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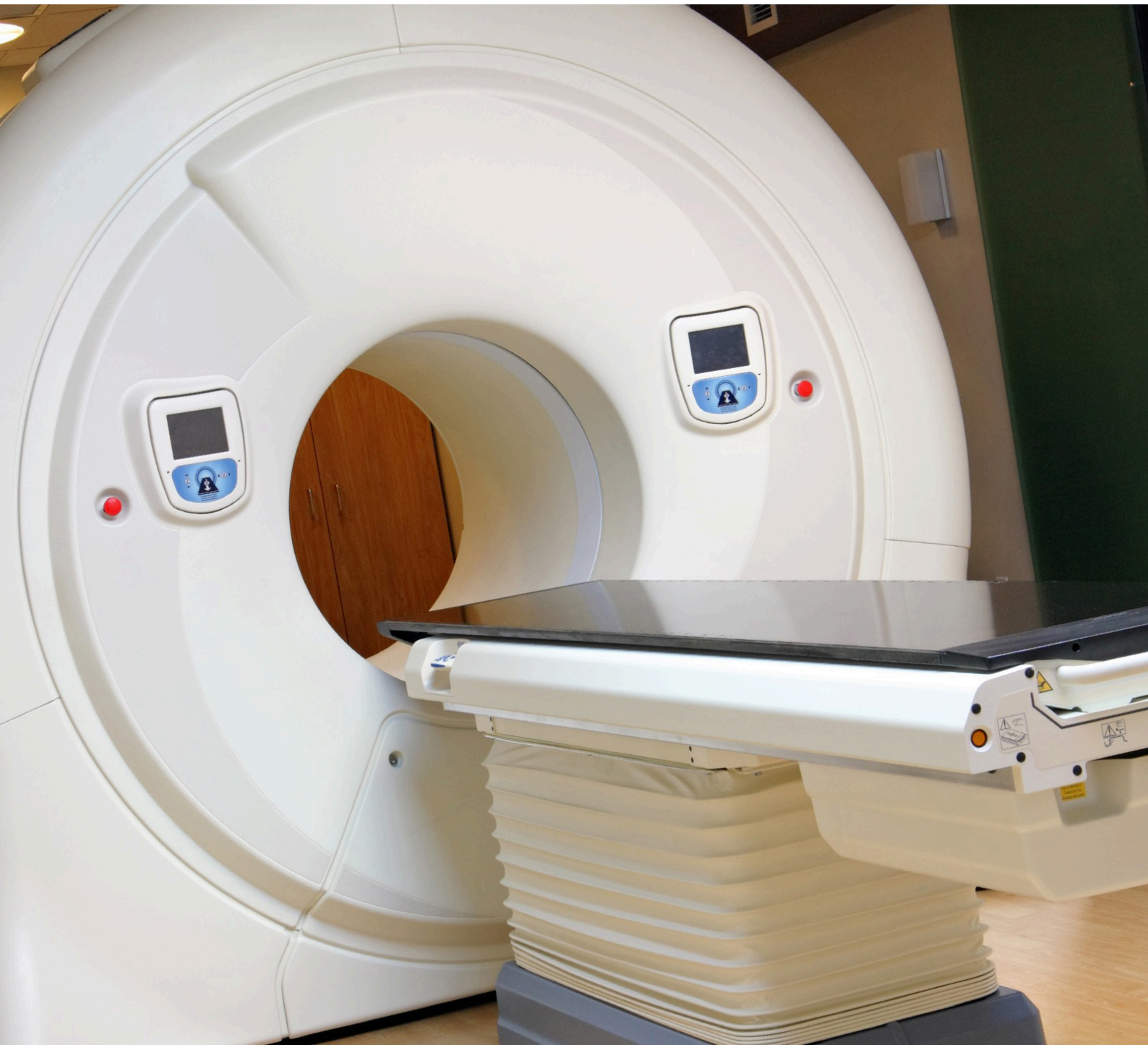
Nigeria

Medical Devices Report

Includes 5-year forecasts to 2023



Contents

Key View

Key View: *The Nigerian medical device market will record double-digit growth in local currency terms and lower growth in US dollar terms due to further depreciation of the naira. The market will benefit from an improved outlook for the economy and will remain almost entirely reliant on imports. The large population and highly underdeveloped healthcare sector offer huge long-term potential, but chronic underfunding and the chaotic management of public healthcare services, exacerbated by the insurgency in the northeast region, will continue to restrict market growth in the medium term.*

PROJECTED MEDICAL DEVICE MARKET, 2018-2023						
	2018	2019	2020	2021	2022	2023
Total (Local Currency mn)	41,100.9	47,317.4	56,183.5	64,969.8	72,860.0	82,731.3
Per Capita (Local Currency)	209.8	235.5	272.5	307.3	336.0	372.1
Total (USDmn)	134.7	155.1	166.5	172.1	185.6	201.8
Per Capita (USD)	0.7	0.8	0.8	0.8	0.9	0.9
Exchange Rate (Local Currency/USD)	305.0	305.0	337.5	377.5	392.5	410.0

