.1	52.8	63.0	28.8	32.7
Kenya	40.7	14.8	93.5	38.2	35.5
Namibia	8.3	42.6	79.6	25.7	28.3
Ghana	12.0	8.3	84.3	18.1	22.8
Tanzania	25.9	4.6	89.8	25.9	27.4
Cameroon	23.1	13.0	82.4	26.0	28.7
Cote D'Ivoire	27.8	15.7	52.8	26.7	28.2
Uganda	18.5	5.6	70.4	19.8	21.5
Gabon	0.9	28.7	27.8	11.9	22.5
Nigeria	25.0	0.9	39.8	19.3	22.4
Ethiopia	13.0	1.9	74.1	15.7	19.3
Angola	1.9	2.8	75.9	9.5	16.6
Zambia	4.6	6.5	66.7	11.4	16.1
Zimbabwe	15.7	18.5	32.4	18.2	20.3
Mozambique	3.7	3.7	69.4	10.3	15.9
Sudan	0.0	0.0	80.6	8.1	14.2
Global Average	50.0	50.0	50.0	50.0	50.0
Regional Average	16.8	17.1	65.7	21.8	25.1

Note: Scores out of 100; higher score = lower risk. Source: Fitch Solutions' Innovative Pharmaceuticals Risk/Reward Index

COUNTRY REWARDS SCORES

Rewards	Urban/Rural Split	Pensionable Population, %	Population Growth, %	Country Rewards	Rewards
South Africa	45.4	31.5	61.1	42.4	49.1
Mauritius	14.8	58.3	25.9	39.4	29.9
Botswana	53.7	22.2	79.6	44.4	32.7
Kenya	3.7	7.4	90.7	27.3	35.5
Namibia	24.1	17.6	85.2	36.1	28.3
Ghana	31.5	14.8	86.1	36.8	22.8
Tanzania	8.3	10.2	98.1	31.7	27.4
Cameroon	32.4	11.1	92.6	36.8	28.7
Cote D'Ivoire	21.3	9.3	91.7	32.9	28.2
Uganda	2.8	1.9	99.1	26.4	21.5
Gabon	89.8	21.3	84.3	54.2	22.5
Nigeria	23.1	5.6	93.5	31.9	22.4
Ethiopia	0.9	15.7	88.0	30.1	19.3
Angola	44.4	3.7	100.0	38.0	16.6
Zambia	17.6	2.8	97.2	30.1	16.1
Zimbabwe	5.6	6.5	87.0	26.4	20.3
Mozambique	12.0	12.0	95.4	32.9	15.9
Sudan	7.4	16.7	89.8	32.6	14.2
Global Average	50.0	50.0	50.0	50.0	50.0
Regional Average	24.4	14.9	85.9	35.0	25.1

Note: Scores out of 100; higher score = lower risk. Source: Fitch Solutions' Innovative Pharmaceuticals Risk/Reward Index

INDUSTRY RISK SCORES					
Risks	**Patent Respect**	**Pricing Regime**	**Protectionism**	**Industry Risks**	**Risks**
South Africa	54.2	38.4	51.9	50.3	46.9
Mauritius	54.2	38.4	51.9	50.3	54.8
Botswana	38.9	88.9	17.6	42.5	45.5
Kenya	21.3	88.9	33.3	38.4	32.8
Namibia	21.3	88.9	33.3	38.4	34.7
Ghana	38.9	88.9	17.6	42.5	43.0
Tanzania	21.3	88.9	17.6	33.7	29.9
Cameroon	21.3	88.9	4.2	29.7	23.8
Cote D'Ivoire	2.8	88.9	4.2	20.4	21.3
Uganda	21.3	88.9	17.6	33.7	28.1
Gabon	21.3	88.9	4.2	29.7	26.0
Nigeria	2.8	88.9	4.2	20.4	18.8
Ethiopia	21.3	88.9	17.6	33.7	23.7
Angola	10.2	88.9	4.2	24.1	21.8
Zambia	10.2	88.9	17.6	28.1	22.0
Zimbabwe	2.8	88.9	4.2	20.4	13.6
Mozambique	21.3	88.9	4.2	29.7	21.0
Sudan	2.8	38.4	17.6	14.4	8.9
Global Average	50.0	50.0	50.0	50.0	50.0
Regional Average	21.6	80.5	17.9	32.3	28.7

Note: Scores out of 100; higher score = lower risk. Source: Fitch Solutions' Innovative Pharmaceuticals Risk/Reward Index

COUNTRY RISK SCORES							
Risks	Long Term Economic Risk Index	Short Term Economic Risk Index	Long Term Political Risk Index	Short Term Political Risk Index	Op Risk Index	Country Risks	Risks
South Africa	48.1	34.3	39.8	46.3	40.7	41.7	46.9
Mauritius	47.2	44.0	81.5	79.6	58.3	61.5	54.8
Botswana	38.0	56.9	63.9	63.9	38.9	50.1	45.5
Kenya	28.7	28.2	33.3	15.3	20.4	24.4	32.8
Namibia	5.6	6.5	48.1	49.5	32.4	29.1	34.7
Ghana	31.5	38.0	69.4	66.2	28.7	43.8	43.0
Tanzania	24.1	18.5	38.9	41.7	11.1	24.2	29.9
Cameroon	30.6	33.3	3.7	18.5	1.9	15.0	23.8
Cote D'Ivoire	41.7	48.1	8.3	10.2	13.9	22.7	21.3
Uganda	27.8	25.9	17.1	27.3	10.2	19.8	28.1
Gabon	22.2	20.4	44.4	25.9	4.6	20.4	26.0
Nigeria	39.8	42.6	9.3	6.9	0.0	16.4	18.8
Ethiopia	13.9	9.3	1.9	9.3	9.3	8.8	23.7
Angola	2.8	23.6	23.1	53.7	3.7	18.4	21.8
Zambia	6.5	5.6	14.8	13.9	17.6	12.7	22.0
Zimbabwe	0.0	0.9	6.5	2.3	5.6	3.5	13.6
Mozambique	0.9	1.9	13.9	16.7	7.4	8.0	21.0
Sudan	1.9	0.0	0.0	0.0	0.9	0.6	8.9
Global Average	50.0	50.0	50.0	50.0	50.0	50.0	50.0
Regional Average	22.8	24.3	28.8	30.4	17.0	23.4	28.7

Note: Scores out of 100; higher score = lower risk. Source: Fitch Solutions' Innovative Pharmaceuticals Risk/Reward Index

Innovative Pharmaceuticals Risk/Reward Index

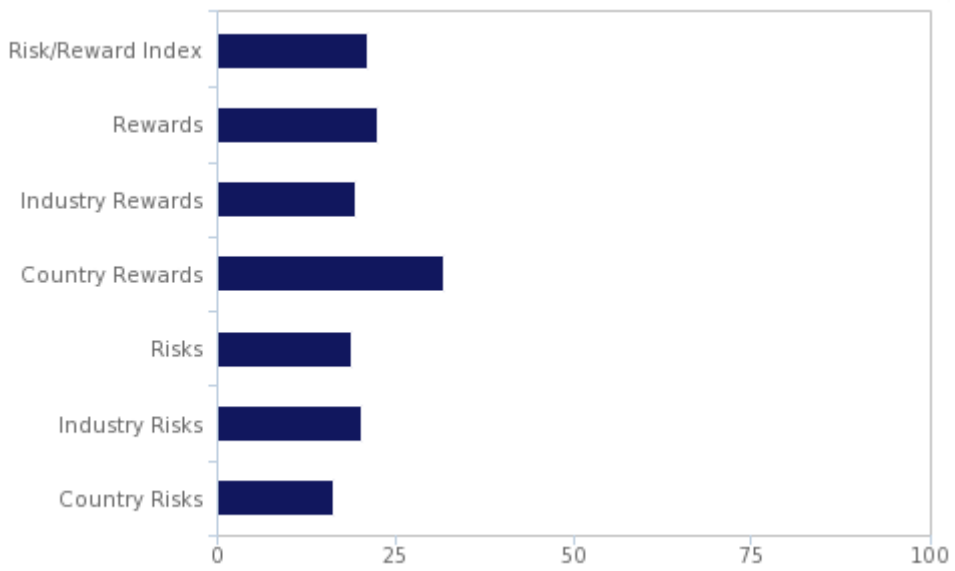
***Key View**: Nigeria's low per capita pharmaceutical expenditure limits the opportunities for innovative drugmakers, reflected in its score of 22.7 in our Innovative Pharmaceuticals Risk/Reward index. While the country's overall market size is significant, operational and political risks are elevated, dissuading foreign investment, while the regulatory environment is also highly challenging with a lack of patent respect.*

Nigeria: Innovative Pharmaceuticals RRI - Global And Regional Ranks

- Regional rank (out of 20): 12th
- Global rank (out of 109): 101st

Innovative Pharmaceuticals Risk/Reward Index

Risk/Reward Index Q319



Note: Scores out of 100; higher scores = lower risk. Source: Fitch Solutions' Innovative Pharmaceuticals Risk/Reward Index

Industry Rewards: Dragged down by its significantly low per capita medicine expenditure, Nigeria scores just 20.6 - below the regional average of 22.4. While Nigeria's large pharmaceutical market size is favourable for drugmaker opportunities, the weak purchasing power among the population will limit the demand for high-value medicines and most opportunities will be within the generic drug sector over the near-to-medium term.