Source: National Statistics, Fitch Solutions

Latest Updates And Key Forecasts

- We maintain our CAGR forecast in local currency terms and project that the market will grow at a 2018-2023 CAGR of 15.0% which should see it rise to NGN82.7bn by 2023. In US dollar terms, maintain our CAGR forecast and project that the market will grow at a 2018-2023 CAGR of 8.4% to reach USD201.8mn by 2023.
- The recovering economy will support medical devices import growth in 2019, although further depreciation of the naira will be a restraining factor. The latest monthly mirror trade data reveal that imports fell by 6.9% y-o-y to USD35.4mn in Q418.
- Nigerian medical device exports will remain prone to sudden fluctuations indicating that some export activity may be due to one-off re-exports. The establishment of a large syringe factory serving markets in West Africa will boost exports of consumables but the overall level of exports will remain very low. The latest monthly mirror trade data show that exports grew by 42.3% y-o-y to USD0.2mn in Q418.
- A reduction in import duty on medical, surgical and dental equipment will increase medical device market access and make imports more affordable. It was reported at the end of January 2019 that the Lagos Chamber of Commerce and Industry (LCCI) has advised the Federal Government to revise downwards import duty on medical, surgical and dental equipment as a matter of urgency. If implemented, we believe that this will benefit the medical device market which remains almost entirely reliant on imports.

SWOT

SWOT Analysis

Strengths

- Second largest economy in Africa with substantial oil reserves
- Largest country in Africa with a population of over 195mn
- Pro reform government committed to strengthening the healthcare system
- Growing middle class that will demand better healthcare services

Weaknesses

- Medical device market is very underdeveloped with per capita spending of less than USD1.
- Chronically under-funded healthcare sector
- Woefully inadequate healthcare infrastructure
- Shortage of health personnel in rural areas
- Autonomy of State governments in the health field hinders implementation of a national development policy

Opportunities

- Economic recovery following the recession in 2016
- Implementation of the National Health Bill will generate additional funds for the healthcare sector
- New initiatives within the National Health Insurance Scheme (NHIS) will expand health coverage to vulnerable groups
- Increased demand for medical devices will have to be met by imports
- Public-private partnerships, including Lagos Medical Park project
- Government plans to upgrade cancer services

Threats

- Increasing political instability and security challenges
- Rising Islamic militancy in largely Muslim northern states
- Continued tension in the oil-producing south east
- Naira depreciation making imported products more expensive
- Inadequate 2019 health budget, with capital expenditure decreased
- Slow uptake of health insurance schemes and a lack of government funds to increase their attractiveness
- Reduction in federal expenditure hindering development
- Regular strikes by health professionals
- "Brain drain" of health personnel to countries offering better pay and working conditions

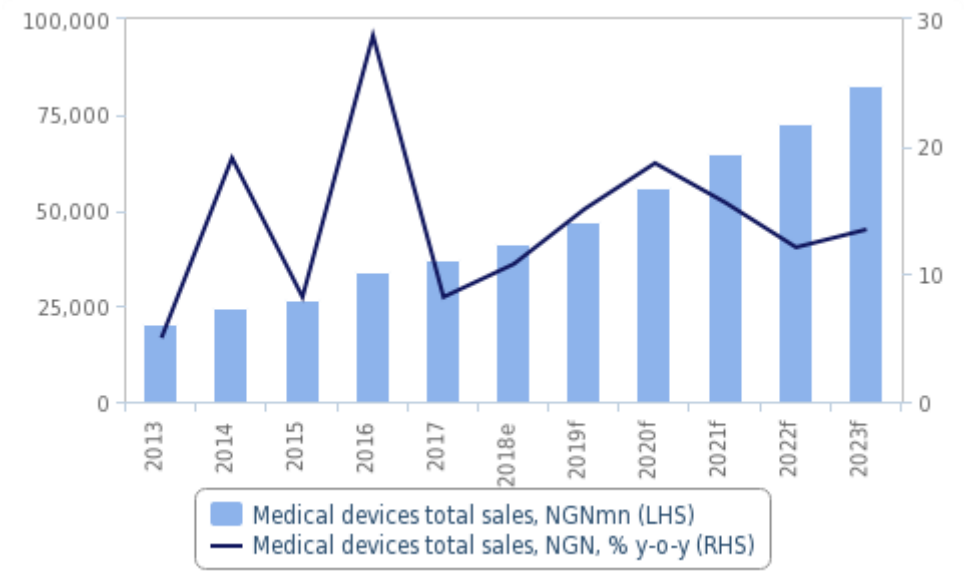
Industry Forecast

Medical Device Forecast

Latest Updates

We maintain our CAGR forecast in local currency terms and project that the market will grow at a 2018-2023 CAGR of 15.0% which should see it rise to NGN82.7bn by 2023. The market will benefit from Nigeria's economic recovery following the recession in 2016, with higher fiscal spending during the February 2019 elections and upturns in oil supply helping to drive expansion. However, any protracted policymaking uncertainty following elections will deter both local and foreign investors, while high local borrowing costs will act as a further constraint.