Country Rewards: Nigeria scores 32.1, below the regional average of 34.4. Despite being one of the largest economies in Sub-Saharan Africa, high levels of poverty and the persistence of infectious diseases such as HIV/AIDS going untreated contributes to Nigeria having one of the lowest life expectancies worldwide. As such, a young population and short life expectancy will limit the demand for high-value innovative medicines. This is compounded by the low degree of urbanisation, with the majority of the population living in rural areas and thereby restricting access to healthcare services. The underdeveloped state of Nigeria's rural healthcare infrastructure, combined with an inefficient supply chain and understaffing in health centres, places significant limits on access to pharmaceuticals for Nigeria's rural poor. The high growth outlook for the population, in line with a rising chronic disease burden, will boost medicine demand over the long term.

Industry Risks: Reflective of its weak intellectual property environment, Nigeria scores 20.9, well below the regional average of 32.8. Despite the establishment of the National Agency for Food and Drug Administration and Control (NAFDAC), Nigeria's

pharmaceutical regulatory infrastructure is inadequate, providing no meaningful patent legislation or pricing and reimbursement systems. The high level of industry-associated risks in Nigeria's pharmaceutical market will remain a significant challenge to innovative drugmakers.

Country Risks: Nigeria scores 21.9, below the regional average of 24.3. Improved oil production, higher oil prices, and greater exchange rate flexibility will contribute to a modest economic recovery in Nigeria over the short term. Over a longer timeframe, wide-scale reforms will be necessary if the country is to transform its economy from an elite-driven consumption model to one driven by investment and more broad-based consumption.

Regulatory Development

Regulatory Review

The main regulatory body in Nigeria is the National Agency for Food and Drug Administration and Control (NAFDAC). The country's pharmaceutical regulatory infrastructure provides no meaningful patent legislation or pricing and reimbursement systems. Although regulation is basically a government function, NAFDAC insists that it requires pharmaceutical company and consumer participation, by putting in place 'self-regulatory' measures. To this end, the agency is pushing for the establishment of collaborations between the pharmaceutical industry and other sectors of the economy, which often leaves gaping holes in regulatory coverage.

NAFDAC works with the Nigeria Ports Authority (NPA), which is required to release shipping and cargo manifests to NAFDAC inspectors. All factories must be certified for Good Manufacturing Practice (GMP) before they are allowed to import drugs into Nigeria, and NAFDAC must inspect factories anywhere in the world before it registers or renews the registration of their products. The agency also requires compulsory pre-shipment information from all importers before the arrival of their products.

National Drug Policy

The government is committed to national self-sufficiency in terms of pharmaceutical production, which is stimulated by assistance for Nigeria's pharmaceutical manufacturing sector and by attempts to curb the influx of inexpensive counterfeit drugs. The recently introduced National Drug Policy (NDP) aims for 70% national self-sufficiency in drugs, which is to be achieved through the greater local production of generic drugs and the raising of tariff and non-tariff barriers on imported drugs. In 2017, Nigeria's Vice President, Yemi Osinbajo, signed an executive order that mandates all ministries, departments and agencies (MDAs) to give preference to locally-produced medicines in their procurement activities. According to the Pharmaceutical Manufacturers Group of Manufacturers Association of Nigeria (PMG-MAN), around 40% of expenditure by the MDAs must be targeted towards pharmaceuticals manufactured by local drugmakers.

However, in our opinion, uncompetitive local drugmakers in Nigeria can only survive with government intervention (protectionism) or investment. This support has been given in the form of the NPDF and the World Health Organization (WHO)'s efforts to help local drugmakers reach prequalification. The WHO's assistance to local manufacturers will improve the quality of medicines and make the companies more competitive with foreign generic drugmakers, particularly those from India and China. Furthermore, if a company can reach prequalification, it will be able to sell medicines to the Global Fund, which is the biggest purchaser of antiretrovirals (ARVs) and anti-malarial drugs in Africa.

Intellectual Property Issues

Nigeria has been a member of the WTO since 1995. Nigeria was given a transition period - until the start of 2006 - to implement TRIPS-style measures, although the regulations have yet to be fully transposed. In the meantime, Nigeria has been able to import generic ARVs from Indian manufacturers such as Cipla at the low price of USD350 per patient per annum, which has assisted in the treatment of many HIV-positive Nigerians. However, a lack of patent legislation, other than the two-page Patents and Designs Act of 1990, reflects the inadequacies of the country's regulatory infrastructure.

Pricing Regime

Nigerian drug prices are controlled mostly by market forces, with government tariffs, taxes and distribution markups accounting for a significant proportion of the final price. Medicine pricing has become increasingly complicated since 2017 as a result of the lack of foreign currency needed by local drugmakers for imports. The introduction of a 20% 'Import Adjustment Tax' in Nigeria, which applies to medicines under HS Codes 3003 and 3004, has exacerbated issues brought about as a result of scarce foreign exchange (see '*Near-Term Uncertainty For Local Drugmakers*', May 19 2017).

Reimbursement Regime

There is no meaningful reimbursement programme in place. The low-income population cannot afford necessary treatments - particularly for infectious diseases - forcing the companies in question to drop their prices. Similarly, foreign suppliers of essential medicines have been under pressure to reduce their prices. Imports, however, incur a registration-fee levy, which is indirectly designed to help the indigenous industry.

Market Overview

In 2018, the Nigerian pharmaceutical market was valued at NGN203bn (USD666mn), representing 0.2% of GDP and 4.5% of total health expenditure. We estimate that per capita spending on pharmaceuticals was just USD3 in 2018, although distorted by the significant population size. Over-the-counter (OTC) medicines made up the largest part of the overall pharmaceutical market at NGN84.7bn (USD278mn), or 41.7% of the total expenditure. This was followed by generic drugs at NGN80.4bn (USD264mn), or 39.6%, and patented drugs, at NGN38.0bn (USD125mn), or 18.7%.

Healthcare expenditure reached NGN4.51trn (USD14.8bn) in 2018, representing 3.5% of GDP. We calculate per capita spending on healthcare amounted to just USD75. Private health expenditure represents a majority 76.5% of the total market at NGN3.44trn (USD11.30bn), with the government contributing the remaining 23.5% of NGN1061bn (USD3.48bn) in 2018.

According to our Disease Database, 31mn disability-adjusted life years (DALYs) were lost to non-communicable diseases in 2017, compared to 80mn DALYs lost to communicable diseases. By 2030, the DALYs lost to non-communicable diseases as a percentage of total DALYs will increase to 34%, compared to a still-significant 48% for communicable diseases. While communicable diseases such as malaria, HIV/AIDS and chronic obstructive pulmonary disease (COPD) will remain dominant in the disease landscape, the shifting epidemiological profile will see their burden gradually decrease relative to chronic diseases. This will provide greater revenue-earning opportunities for pharmaceutical companies whose product portfolios include treatments for non-communicable diseases.

There are nine pharmaceutical and biotech companies listed on the Nigerian stock exchange. However, we believe only GlaxoSmithKline Nigeria, Fidson Healthcare, Neimeth International Pharmaceuticals and Ekocorp are sizeable enough to warrant any serious investments. Local companies Evans Pharmaceuticals, May and Baker, Chi Pharmaceutical and Swiss Pharma Nigeria have obtained World Health Organization (WHO) prequalification, and ten local firms currently meet requirements of the International Standards Organization (ISO).

Healthcare Sector

The public healthcare services in Nigeria are weak, inadequate and mirror political organisation. Primary healthcare centres are underfunded with poor quality services as they are left in the purview of the weakest tier of government - the local government. Poor management and distribution of funds in the public healthcare sector lead to irrational choices of healthcare facility by Nigerians, resulting in mismatched treatments and low confidence in the public healthcare system. As such, the majority of spending on healthcare comes from the private sector through individual out-of-pocket payments at private facilities.

In addition to the above-mentioned management and funding inadequacies, uptake of public healthcare services, specifically primary healthcare services (PHC), is low due to a number of other factors:

- Poor health infrastructure with dilapidated buildings and equipment requiring repairs and regular maintenance.
- Inadequate healthcare human resource capacity and inadequate supervision.
- The PHC offer limited minimum packages of care with weak referral links between different levels of care.
- Weak logistics systems for healthcare commodities with several vertical commodities with limited integrated systems.

We are of the view that certain fundamentals surrounding the public healthcare system - including infrastructure development and access to primary healthcare centres - need to be addressed in order to spark confidence by Nigerians in the system and allow them to part with a proportion of their salaries to contribute to the government's community-based health insurance model, which aims to achieve universal health coverage.

Health Sector To Remain Underfunded

Crucially, Nigeria's budgeted healthcare allocation has been on a downward trend since 2015 (see chart below), reflective of the collapse in global oil prices impacting the government's financing capabilities. Analysis of the historical trends of Nigeria's budgetary allocations reveals that the government has allocated between 5-6% of the budget to healthcare annually since 2011. In percentage terms, the 2018 health budget marks the first drop below 4% since 2010. It is also inferior to its neighbouring West African counterpart; Ghana's 2018 health budget is set to receive a 7% contribution from the national budget.

In light of this, Nigeria once again falls short of the 2001 Abuja Declaration, in which African Union (AU) members pledged to increase healthcare funding to 15% of their national budgets. We note, however, that while the majority of AU members have increased their contributions to the healthcare sector, most are still failing to meet the 15% target.

Healthcare Provision

There are three tiers of healthcare delivery in Nigeria, each associated with an administrative level of government. Nigeria has approximately 10,600 registered primary healthcare centres, 1,000 secondary healthcare centres and 50 tertiary centres. Local government councils are responsible for primary care services, with support from the State Ministry of Health and the federal government. Secondary care services are the responsibility of the state governments and are specialised services provided to patients referred from the primary healthcare level. Tertiary care services offer highly specialised services to patients referred from the primary and secondary care services. The federal government is responsible for tertiary care services and has established at least one tertiary health institution, termed a Federal Medical Centre (FMC), in each state that does not have Federal University Teaching Hospitals present. The exception to this rule is Lagos State, which has one such centre in addition to a teaching hospital.