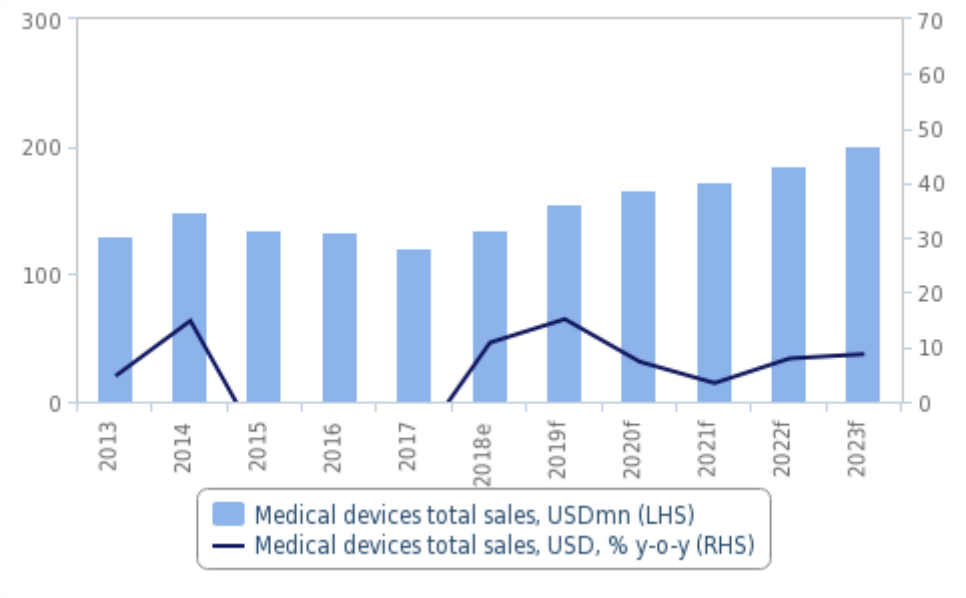
Medical Device Market, Local Currency
(2013-2023)



Source: National Statistics, Fitch Solutions

We maintain our CAGR forecast in US dollar terms and project that the market will grow at a 2018-2023 CAGR of 8.4% to reach USD201.8mn by 2023. The lower US dollar rate reflects ongoing currency weakness with the naira set to continue on its downward trajectory against the US dollar over the forecast period. That said, the market will see double-digit growth in 2019 falling to single-digit growth from 2020.

Medical Device Market, US Dollar
(2013-2023)



Source: National Statistics, Fitch Solutions

Structural Trends

The market will benefit from key drivers:

Strong fundamentals: second largest economy in Africa, although it is recovering from its recession in 2016; a growing middle class; and pro-reform government committed to strengthening the healthcare system.

Healthcare drivers: the world's seventh largest population exceeding 195mn; the National Health Insurance Scheme that is expected to improve healthcare services over the long term; the National Health Bill, which will generate funds and act as a catalyst for health sector improvements; and public private partnerships, including the Lagos Medical Park project.

Market drivers: continuing reliance on imports to supply almost all the market; and government moves to introduce a patent regime that complies with the WTO's Agreement on Trade-Related Aspects of Intellectual Property Rights.

Market growth will be constrained by:

Weak fundamentals: rising Islamic militancy in northern states; continued tension in the oil-producing south east; uncertain economic prospects; a vulnerability to global oil prices; currency depreciation; widespread corruption; and the autonomy of state governments hindering the implementation of national policies.

Healthcare barriers: a chronically under-funded healthcare sector with one of the world's lowest levels of per capita health expenditure; inadequate health budget; a reliance on foreign aid; the slow implementation of universal health insurance; the chaotic management of public healthcare services; a shortage of healthcare personnel in rural areas; and the tendency for wealthier Nigerians to seek medical treatment abroad.

Market barriers: a very low level of medical device expenditure exacerbated by the weak naira; widespread corruption making regulatory enforcement difficult; and the lack of meaningful patent legislation or pricing & reimbursement system.