Healthcare Insurance

Nigeria's new healthcare system, the Community-Based Social Health Insurance Scheme (CBSHIS), a modified version of the country's National Health Insurance Scheme (NHIS), is designed to operate on a community level and is intended to offer coverage to every citizen in the country. The scheme is contributory in terms of which individuals are likely to offer financial contribution on a regular basis, and subsidies will be provided to individuals who cannot afford the contribution along with the aid needed to ensure that they can benefit from the coverage.

Given the country's population of over 160mn, we believe that low uptake in the private sector is due to reluctance by employers to contribute a portion of employees' wages to the NHIS. Another key reason cited for NHIS' slow uptake has been affordability. The introduction of private community micro-insurance in Nigeria's Lagos state could provide a more affordable alternative to the government-introduced coverage scheme. In light of its slow progress, it was announced in April 2017 by the Lagos State Government that the much anticipated State Health Insurance Scheme (LSHS) would commence in November 2017.

HEALTHCARE RESOURCES (NIGERIA 2013-2018)

Indicator	2013	2014	2015	2016	2017	2018
Hospitals, total	3,516	3,533	3,551	3,569	3,587	3,605
Hospitals, public	945	950	954	959	965	970
Hospitals, private	2,570	2,583	2,596	2,609	2,622	2,635
Hospitals, beds	144,720	153,274	162,303	171,826	181,973	192,709
Hospitals, beds, per '000 population	0.84	0.87	0.90	0.92	0.95	0.98

Source: Fitch Solutions

HEALTHCARE PERSONNEL (NIGERIA 2013-2018)						
Indicator	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**
Physicians, total	64,829	66,554	68,325	70,144	72,011	73,928
Physician, per '000 population	0.38	0.38	0.38	0.38	0.38	0.38
Nurses, total	276,645	284,101	291,702	299,443	307,497	315,752
Nurses, per '000 population	1.61	1.61	1.61	1.61	1.61	1.61
Dentists, total	2,429	2,429	2,429	2,429	2,422	2,414
Dentists, per '000 population	0.01	0.01	0.01	0.01	0.01	0.01
Pharmacists, total	18,743	19,869	21,060	22,317	23,657	25,076
Pharmacists, per '000 population	0.11	0.11	0.12	0.12	0.12	0.13

Source: Fitch Solutions

HEALTHCARE ACTIVITY (NIGERIA 2013-2018)						
Indicator	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**
Public inpatient admissions, '000	10,281.10	10,832.50	11,411.28	12,018.43	12,662.29	13,340.02
Public inpatient admissions, per '000 population	59.83	61.39	62.98	64.62	66.33	68.10
Hospitals, average length of stay, days	5.3	5.3	5.3	5.2	5.2	5.2
Surgical procedures, '000	3,392.76	3,574.72	3,765.72	3,966.08	4,178.56	4,402.21
Outpatient visits, '000	342,703.27	361,083.31	380,376.12	400,614.30	422,076.43	444,667.23
Outpatient visits, per '000 population	1,994.44	2,046.26	2,099.42	2,153.96	2,211.14	2,270.16

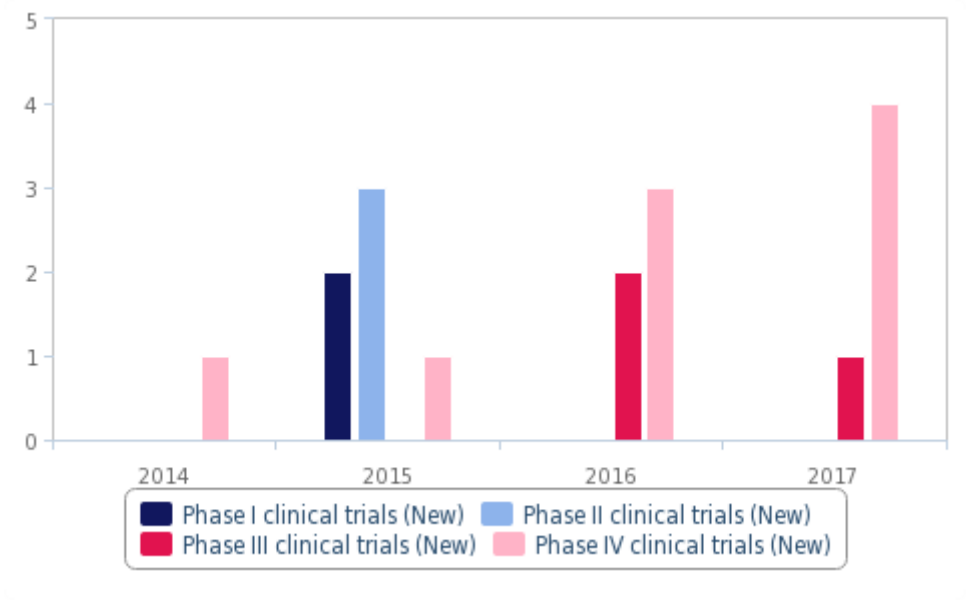
Source: Fitch Solutions

Clinical Trials

Nigeria hosts well below the average number of clinical trials conducted in West Africa. Poor infrastructure means establishing sites to conduct clinical trials is more expensive than in developed countries, although a small number of ultra-modern facilities with the capacity for clinical trials exist, while the trial sponsors are also able to provide some of the necessary equipment.

We believe Nigeria, as with other markets in the region, can offer drugmakers looking to conduct clinical trials in the country numerous benefits - including access to large, treatment-naïve populations as a result of underdeveloped healthcare systems. We note that this is vital in clinical trials as it reduces data variability. However, it also creates challenges in the form of understanding data comparisons with western populations, particularly for multi-site trials across different countries.

Clinical Trial Registrations
2013-2017 (2014-2018)



Note: New Trials begun in the given year. Sourced by date of initial registration. Includes clinical trials of drugs, medical devices, surgical procedures and behavioural interventions. Source: ClinicalTrials.gov, Fitch Solutions

Research & Development

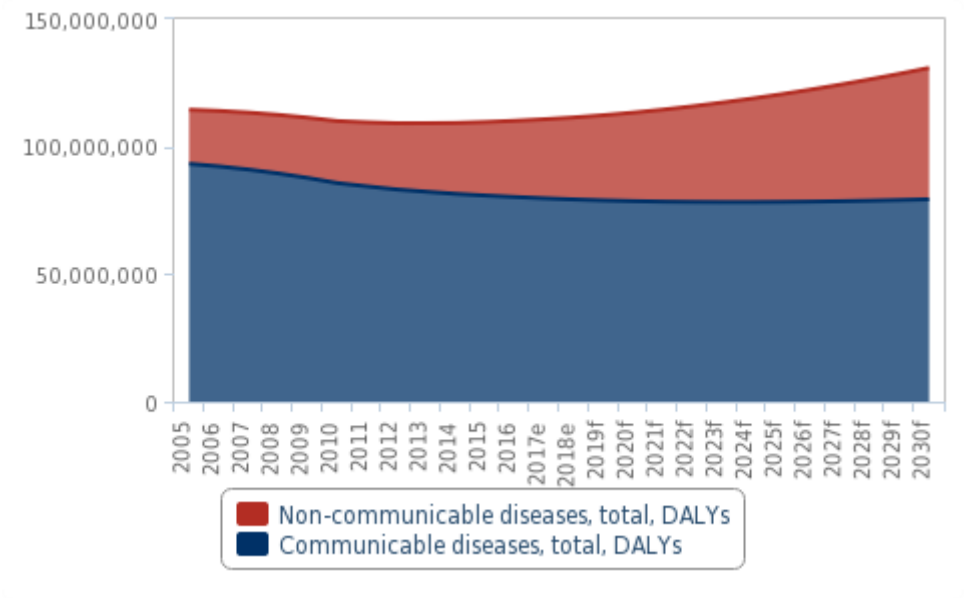
The Nigerian government plans to collaborate with professional associations, regulatory agencies and the Nigeria Universities Commission, according to the Minister of Science and Technology Mohammed Abubakar. The partnership will develop a curriculum for biopharmaceutical education and training as well as R&D, said Abubakar at the launch of a two-day workshop on biopharmaceutical education curriculum development.

We also expect significantly more regional collaborations in the field of R&D. The Kenya Aids Vaccination Initiative (KAVI) reported that it was keen to partner with Nigeria to deal with diseases in Africa. It is already working with Uganda, Rwanda, Zambia, Tanzania, South Africa and The Gambia on vaccine research. KAVI has recently applied for research funding through the Human Heredity and Health in Africa Initiative, according to KAVI's programme director, Omu Anzala.

Epidemiology

According to our Disease Database, 31mn disability-adjusted life years (DALYs) were lost to non-communicable diseases in 2017, compared to 80mn DALYs lost to communicable diseases. By 2030, the DALYs lost to non-communicable diseases as a percentage of total DALYs will increase to 34%, compared to a still-significant 48% for communicable diseases. While communicable diseases such as malaria, HIV/AIDS and chronic obstructive pulmonary disease (COPD) will remain dominant in the disease landscape, the shifting epidemiological profile will see their burden gradually decrease relative to chronic diseases. This will provide greater revenue-earning opportunities for pharmaceutical companies whose product portfolios include treatments for non-communicable diseases.

Burden Of Disease Projection
(2005-2030)



Note: DALYs = disability-adjusted life years; e/f = Fitch Solutions' estimate/forecast. Source: Fitch Solutions' Disease Database

HIV/AIDS To Remain A Key Area Of Unmet Medical Need

Nigeria's significant HIV/AIDS burden, and its sizeable treatment programme, will continue to increase the demand for cheap antiretroviral medicines (ARVs), providing commercial opportunities for domestic and multinational drugmakers alike. As part of the government's National Action Committee on AIDS (NACA), this has funded the local production of ARVs and their uptake has been substantially increased, while duties on imported ARVs have been cut.

Despite this, ARV shortages are commonplace as issues relating to corruption and logistical difficulties remain firmly in place. According to the latest UNAIDS report, around 3.5mn people in Nigeria suffer from HIV/AIDS, the majority of whom are adults. The prevalence and incidence rates vary significantly between geographical areas and gender; females report a higher incidence rate than males, and the HIV epidemic is concentrated in both rural and urban areas, including along major transport corridors. According to NACA, around 800,000 HIV patients in Nigeria receive government-sponsored ARV therapy annually, yet this figure is still markedly below the number of those eligible. UNAIDs estimate that approximately 180,000 Nigerians suffered HIV-related mortalities in 2016 (latest available data).

Non-Communicable Diseases - Greater Commercial Rewards

Highlighting the significant unmet medical need for cancer treatments in Nigeria, incidence and mortality rates for certain cancer sub-types are rising at a significant rate. Within the therapeutic space, we highlight prostate cancer and breast cancer as two of the fastest growing sub-types, with Globocan forecasting the number of new cases of prostate cancer to grow from 11,944 in 2012 to 17,469 by 2030, an increase of 46%; while the number of new breast cancer cases will increase by 67% - from 27,304 to 45,562. This makes prostate cancer the most common form of cancer affecting men, with an age-standardised incidence rate (ASR) of 30.7 per 100,000 in 2015, followed by liver cancer and colorectal cancer. Similarly, breast cancer is the most common subtype in women, with an ASR of 42.2 per 100,000 - ahead of liver cancer and cervical cancer.

In terms of mortality, it is liver cancer that is responsible for the greatest number of cancer-related deaths in Nigeria, responsible for 21% according to our Disease Database. The number of liver cancer deaths in Nigeria increased from 9,140 in 2007 to 14,418 in 2017. This figure is expected to reach 31,119 by 2030, which is among the fastest growing cancer mortality rates in Nigeria, above the likes of colorectal cancer, prostate cancer and breast cancer. Given the differences in incidence and mortality rates, this

highlights a severe lack of diagnosis for liver disease and many patients are likely to be undiagnosed or misdiagnosed. While awareness of the most prevalent and diagnosed cancer types in Nigeria, namely prostate and breast cancer, is gradually improving, diagnosis of liver disease continues to suffer from the underdeveloped preventative, diagnostic and palliative care networks. To this end, the most common liver malignancy associated with liver cancer, hepatocellular carcinoma (HCC), has been found to have a significantly poor prognosis in Nigeria.

Chronic Respiratory Disease

In Nigeria, chronic obstructive pulmonary disease (COPD) is dominant within this therapeutic area. This is reflected in the number of disability-adjusted life years (DALYs), with COPD imposing a burden of 1.045mn DALYs to asthma's 907,101 for 2017. COPD-related DALYs are forecast to increase at a much faster rate, however, totalling 2.24mn by 2030, at which time asthma will be responsible for 1.77mn DALYs. Collectively, there were 30,848 deaths arising from chronic respiratory diseases in Nigeria in 2017, which is expected to increase to 77,167 by 2030. This represents one of the fastest growing mortality rates in Nigeria's non-communicable disease profile, above the likes of cancer, cardiovascular disease and strokes.

Competitive Landscape

Research-Based Industry

There are 10 pharmaceutical and biotech companies listed on the Nigerian Stock Exchange. However, only a few are large enough to warrant serious investment, including GlaxoSmithKline Nigeria, Neimeth International Pharmaceuticals, Fidson Healthcare and Ekocorp.

Due to the widespread counterfeit trade in medicines, manufacturing deficiencies and corruption, among other factors, the Nigerian pharmaceutical industry continues to operate at only below full capacity, despite the obvious demand for effective medicines. Nevertheless, the government remains committed to making the country self-sufficient, encouraging local firms' production capabilities by discouraging imports through biased regulatory regimes and cracking down on counterfeits. However, this has recently become complicated due to the lack of foreign exchange. Although most foreign exchange is now accessed via the more flexible parallel and NAFEX rates, the economy remains vulnerable to a shock via sudden exchange rate reform.

Nigeria's poor pharmaceutical regulatory environment and sporadic power supplies to energy-heavy industries are major drawbacks to foreign direct investment (FDI). The country's inability to provide its own reliable high-capacity pharmaceutical sector contradicts its own rationale behind banning imported drugs.

Multinationals are present in the country through a limited number of imports, given the discriminatory regulatory regime. Although foreign firms such as Sanofi and Indonesia's Kalbe Farma began new partnerships with Nigerian firms, the multinational sector has generally proceeded with caution in the country. The unregulated nature of the market will continue to hamper the faster development of FDI in the country.

Greater Support For Domestic Industry

The National Agency for Food and Drug Administration and Control (NAFDAC), the World Health Organization (WHO), and the Pharmaceutical Society of Nigeria (PSN) are continually working towards raising the standards of locally produced medicines and supporting Nigerian drugmakers in their pursuit of WHO prequalification status. However, as of June 2018, only four local drugmakers, namely May & Baker, Chi Pharmaceutical, Evans Pharmaceuticals and Swiss Pharma Nigeria have obtained WHO pre-qualification status to produce drugs in accordance with its Good Manufacturing Practice (GMP) standards. These local drugmakers will be more adept to compete with foreign generic drugmakers, particularly those from India and China. Additionally, if a company can reach prequalification, it will be able to sell medicines to the Global Fund - the largest purchaser of antiretrovirals (ARVs) and anti-malarial drugs in Africa. However, given the significantly slow progress of achieving WHO-GMP certification, we believe the target of self-sufficiency in Nigeria's pharmaceutical industry is only achievable over a much longer timeframe.

It is worth mentioning that proposals to boost local drugmakers' manufacturing capabilities in Nigeria will be supported by a gradual recovery in oil prices and a more proactive stance on improving the local medicine supply (*see 'Drugmakers Will Benefit From Pro-Domestic Policies', August 17*). Our Country Risk team is of the view that an improvement to the operating environment is drastically needed if the government is to make any progress in diversifying the economy away from hydrocarbon dependence as stipulated in the 'Economic Recovery And Growth Plan'. For local drugmakers, we expect that their performance will improve in line with increasing government support, although the benefits are unlikely to be realised over the short term.

Pharmaceutical Distribution & Retail Sector

Manufacturers and importers are required to channel their medicines to State and Mega Drug Distribution Centres - introduced by the National Agency For Food, Drug Administration and Control - as a provision of the new National Drug Distribution Guidelines. The lack of a fully coordinated drug distribution system is largely responsible for the circulation of counterfeit medicines in the pharmaceutical sector. Consumption of illegal medicines leads to greater health problems and places a greater burden on healthcare provision in the long term.

Company Profile

GlaxoSmithKline

SWOT Analysis

Strengths	• Strong presence in the vaccines sector. • Expanding presence across the country, through both regional offices and the operations of its sales representatives. • Continuous development of contract manufacturing with local producers, which allows the company to focus on its commercial business.
Weaknesses	• Challenging pharmaceutical market, with poor regulation, underdeveloped physical infrastructure and unreliable utilities. • Counterfeit drugs threaten company sales.
Opportunities	• Strong pipeline of products related to chronic diseases, supporting the Open Lab Initiative in SSA. • The infectious diseases product market is huge, given the scale of HIV/AIDS, malaria and Tuberculosis.
Threats	• Government resistance to reforms and inadequate regulatory infrastructure. • Continued regulatory bias against imported medicines.

Company Overview

GlaxoSmithKline's Nigerian subsidiary, GlaxoSmithKline Consumer Nigeria, is listed on the Lagos Stock Exchange. The company's product portfolio includes a consumer health and pharmaceutical division. The bulk of the company's revenue is generated from sales of consumer health products.

Strategy

GlaxoSmithKline is mostly focused on larger regional markets. In the Middle East, the company operates local offices in Saudi Arabia, the United Arab Emirates and Israel. Other markets in the Middle East region are mostly served via distribution deals or government tenders, as is the case in Kuwait. In addition to Nigeria, the company's African footprint extends to Egypt, Algeria, Ghana, Kenya, Morocco and South Africa.

In Nigeria, GlaxoSmithKline has a wide-ranging regional network, which includes a head office in Ilupeju in Lagos state; warehousing facilities in Ijanikin and Isolo; and a manufacturing plant at Agbara in the state of Ogun. Its locally manufactured products include antibiotic *Septrin* (trimethoprim + sulfamethoxazole). The manufacturing plant supplies the Nigerian market and has recently begun to export to Ghana. In April 2019, the company announced that it will be shutting down its Agbara manufacturing plant by Q3 of 2021.

GlaxoSmithKline Consumer Nigeria Plc's product portfolio consists of a consumer health division and pharmaceutical division. The consumer health division includes nutritional health drinks, over-the-counter medicines and oral healthcare. The company's pharmaceutical products include prescription drug treatments for asthma, malaria, depression, migraine, diabetes, heart failure, digestive conditions and cancer.

Fidson Healthcare

SWOT Analysis

Strengths

- Strong generics portfolio well-suited to population.
- Diverse presence in both the pharmaceutical and healthcare markets.
- Strong company infrastructure.

Weaknesses

- Low consumer spending power.
- Lack of basic utilities increasing the cost of production.

Opportunities

- Nigeria's large and rapidly expanding population.
- Moves to diversify into fast-moving consumer goods (FMCG).

Threats

- Government resistance to reforms and inadequate regulatory infrastructure.
- Competition from Asian producers of generic drugs.