MEDICAL DEVICE MARKET BY PRODUCT AREA, 2013-2023 (USDMN)											
	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
CONSUMABLES	32.9	44.8	36.9	40.7	45.3	51.5	59.2	63.2	64.9	70.9	77.7
DIAGNOSTIC IMAGING	37.4	31.9	29.4	27.0	19.6	22.5	25.4	27.2	28.1	30.3	33.2
DENTAL PRODUCTS	3.0	3.6	3.9	2.9	5.3	4.1	4.7	5.1	5.3	5.9	6.6
ORTHOPAEDICS & PROSTHETICS	4.6	5.6	7.7	10.1	4.1	4.9	5.7	6.3	6.5	6.8	7.2
PATIENT AIDS	18.0	22.9	15.8	16.8	12.4	14.4	16.9	18.1	18.6	20.1	21.6
OTHER MEDICAL DEVICES	33.9	40.2	41.0	35.8	34.9	37.3	43.2	46.7	48.8	51.7	55.5
TOTAL	**129.7**	**149.0**	**134.7**	**133.2**	**121.6**	**134.7**	**155.1**	**166.5**	**172.1**	**185.6**	**201.8**

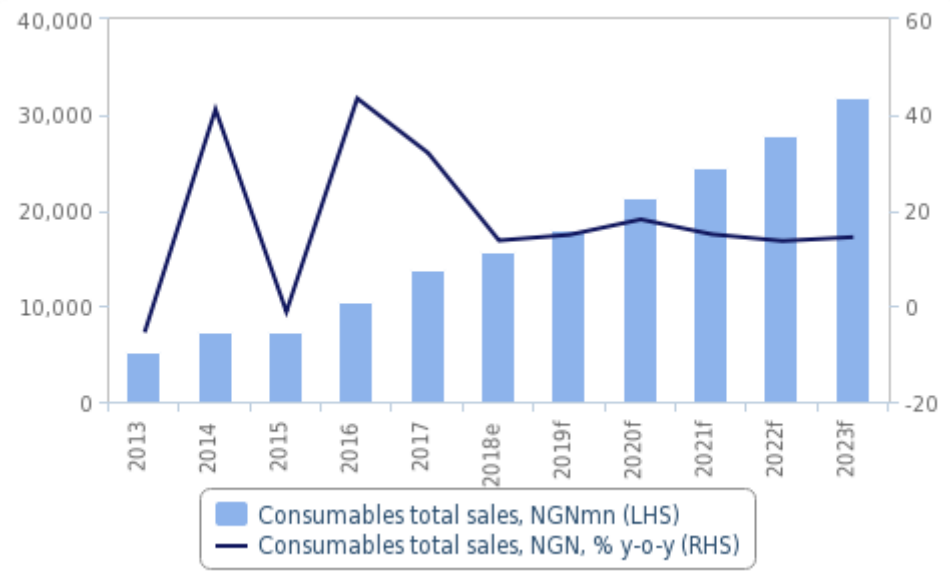
Source: National Statistics, Fitch Solutions

Consumables Forecast

Latest Updates

We maintain our CAGR forecast in local currency terms and project that the market will grow at a 2017-2022 CAGR of 15.2% which should see it rise to NGN31.8bn by 2023. Offering huge potential, the consumables market will be the second best performing sector of the medical device market, driven by the availability of funds, the rising population and the increasing incidence of non-communicable diseases. However, despite Nigeria's economic recovery after the recession in 2016, any protracted policymaking uncertainty following the February 2019 elections will deter both local and foreign investors.

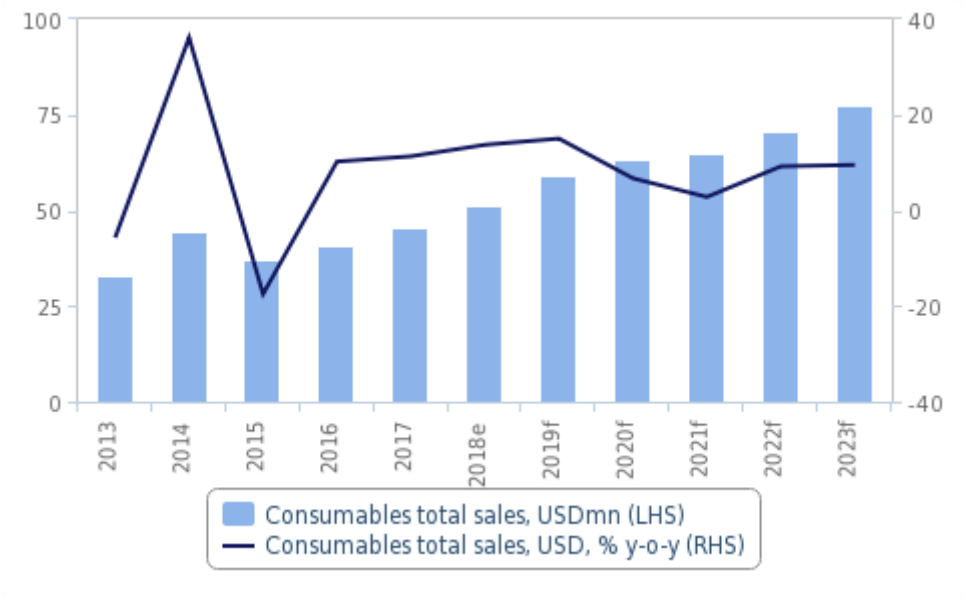
Consumables Market, Local Currency
(2013-2023)