Company Overview

Fidson Healthcare is a member of the Nigerian Fidson Group. Since Fidson was established in Nigeria in 1995, it has successfully adhered to WHO regulations in producing and exporting pharmaceuticals. The company is engaged in the manufacturing, marketing and export of pharmaceuticals that conform to WHO/GMP standards.

Strategy

Fidson's affiliates include Indian company Tablets India Ltd and Synergy Healthcare. The former is engaged in the manufacture of various pharmaceuticals and nutraceuticals, including probiotics. The latter is a joint venture between Fidson Healthcare Plc and Synergy Healthcare Limited, which is focused on healthcare sector solutions. The generic-maker is attempting to build partnerships and increase its product portfolio. For example, the company donated its ARV Virex to Cross River State in order to make sure it was easily accessible to Nigerians living with HIV.

May & Baker Nigeria

SWOT Analysis

Strengths

- One of the leading producers in the country, with WHO/GMP compliance.
- Wide-ranging distribution network and product portfolio.

Weaknesses

- Low consumer spending power.
- Shortages of public funding, compounded by corruption.

Opportunities

- The company is also targeting rising demand for antihypertensive products.
- Nigeria's large and rapidly expanding population presents a major long-term opportunity.

Threats

- Government resistance to reforms and inadequate regulatory infrastructure.
- Authorities attempting to encourage local investment by Indian players.
- Market vulnerable to wider economic fluctuations, given the lack of a comprehensive reimbursement scheme.

Company Overview

Established in 1944 as the first domestic drugmaker, May & Baker is one of the larger Nigerian pharmaceutical manufacturers. It is one of the four WHO/GMP certified drugmakers in Nigeria. Since 2002, the company has been 100% owned by Nigerians, following a buy-out of foreign partners. The company aims to produce vaccines locally by 2019.

Strategy

Its leading products include medicines against infectious diseases such as antimalarials. In more recent years, however, May & Baker has been steadily expanding its portfolio to include vaccines and oncology drugs as well as more anti-infectives and analgesics, while also investing in some research and development initiatives, such as the development of the Easadol brand of paracetamol.

The company also offers a limited number of diagnostic products. May & Baker is aiming to become one of the top 10 conglomerates in Nigeria by 2020. In May 2017, the Federal Ministry of Health signed a Memorandum of Understanding with May & Baker for the production of vaccines under a Public Private Partnership (PPP) arrangement. This is expected to be completed in 2019, despite the economic challenges local pharmaceutical firms are currently facing.

Merck & Co

SWOT Analysis

Strengths

- One of the leading global pharmaceutical manufacturers.
- Strong presence in the vaccines and antiretroviral sectors.

Weaknesses

- Limited local presence.
- Difficult and unattractive marketplace, in view of the poor regulation and physical infrastructure.

Opportunities

- Potential for enhanced partnerships with local drugmakers.
- International grants and aid money supporting programmes for the eradication of infectious diseases.

Threats

- Government resistance to reforms and inadequate regulatory infrastructure.
- Continued regulatory bias against imported medicines.
- Government encouraging local investment by Indian companies.

Company Overview

Merck & Co is present in Nigeria through imports, which are handled by its fully owned overseas subsidiary Merck Sharp & Dohme. It has no direct manufacturing site in the country but is present through a representative office in Lagos. The company continues to drive its presence in the ARV sector with new product launches, including the antiretroviral (ARV) drug *Atripla* (efavirenz + emtricitabine + tenofovir).

Neimeth International Pharmaceuticals

SWOT Analysis

Strengths

- Diverse product range including OTC medicines, veterinary products and prescription branded generic drugs.
- Presence in West African countries.

Weaknesses

- Presence of sizeable counterfeit industry.
- Domestic market has low per capita spending on pharmaceutical drugs.

Opportunities

- Anti-diabetic and anti-hypertensive products to benefit from the increasing burden of non-communicable diseases.
- Nigeria's increasing demand for generic drugs.
- Public healthcare system strongly orientated to urban areas where uptake of OTC medicines and generic drugs is greatest.

Threats

- Government resistance to reforms and inadequate regulatory infrastructure.
- Increasing competition from Indian and Chinese generic drugmakers penetrating African markets.

Company Overview

Neimeth International Pharmaceuticals operates a single manufacturing plant in Oregun, Lagos, which was established in 1976. The plant is GMP-compliant, and NAFDAC (National Agency for Food and Drug Administration Control) and PCN (Pharmacist Council of Nigeria) certified. The company's products are distributed from the plant to a number of warehouses which cover the six geo-political zones of the country.

Strategy

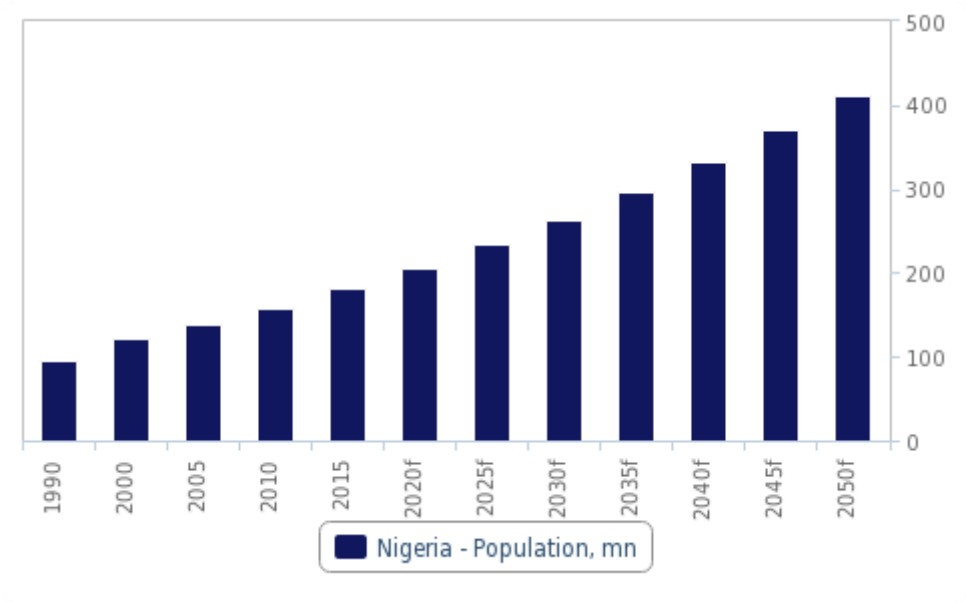
Neimeth International Pharmaceuticals focuses on three product divisions; the Ethical Product group which includes prescription generic drugs, cradling the company's flagship product *Ciklavit* for management of sickle-cell disease; the Consumer Product Group, the fastest growing group in terms of volume sales and product portfolio, which focuses on OTC medicines including NCP, Homtamin G and Pancemol; and the Veterinary Product Group. The company has registered products in the West African countries of Ghana, Sierra Leone, Liberia and Gambia, and has started registration processes in French-speaking African countries. The company claims to have the largest field sales team in the Nigerian pharmaceutical industry and is planning to expand its distribution fleet to meet increasing local demand.

Nigeria Demographic Outlook

Demographic analysis is a key pillar of our macroeconomic and industry forecasting model. Not only is the total population of a country a key variable in consumer demand, but an understanding of the demographic profile is essential to understanding issues ranging from future population trends to productivity growth and government spending requirements.

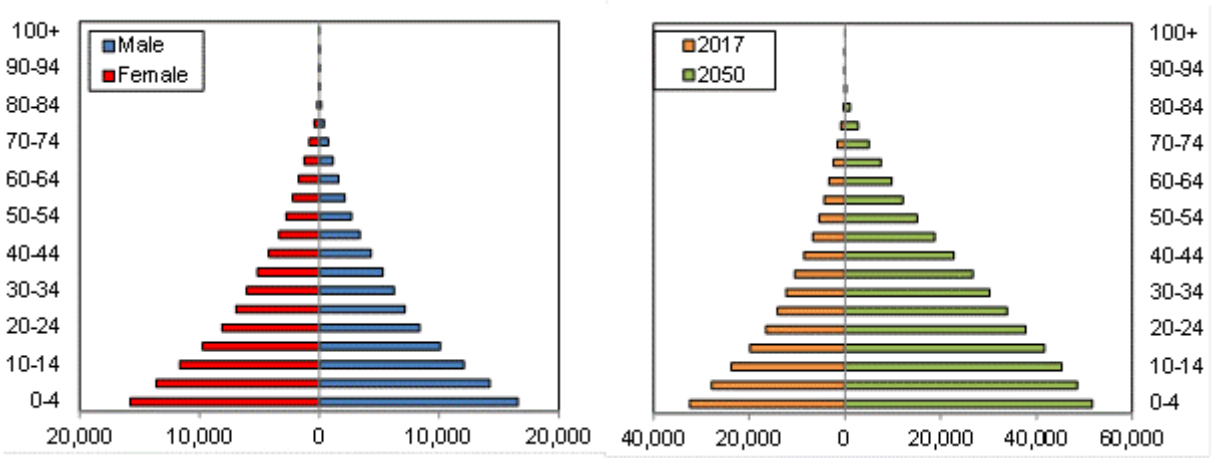
The accompanying charts detail the population pyramid for 2017, the change in the structure of the population between 2017 and 2050 and the total population between 1990 and 2050. The tables show indicators from all of these charts, in addition to key metrics such as population ratios, the urban/rural split and life expectancy.

Population
(1990-2050)



f = Fitch Solutions forecast. Source: World Bank, UN, Fitch Solutions

Nigeria Population Pyramid
2017 (LHS) & 2017 Versus 2050 (RHS)



Source: World Bank, UN, Fitch Solutions

POPULATION HEADLINE INDICATORS (NIGERIA 1990-2025)							
Indicator	**1990**	**2000**	**2005**	**2010**	**2015**	**2020f**	**2025f**
Population, total, '000	95,270.0	122,352.0	138,939.5	158,578.3	181,181.7	206,152.7	233,691.9
Population, % y-o-y		2.53	2.62	2.70	2.68	2.58	2.51
Population, total, male, '000	47,928.9	61,684.9	70,160.0	80,204.2	91,768.7	104,524.8	118,562.9
Population, total, female, '000	47,341.1	60,667.1	68,779.5	78,374.1	89,413.0	101,627.9	115,128.9
Population ratio, male/female	1.01	1.02	1.02	1.02	1.03	1.03	1.03

na = not available; f = Fitch Solutions forecast. Source: World Bank, UN, Fitch Solutions

KEY POPULATION RATIOS (NIGERIA 1990-2025)							
Indicator	**1990**	**2000**	**2005**	**2010**	**2015**	**2020f**	**2025f**
Active population, total, '000	49,681.5	65,560.5	74,459.2	84,414.5	96,296.0	110,907.5	128,253.5
Active population, % of total population	52.1	53.6	53.6	53.2	53.1	53.8	54.9
Dependent population, total, '000	45,588.5	56,791.6	64,480.3	74,163.8	84,885.7	95,245.2	105,438.4
Dependent ratio, % of total working age	91.8	86.6	86.6	87.9	88.2	85.9	82.2
Youth population, total, '000	42,845.6	53,347.3	60,672.2	69,822.7	79,928.3	89,595.2	98,881.2
Youth population, % of total working age	86.2	81.4	81.5	82.7	83.0	80.8	77.1
Pensionable population, '000	2,742.9	3,444.2	3,808.1	4,341.0	4,957.5	5,650.0	6,557.2
Pensionable population, % of total working age	5.5	5.3	5.1	5.1	5.1	5.1	5.1

na = not available; f = Fitch Solutions forecast. Source: World Bank, UN, Fitch Solutions

URBAN/RURAL POPULATION & LIFE EXPECTANCY (NIGERIA 1990-2025)							
Indicator	**1990**	**2000**	**2005**	**2010**	**2015**	**2020f**	**2025f**
Urban population, '000	28,276.1	42,627.4	54,289.2	68,949.8	86,561.4	106,638.7	129,131.1
Urban population, % of total	29.7	34.8	39.1	43.5	47.8	51.7	55.3
Rural population, '000	66,993.9	79,724.6	84,650.3	89,628.4	94,620.4	99,514.0	104,560.8
Rural population, % of total	70.3	65.2	60.9	56.5	52.2	48.3	44.7
Life expectancy at birth, male, years	44.7	45.4	47.5	50.1	52.2	54.4	56.4
Life expectancy at birth, female, years	47.2	47.2	49.0	51.6	53.8	56.1	58.4
Life expectancy at birth, average, years	45.9	46.3	48.2	50.8	53.0	55.2	57.4

na = not available; f = Fitch Solutions forecast. Source: World Bank, UN, Fitch Solutions

POPULATION BY AGE GROUP (NIGERIA 1990-2025)							
Indicator	**1990**	**2000**	**2005**	**2010**	**2015**	**2020f**	**2025f**
Population, 0-4 yrs, total, '000	16,808.7	21,083.5	24,325.6	27,699.3	31,109.2	33,914.2	36,830.0
Population, 5-9 yrs, total, '000	14,066.1	17,217.6	19,698.2	23,021.7	26,417.7	29,887.1	32,768.2
Population, 10-14 yrs, total, '000	11,970.9	15,046.2	16,648.3	19,101.7	22,401.4	25,793.9	29,283.0
Population, 15-19 yrs, total, '000	9,873.7	13,315.5	14,628.9	16,213.2	18,648.9	21,923.3	25,319.8
Population, 20-24 yrs, total, '000	7,995.2	11,266.8	12,810.6	14,102.2	15,671.5	18,076.4	21,341.5
Population, 25-29 yrs, total, '000	6,722.1	9,154.2	10,783.6	12,292.0	13,565.3	15,115.8	17,517.4
Population, 30-34 yrs, total, '000	5,653.0	7,356.3	8,739.2	10,319.2	11,795.2	13,052.3	14,612.2
Population, 35-39 yrs, total, '000	4,723.9	6,158.7	7,006.5	8,345.9	9,884.0	11,331.0	12,595.7
Population, 40-44 yrs, total, '000	4,126.6	5,142.6	5,839.0	6,665.1	7,964.6	9,463.4	10,898.2
Population, 45-49 yrs, total, '000	3,535.2	4,246.9	4,840.7	5,516.4	6,319.8	7,580.9	9,049.1

Indicator	1990	2000	2005	2010	2015	2020f	2025f
Population, 50-54 yrs, total, '000	2,903.3	3,631.8	3,941.1	4,511.8	5,165.1	5,945.6	7,166.7
Population, 55-59 yrs, total, '000	2,329.1	2,993.9	3,285.5	3,587.2	4,131.1	4,759.0	5,508.1
Population, 60-64 yrs, total, '000	1,819.4	2,293.6	2,584.1	2,861.3	3,150.5	3,659.8	4,244.8
Population, 65-69 yrs, total, '000	1,318.1	1,628.7	1,826.3	2,085.7	2,336.5	2,605.0	3,053.3
Population, 70-74 yrs, total, '000	829.6	1,037.9	1,136.6	1,300.4	1,508.6	1,719.0	1,940.3
Population, 75-79 yrs, total, '000	411.1	534.9	580.4	654.6	764.6	907.6	1,052.3
Population, 80-84 yrs, total, '000	147.6	194.6	211.9	239.6	277.1	333.4	405.5
Population, 85-89 yrs, total, '000	32.3	42.7	47.0	54.0	62.7	75.3	93.6
Population, 90-94 yrs, total, '000	3.9	5.1	5.4	6.4	7.5	9.1	11.4
Population, 95-99 yrs, total, '000	0.2	0.3	0.4	0.4	0.5	0.6	0.8
Population, 100+ yrs, total, '000	0.0	0.0	0.0	0.0	0.0	0.0	0.0

na = not available; f = Fitch Solutions forecast. Source: World Bank, UN, Fitch Solutions

POPULATION BY AGE GROUP % (NIGERIA 1990-2025)

Indicator	1990	2000	2005	2010	2015	2020f	2025f
Population, 0-4 yrs, % total	17.64	17.23	17.51	17.47	17.17	16.45	15.76
Population, 5-9 yrs, % total	14.76	14.07	14.18	14.52	14.58	14.50	14.02
Population, 10-14 yrs, % total	12.57	12.30	11.98	12.05	12.36	12.51	12.53
Population, 15-19 yrs, % total	10.36	10.88	10.53	10.22	10.29	10.63	10.83
Population, 20-24 yrs, % total	8.39	9.21	9.22	8.89	8.65	8.77	9.13
Population, 25-29 yrs, % total	7.06	7.48	7.76	7.75	7.49	7.33	7.50
Population, 30-34 yrs, % total	5.93	6.01	6.29	6.51	6.51	6.33	6.25
Population, 35-39 yrs, % total	4.96	5.03	5.04	5.26	5.46	5.50	5.39
Population, 40-44 yrs, % total	4.33	4.20	4.20	4.20	4.40	4.59	4.66
Population, 45-49 yrs, % total	3.71	3.47	3.48	3.48	3.49	3.68	3.87
Population, 50-54 yrs, % total	3.05	2.97	2.84	2.85	2.85	2.88	3.07
Population, 55-59 yrs, % total	2.44	2.45	2.36	2.26	2.28	2.31	2.36
Population, 60-64 yrs, % total	1.91	1.87	1.86	1.80	1.74	1.78	1.82
Population, 65-69 yrs, % total	1.38	1.33	1.31	1.32	1.29	1.26	1.31
Population, 70-74 yrs, % total	0.87	0.85	0.82	0.82	0.83	0.83	0.83
Population, 75-79 yrs, % total	0.43	0.44	0.42	0.41	0.42	0.44	0.45
Population, 80-84 yrs, % total	0.15	0.16	0.15	0.15	0.15	0.16	0.17
Population, 85-89 yrs, % total	0.03	0.03	0.03	0.03	0.03	0.04	0.04
Population, 90-94 yrs, % total	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Population, 95-99 yrs, % total	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Population, 100+ yrs, % total	0.00	0.00	0.00	0.00	0.00	0.00	0.00

na = not available; f = Fitch Solutions forecast. Source: World Bank, UN, Fitch Solutions

Pharmaceuticals & Healthcare Glossary

Terms Used In Datasets, Daily Analysis And Reports

Pharmaceuticals, medicines, drugs: synonym terms used interchangeably.

Pharmaceutical market/sales: the sum of revenues generated by generic, patented and over-the-counter (OTC) drugs through hospitals, retail pharmacies and other channels. Unless otherwise stated, market value is reported at final consumer price including mark-ups, taxes, etc.

Prescription drugs: patented and generic medicines regulated by legislation that requires a physician's prescription before they can be sold to a patient.

Patented drug: an innovative medicine granted intellectual property protection by a patent office. The patent may encompass a wide range of claims, such as active ingredient, formulation, mode of action, etc, giving the patent holder the sole right to sell the drug while the patent is in effect.

Generic drug: a bioequivalent medicine that contains the same active ingredient as an originator drug. The originator drug is an innovative medicine that no longer has intellectual property protection due to patent expiry. The definition for generic drugs includes off-patent originator medicines.

Over-the-counter (OTC) drug: a medicine that does not require a prescription to be sold to patients. Also known as non-prescription medicines.