Source: National Statistics, Fitch Solutions

We maintain our forecast in US dollar terms and project that the market will grow at a 2018-2023 CAGR of 8.6% to reach USD77.7mn by 2023. The lower US dollar rate reflects ongoing currency weakness with the naira set to continue on its downward trajectory against the US dollar over the forecast period. That said, we expect double-digit growth in 2019.

Consumables Market, US Dollar
(2013-2023)



Source: National Statistics, Fitch Solutions

Structural Trends

The market is almost totally reliant upon imports. The principal supplier is China which contributed nearly 75% of imports in 2017. Less than 10% came from the EU-28.

Bandages & Dressings

We forecast that the market for bandages & dressings will expand at a 2018-2023 CAGR of 9.6% in US dollar terms to reach USD26.6mn by 2023. Non- adhesive dressings will see the fastest growth.

Imports supply almost all the market and the majority of these come from China. The EU-28 only supplied around 5% of the total in 2017.

Suturing Materials

We project that the market for suturing materials will grow at a 2018-2023 CAGR of 10.3% in US dollar terms to USD2.9mn.

The market is almost totally reliant upon imports, of which over 50% came from China and around one third from the EU-28 in 2017.

Syringes, Needles & Catheters

We forecast that the market for syringes, needles & catheters will rise at a US dollar 2018-2023 CAGR of 7.8% to USD36.9mn by 2023. Tubular metal needles/needles for sutures will be the fastest growing segment.

Imports supply almost all of the market. China was the leading supplier in 2017 accounting for nearly 80% of total imports, ahead of India with over 10%.

Other Consumables

We project that the market for other consumables will increase by a US dollar 2018-2023 CAGR of 8.2%. The value of the market will grow to USD11.3mn by 2023, with surgical gloves accounting for over 80% of the total. Blood-grouping reagents will be the fastest growing segment.

The market is almost totally reliant on imports, with China the leading supplier, followed by Malaysia given its dominance in surgical gloves.

CONSUMABLES MARKET, 2013-2023 (USDMN)	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
CONSUMABLES	**34.9**	**32.9**	**44.8**	**36.9**	**40.7**	**45.3**	**51.5**	**59.2**	**63.2**	**64.9**	**70.9**
BANDAGES & DRESSINGS	10.5	9.7	11.9	8.8	8.9	14.9	16.8	19.4	20.7	21.5	24.0
Medical dressings (adhesive)	2.2	3.3	5.3	4.1	3.3	4.4	5.0	5.8	6.2	6.4	6.9
Medical dressings (non-adhesive)	8.3	6.5	6.6	4.7	5.6	10.5	11.8	13.6	14.5	15.1	17.1
SUTURING MATERIALS	1.5	1.2	1.5	1.3	3.6	1.5	1.8	2.1	2.4	2.5	2.7
SYRINGES, NEEDLES & CATHETERS	14.5	13.5	22.0	17.2	20.5	22.3	25.3	28.8	30.6	31.4	33.9
Syringes (with/ without needles)	7.3	7.0	9.2	10.1	13.0	13.5	15.3	17.4	18.6	19.1	20.5
Tubular metal needles/needles for sutures	1.0	1.1	1.5	1.8	1.3	1.4	1.6	1.8	2.0	2.0	2.2
Other needles, catheters, cannulae etc	6.1	5.4	11.3	5.2	6.2	7.4	8.3	9.5	10.1	10.3	11.2
OTHER CONSUMABLES	8.5	8.4	9.4	9.6	7.7	6.6	7.6	8.9	9.4	9.6	10.4
Blood-grouping reagents	0.1	0.1	0.4	0.2	0.3	0.0	0.1	0.1	0.1	0.1	0.1
First-aid boxes & kits	1.2	0.5	0.5	1.7	2.4	1.0	1.2	1.5	1.6	1.7	1.8
Ostomy products	0.4	0.7	0.8	0.8	0.1	0.1	0.1	0.2	0.2	0.2	0.2
Surgical gloves	6.8	7.1	7.8	6.9	5.0	5.5	6.3	7.2	7.5	7.5	8.2