Biosmilar: a drug that is similar to a biological reference product, and which is manufactured by a company other than the originator. Regulatory approval of biosimilars is technically possible following patent expiry of the reference product. There are several terms used to describe these drugs in various markets, including 'similar biologics' (India), 'similar biological products' (Singapore) and 'subsequent entry biologics' (Canada). However, biosimilars is the official name given in the EU pharmaceutical directives, and that was adopted in the 2010 US legislation.

Healthcare expenditure: government and private spending on medical products and services. This includes the purchase of healthcare services and goods by public entities such as ministries and social security institutions; government purchase of new assets including investments into buildings, machinery (capital expenditure); or by private entities such as non-profit institutions and households. The inclusion of this factor in our forecasts necessitates taking into account the essential attributes of country-specific healthcare sector characteristics such as comprehensiveness, consistency, standardisation and timeliness. The inclusion of this factor in our forecasts necessitates taking into account the essential attributes of country-specific healthcare sector characteristics such as comprehensiveness, consistency, standardisation and timeliness.

Government healthcare expenditure: (includes capital healthcare expenditure): refers to current healthcare expenditure which includes healthcare goods and services used or consumed during the year, capital expenditure on assets, restoration or enhancement paid by government entities such as a ministry of health, other ministries, parastatal organisations and social security agencies, including transfer payments to households to offset medical care costs and extra-budgetary funds to finance healthcare provision.

Private healthcare expenditure: spending on health by private entities such as commercial or mutual health insurance providers, households, non-profit institutions serving households, resident corporations and quasi-corporations not controlled by governments.

Medical devices: equipment and products used for diagnosis or therapy in patients. Whereas pharmaceuticals achieve their principal action by pharmacological, metabolic or immunological means, medical devices act by physical or mechanical means. Medical devices include a wide range of products, including syringes, thermometers, blood glucose tests, prosthetic limbs, ultrasound scans and X-ray machines.

Clinical trials: for the purposes of registration, a clinical trial is any research study that prospectively assigns human participants or groups of humans to one or more health-related interventions to evaluate the effects on health outcomes. Clinical trials may also be referred to as interventional trials. Interventions include, drugs, cells and other biological products, surgical procedures, radiologic procedures, devices, behavioural treatments, process-of-care changes and preventive care. This definition includes Early Phase I to Phase IV trials.

Hospitals: health facilities larger than clinics, including general hospitals, specialised hospitals, public hospitals and private hospitals.

Hospital beds: a piece of furniture for recovery from illness, available at all facilities classified as hospitals by the relevant national statistical office.

Public inpatient admission: a person receiving medical treatment overnight in a hospital as defined by the relevant national statistical organisation. Excludes outpatient (non-overnight) visits. Units: thousands of visits.

Outpatient visit: a person who is not hospitalised overnight but who visits a hospital, clinic or associated facility for diagnosis or treatment.

Physician: a skilled healthcare professional trained and licensed to practice medicine.

Proprietary Tool Terminology

Disease Database: a fully country-comparative interactive tool that provides dynamic forecasts of the burden and number of deaths of 268 diseases and injuries in 178 countries, from 1990 to 2030. Fitch Solutions' disease database incorporates WHO, World Bank, IMF and Fitch Solutions data to create a proprietary dataset. The data is quantified as the sum of disability-adjusted life years lost to a disease in a particular country.

Disability-adjusted life years (DALYs): the sum of the years of life lost (YLL) due to premature mortality in a population and the years lost due to disability (YLD) for incident cases of the health condition. The DALY is a health gap measure that extends the concept of potential years of life lost due to premature death (PYLL) to include equivalent years of 'healthy' life lost in states of less than full health (broadly termed 'disability'). One DALY represents the loss of one year of equivalent full health.

Communicable disease: an infectious disease transmissible (as from person to person) by direct contact with an affected individual or the individual's discharges or by indirect means (as by a vector).

Non-communicable disease: also known as chronic diseases, non-communicable diseases are not passed from person to person. They are of long duration and generally of slow progression.

Innovative Pharmaceuticals Risk/Reward Index (RRI): quantifies and ranks a country's attractiveness in terms of its pharmaceuticals industry; it balances the Risks and Rewards of launching innovative medicines in different countries. It should be emphasised that the RRI broadly assess the rewards and the risks that a company will face when looking to launch an innovative drug in a market. For example, we do not differentiate between drugs that are part of different therapeutic groups or whether the drug being launched is the first to be launched in the market or will be one of the many different drugs of the same therapeutic class that has been launched in the market.

Rewards: this component of the RRI is composed of an evaluation of an industry's size and growth potential (Industry Rewards),

and also macro industry and/or country characteristics that directly impact the size of business opportunities in a specific sector (Country Rewards).

Risks: this component of the RRI is composed of an evaluation of micro, industry-specific characteristics, crucial for an industry to develop to its potential (Industry Risks) and a quantifiable assessment of the country's political, economic and operational profile (Country Risks).

Acronyms

CAGR: compound annual growth rate

WHO: World Health Organization

LHS: left-hand side

RHS: right-hand side

EUR: euro

USD: US dollar

Pharmaceuticals & Healthcare Methodology

Pharmaceutical Expenditure Forecast Model

Historic pharmaceutical market data is collected from a range of sources, including:

- regulatory agencies;
- pharmaceutical trade associations;
- company press releases and annual reports;
- subscription information providers;
- local news sources;
- information from market research firms that is in the public domain.

Currently available data varies in confidence levels, so it is calibrated by Fitch Solutions' Pharmaceuticals & Healthcare analysts. In the absence of a complete time series of numbers, intermediate years are calculated from secondary sources. This 'composite' approach is used to ensure the accuracy and consistency of historic data, which is crucial for reliable forecasts.

To remove the effect of inflation, real pharmaceutical expenditure figures are then calculated by removing the annual average consumer price index (CPI).

Real per-capita pharmaceutical expenditure numbers are calculated by dividing by population figures.

A linear regression (see Note 3 for explanation) is then performed on five years of real per-capita pharmaceutical expenditure against real per-capita final consumption (see Note 4 for explanation). From analysis of the top 130 economies, Fitch Solutions has established a strong statistical relationship between pharmaceutical expenditure and final consumption expenditure (r = 0.985).

Healthcare Expenditure Forecast Model

Historic government and private healthcare expenditure data is sourced from the World Health Organization (WHO)'s Global Health Expenditure Database, which contains the National Health Accounts (see Note 1 for explanation). This methodology has been used for a few markets including Hong Kong, Taiwan, Somalia, Puerto Rico, Kosovo, Burkina Faso, Cuba and North Korea. This is due to elements of healthcare sector-financed expenditures being omitted in the System of Health Accounts 2011 methodology, owing to lack of appropriate methods and data sources.

For the remainder of the markets, historic government and private healthcare expenditure data is sourced from the World Health Organization (WHO)'s Global Health Expenditure Database, which contains the System of Health Accounts 2011 (see Note 2 for explanation). In December 2017, WHO released estimates of health expenditures through an updated framework called the System of Health Accounts 2011. The new classification now captures more accurately the health financing reforms taking place in member states, and enables more insightful and policy relevant analysis to be conducted. Each country's health expenditure estimates are available in absolute amounts in national current units (NCU) and common currencies including US dollars (USD) and international dollars at purchasing power parity (PPP).

To remove the effect of inflation, real healthcare expenditure figures are then calculated by removing the annual average CPI.

Real per-capita healthcare expenditure numbers are calculated by dividing by population figures.

A linear regression is then performed (see Note 3 for explanation). This is first on five years of real per-capita public healthcare expenditure against real per-capita government final consumption expenditure (see Note 4 for explanation). This generates a 10-year forecast of future real per-capita public healthcare expenditure figures from 'known' projected real per-capita government final consumption expenditure figures. Another linear regression is simultaneously performed on real per-capita private healthcare expenditure against real per-capita private final consumption expenditure.

To generate the nominal public healthcare spending forecast, population and CPI numbers are returned to both real per-capita public healthcare expenditure figures and real per-capita private healthcare expenditure figures.

The overall healthcare expenditure forecast is then calculated by combining public and private healthcare expenditure.

Notes On Methodology

Note 1: National Health Accounts methodology. The global health expenditure database that WHO has maintained for the past ten years, provides internationally comparable numbers on national health expenditures. WHO updates the data annually, taking, adjusting and estimating the numbers based on publicly available reports (national health account reports, reports from the Ministry of Finance, Central Bank, National Statistics Offices, public expenditure information and reports from the World Bank, the International Monetary Fund, etc). The estimates are sent out to the Ministries of Health for validation prior to publication but users are advised that country data may still differ in terms of definitions, data collection methods, population coverage and estimation methods used. This database is the source for the health expenditure tables in the World Health Statistics Report and the WHO Global Health Observatory.

Note 2: System of Health Account 2011

In response to the pressing need for reliable and comparable statistics on health expenditure and financing, the OECD, in co-

operation with experts from OECD member countries, developed the manual, A System of Health Accounts (SHA), releasing the initial 1.0 version in 2000. Building on SHA 2000, the OECD worked with the World Health Organization (WHO) and Eurostat to publish A system of health accounts 2011 edition (SHA 2011). The formal process of producing SHA 2011 started in 2007 as a co-operative activity of health accounts experts from the OECD, WHO and Eurostat, known collectively as the International Health Accounts Team (IHAT). The resulting manual has been the subject of an extensive and wide-reaching consultation process aimed at gathering inputs from national experts and other international organisations around the world.

This year, the WHO reported healthcare expenditure data using the framework of System of Health Accounts 2011 (SHA 2011). The macro-economic variables were also updated to calculate some indicators. At present, National Health Accounts (previously used methodology) are at different stages of development in various countries and may not only differ in the boundaries drawn between health and other social and economic activities but also in the classifications used, the level of detail provided and in the accounting rules.

The SHA 2011 framework makes health accounts more adaptable to rapidly evolving health financing systems, further enhances cross-country comparability of health expenditures and financing data, and ultimately improves the information base for the analytical use of national health accounts (NHAs). SHA 2011 reinforces the tri-axial relationship and the description of healthcare and long-term care expenditure – that is, what is consumed has been provided and financed. The framework provides an approach that better reflects the complex and changing systems of healthcare financing, eliminates ambiguities regarding some of the financing categories, provides new approaches for country-specific analysis and is sufficiently flexible to accommodate future changes. The framework also allows middle and low-income countries to provide a more transparent picture regarding foreign assistance.

In summary, the SHA 2011 financing framework increases the transparency of health financing systems, creating the possibility to monitor changes, compare health expenditures across countries and over time, as well as providing better information for analysis of the performance of healthcare financing systems. This is due to the clear distinction between the following four elements: financing schemes, financing agents managing the schemes; revenues of each scheme and the institutional units providing those revenues.

Note 3: Linear regression equation.

y = mx + b

Where y = unknown variable, m = slope of gradient, x = known variable, and b = where the line crosses the y-axis.

Note 4: Final consumption is the sum of government final consumption expenditure and private final consumption expenditure. Government final consumption expenditure is the sum of expenditure on final goods and services made by the government. Included in this are investments into healthcare infrastructure, buildings, machinery, public sector salaries, but it does not include transfer payments such as unemployment benefits or pensions. Private final consumption expenditure is the sum of all private consumption of goods and services within the economy, including both durable and non-durable goods. Housing purchases, however, are excluded. Government final consumption expenditure and private final consumption expenditure are the 'G' and 'C' in this equation:

GDP = C + I + G + (X - M)

Where GDP = gross domestic product, C = private final consumption expenditure, I = gross investment, G = government final consumption, X = exports, and M = imports.

Innovative Pharmaceuticals Risk/Reward Index Methodology

Our Innovative Pharmaceuticals Risk/Reward Index (RRI) quantifies and ranks a country's attractiveness in terms of its pharmaceuticals industry; it balances the **Risks** and **Rewards** of launching innovative medicines in different countries. It should be emphasised that the RRI *broadly* assesses the rewards and the risks that a company will face when looking to launch an innovative drug in a market. For example, we do not differentiate between drugs that are a part of different therapeutic groups or whether the drug being launched is the first to be launched in the market or will be one of the many different drugs of the same therapeutic class that has been launched in the market.

To form a country's RRI score, we combine industry-specific characteristics with broader economic, political and operational market characteristics. We weigh these inputs in terms of their importance to investor decision making in a given industry - in this case, that of innovative pharmaceuticals. The result is a nuanced and accurate reflection of the realities facing investors in terms of the balance between: 1) opportunities and risk; and 2) sector-specific and broader market traits. This enables users of our RRI to assess a market's attractiveness in both a regional and global context.

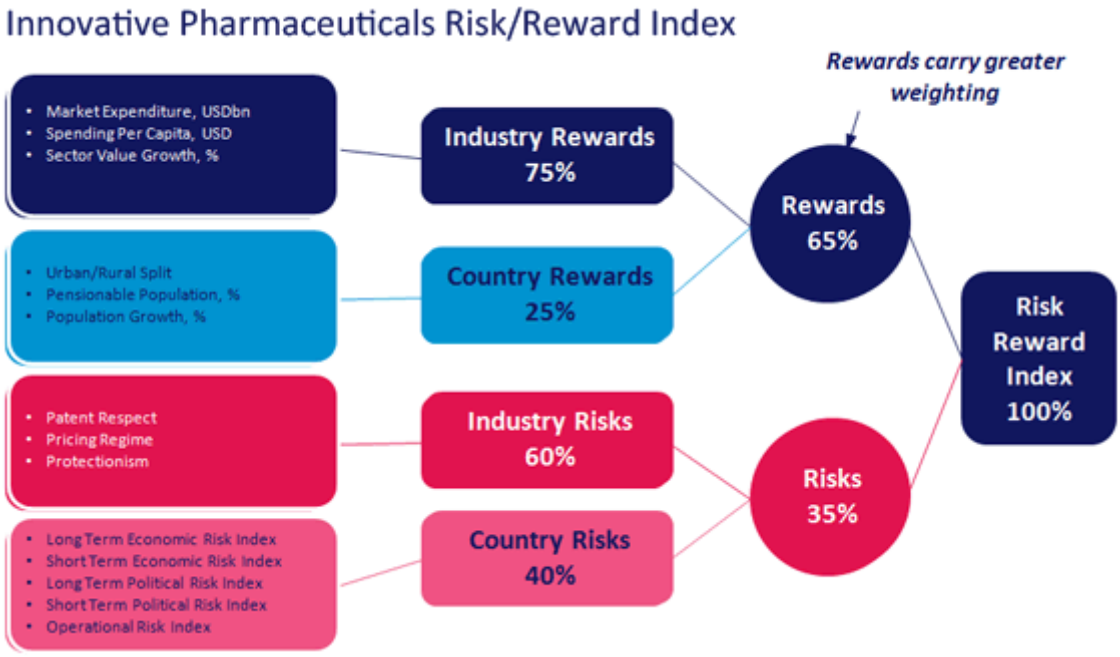
The RRI also encompasses a combination of our proprietary forecasts and analyst assessment of the regulatory climate, as well as globally acceptable benchmark indicators (eg, the World Bank's Ease Of Doing Business Scores and Transparency International's Corruption Perceptions Index). As regulations evolve and forecasts change, so does the RRI score, providing a highly dynamic and forward-looking result.

The Innovative Pharmaceuticals RRI universe comprises **109 countries**.

Benefits Of Using Fitch Solutions' Innovative Pharmaceuticals RRI

- Global Rankings: One global table, ranking 109 countries for the launch of innovative pharmaceuticals from least (closest to zero) to most attractive (closest to 100).Accessibility: Easily accessible, top down view of global, regional or sub-regional Risk/Reward profiles.
- Comparability: Identical methodology across 109 countries allows users to build lists of countries they wish to compare, beyond the confines of a global or regional grouping.
- Scoring: Scores out of 100 with a wide distribution, provide nuanced investment comparisons. The higher the score, the more favourable the country profile.
- Quantifiable: Quantifies the Risks and Rewards of doing business in the innovative pharmaceuticals sector in different countries around the world and helps identify specific flashpoints in the overall business environment.
- Comprehensive: Comprehensive set of indicators, assessing industry-specific risks and rewards alongside political, economic and operational risks.
- Entry Point: A starting point to assess the outlook for the innovative pharmaceuticals sector, from which users can dive into more granular forecasts and analysis to gain a deeper understanding of the market.
- Balanced: Multi-indicator structure prevents outliers and extremes from distorting final scores and rankings.

Weightings Of Categories And Indicators



Source: Fitch Solutions

The RRI matrix can be split into two distinct components:

Rewards: This component of the RRI is composed of an evaluation of an Industry's size and growth potential (**Industry Rewards**), and also macro industry and/or country characteristics that directly impact the size of business opportunities in a specific sector (**Country Rewards**).

Risks: This component of the RRI is composed of an evaluation of micro, industry-specific characteristics, crucial for an industry to develop to its potential (**Industry Risks**) and a quantifiable assessment of the country's political, economic and operational profile (**Country Risks**).

Assessing Our Weightings

We deliberately afford Rewards a greater weighting (65% of a market's final RRI score) and within this, the Industry Rewards pillar accounts for a majority 75%. This is to reflect the fact that when it comes to long-term investment potential, industry size and growth potential carry the most weight in indicating opportunities, with other structural factors weighing in but to a slightly lesser extent. In addition, our focus and expertise in Emerging and Frontier Markets has dictated this bias towards industry size and growth to ensure we are able to identify opportunities in countries where regulatory frameworks are not as developed and industry size is not as big (in USD terms) as in developed markets, but where we know there is a strong desire to invest.

INDICATORS - RATIONALE AND SOURCES

	Source	Rationale
Rewards		
Industry Rewards		
Market Expenditure, USDbn	**Fitch Solutions Forecast**	Denotes breadth of pharmaceutical market. Large markets score higher than smaller ones. Scores are based on annual average expenditure over a five-year forecast period.
Spending Per Capita, USD	**Fitch Solutions Forecast**	Denotes depth of pharmaceutical market. High-value markets score better than low-value ones. Scores are based on annual average expenditure over a five-year forecast period.
Sector Value Growth, %	**Fitch Solutions Forecast**	Denotes sector dynamism. Scores are based on annual average growth over a five-year forecast period.
Country Rewards		
Urban/Rural Split	**Fitch Solutions Forecast**	Urbanisation is used as a proxy for the development of medical facilities. Predominantly, rural states score lower.
Pensionable Population, %	**Fitch Solutions Forecast**	Shows the proportion of the population over 65. States with ageing populations tend to have higher per capita expenditure.
Population Growth, %	**Fitch Solutions Forecast**	Fast-growing states suggest better long-term demand and thus growth for all industries. Scores are based on annual average growth over a five-year forecast period.
Risks		
Industry Risks		
Patent Respect	**Fitch Solutions Subjective Indicator**	Markets with fair and enforced intellectual property regulations score higher than those with endemic counterfeiting.
Pricing Regime	**Fitch Solutions Subjective Indicator**	Markets with a free pricing environment score higher than markets where governments and private-sector payers put downward pressure on pharmaceutical prices as a mechanism to control expenditure.
Protectionism	**Fitch Solutions Subjective Indicator**	High scores are awarded to markets which have realised the economic and social benefit of pharmaceuticals, in turn modernising the provision of healthcare through reforms and essential drug lists and encouraging local manufacturing and research and development by foreign firms.

Source: Fitch Solutions

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