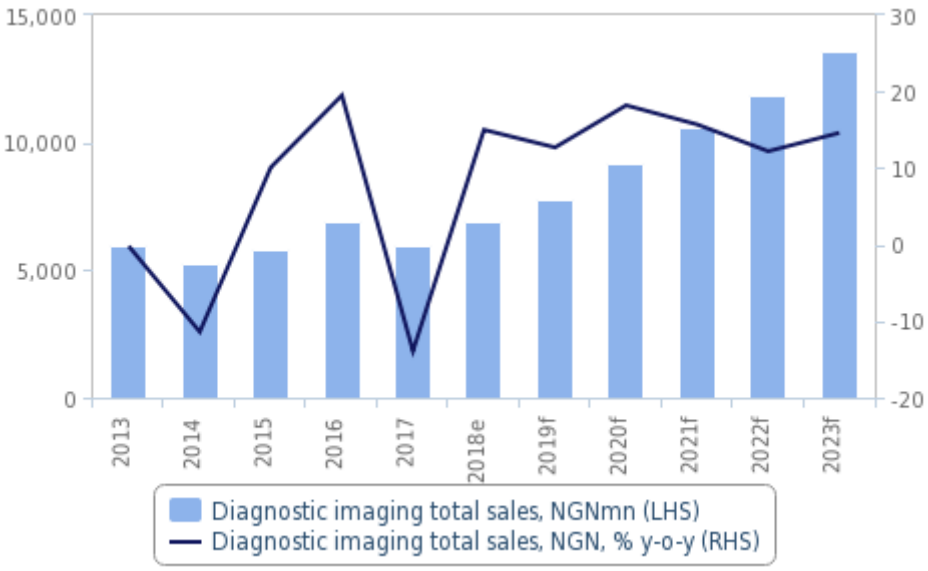
Source: National Statistics, Fitch Solutions

Diagnostic Imaging Forecast

Latest Updates

We maintain our CAGR forecast in local currency terms and project that the market will grow at a 2018-2023 CAGR of 14.7% which should see it rise to NGN13.6bn by 2023. Offering huge potential, the market will be driven by the availability of funds, investment in healthcare infrastructure, the rising population and the increasing incidence of non-communicable diseases. However, despite Nigeria's economic recovery after the recession in 2016, any protracted policymaking uncertainty following the February 2019 elections will deter both local and foreign investors.

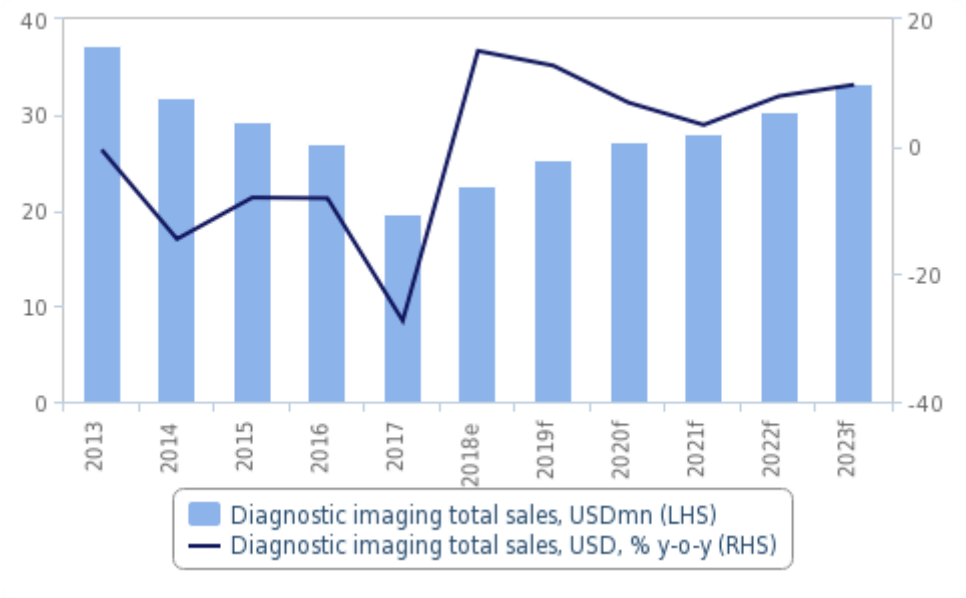
Diagnostic Imaging Market, Local Currency
(2013-2023)



Source: National Statistics, Fitch Solutions

We maintain our CAGR forecast in US dollar terms and project that the market will grow at a 2018-2023 CAGR of 8.1% to reach USD33.2mn by 2023. The naira is set to continue on its downward trajectory against the US dollar. That said, the market will see double-digit growth in 2019.

Diagnostic Imaging Market, US Dollar
(2013-2023)



Source: National Statistics, Fitch Solutions

Structural Trends

Imports supply virtually all of the market. China and the US were the leading suppliers in 2017, accounting for over 30% and about 20% respectively. The EU-28 also contributed around 20% of imports in 2017.

While the Federal Ministry of Health makes available funding for diagnostic equipment in high-level hospitals, tertiary facilities, such as the Lagos University Teaching Hospital, are increasingly turning to public-private partnerships to finance the purchase of expensive CT and MRI equipment.

Electrodiagnostic Apparatus

We forecast that the electrodiagnostic apparatus market will rise at a 2018-2023 CAGR of 8.9% in US dollar terms to USD17.6mn by 2023. This will be the fastest growing area of the diagnostic imaging market. Scintigraphic apparatus will register the highest growth.

Imports supply virtually all of the market. China and the US, whose share has substantially increased, were the principal suppliers in 2017, accounting for around 35% and 30% of imports respectively. The EU-28 supplied around 15% of imports in 2017.

Radiation Apparatus

We forecast that the market for radiation apparatus will grow at a US dollar 2018-2023 CAGR of 7.6% taking the value to USD9.5mn. Other medical X-ray apparatus will record the fastest growth.

Imports supply virtually all of the market. China and Japan were the leading suppliers in 2017 accounting for around 20% and 15% respectively. The EU-28 contributed over 20% of imports.

Imaging Parts & Accessories

We forecast that the market for imaging parts & accessories will increase at a 2018-2023 CAGR of 6.5% in US dollar terms, taking the value of the market to USD6.1mn by 2023. We forecast that all segments will experience positive growth, led by other imaging parts & accessories at a CAGR of 9.3%.

Imports supply virtually all of the market. China was the principal supplier with around 35% of total imports in 2017. The EU-28 accounted for nearly 40% of imports.

DIAGNOSTIC IMAGING MARKET, 2013-2023 (USDMN)											
	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
DIAGNOSTIC IMAGING	**37.4**	**31.9**	**29.4**	**27.0**	**19.6**	**22.5**	**25.4**	**27.2**	**28.1**	**30.3**	**33.2**
ELECTRODIAGNOSTIC APPARATUS	13.8	13.8	10.5	14.2	10.8	11.4	12.8	13.9	14.6	15.7	17.6
Electrocardiographs	1.6	1.1	0.6	0.6	0.4	0.5	0.5	0.5	0.6	0.7	0.5
Ultrasound	1.7	1.3	2.0	2.9	5.2	4.9	5.1	5.8	6.2	6.6	8.2
MRI	4.6	5.3	3.4	4.9	3.1	3.6	4.3	4.6	4.6	5.0	5.3
Scintigraphic apparatus	0.0	0.1	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1
Other electrodiagnostic apparatus	5.9	6.1	4.3	5.7	2.1	2.4	2.8	3.0	3.1	3.3	3.5
RADIATION APPARATUS	15.3	9.9	13.2	9.2	5.0	6.6	7.6	8.1	8.3	8.8	9.5
CT scanners	10.0	4.3	7.7	6.8	2.3	3.5	4.1	4.3	4.5	4.6	4.9
Other medical X-ray apparatus	4.9	5.2	5.2	2.2	2.6	3.0	3.4	3.6	3.7	4.1	4.5
A, B, C ray apparatus	0.5	0.4	0.4	0.2	0.1	0.1	0.2	0.2	0.1	0.1	0.1
IMAGING PARTS & ACCESSORIES	8.3	8.3	5.7	3.6	3.9	4.5	5.0	5.1	5.2	5.8	6.1
Contrast media	0.7	0.9	0.6	0.9	1.0	1.0	1.1	1.0	1.1	1.3	1.4
Medical X-ray film (flat)	2.0	1.8	1.5	1.2	0.7	0.9	1.0	1.0	0.9	1.0	1.0
Medical X-ray film (rolled)	0.6	0.6	0.6	0.2	0.2	0.3	0.3	0.3	0.3	0.3	0.3
X-ray tubes	0.4	0.2	0.1	0.2	0.4	0.5	0.5	0.5	0.5	0.6	0.6
Other imaging parts & accessories	4.5	4.8	2.9	1.0	1.5	1.8	2.1	2.2	2.3	2.5	2.8

Source: National Statistics, Fitch Solutions

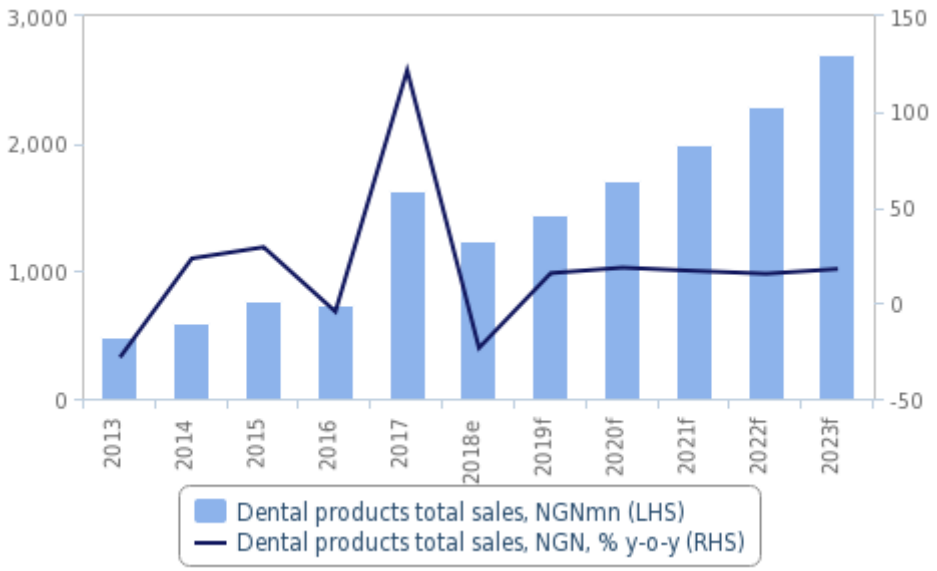
Dental Forecast

Latest Updates

We maintain our CAGR forecast in local currency terms and project that the market will grow at a 2018-2023 CAGR of 16.8% which should see it rise to NGN2.7bn by 2023. Dental products will be the fastest growing product area but it will remain disproportionately small for the size of the population, reflecting extremely limited numbers of qualified dentists.

Offering huge potential in the long term, the market will be driven by the availability of funds, the rising population, investment in dental infrastructure and the availability of qualified dental professionals. However, despite Nigeria's economic recovery after the recession in 2016, any protracted policymaking uncertainty following the February 2019 elections will deter both local and foreign investors.

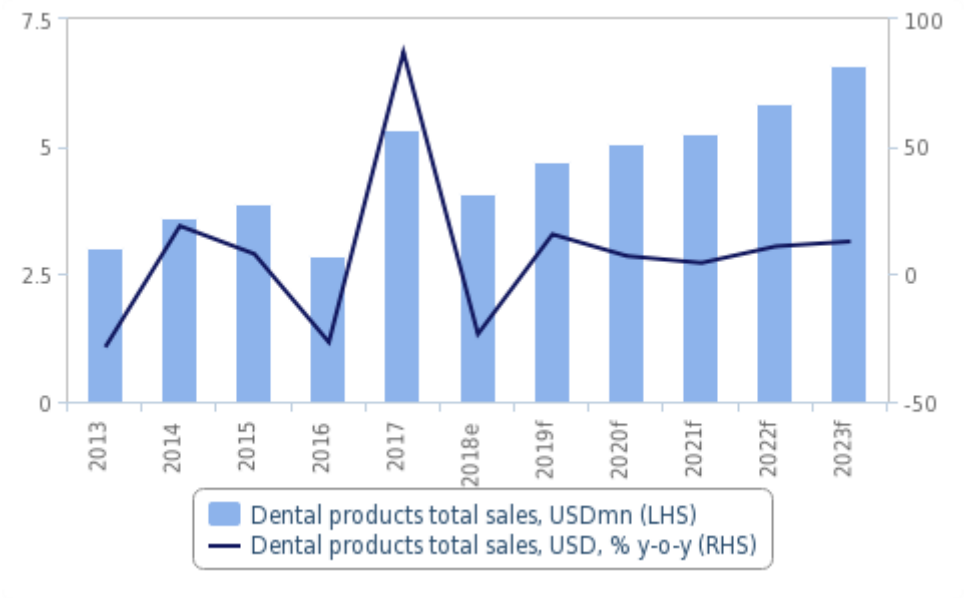
Dental Products Market, Local Currency
(2013-2023)



Source: National Statistics, Fitch Solutions

We maintain our CAGR forecast in US dollar terms and project that the market will grow at a 2018-2023 CAGR of 10.1% to reach USD6.6mn by 2023. The lower US dollar rate reflects ongoing currency weakness with the naira set to continue on its downward trajectory against the US dollar over the forecast period. That said, we expect the market will see double-digit growth in 2019.

Dental Products Market, US Dollar
(2013-2023)



Source: National Statistics, Fitch Solutions

Structural Trends

The market is heavily reliant on imports. In 2017, The EU-28 supplied about 55% of total imports, nearly all of which came from Ireland, but we note that this could be a one-off as Ireland did not supply dental products to Nigeria in previous years. China supplied nearly 30% of imports in 2017, down from around 50% in 2016.

Nigeria has a very underdeveloped dental products sector. The number of registered dentists has doubled in five years but remains below 3,000, which is very low for a country with a population of 186mn, equal to only 0.01 dentists per thousand population.

Capital Equipment

The capital equipment market is currently the larger segment within the Nigerian dental market. We forecast that the market will grow at a 2018-2023 CAGR of 7.2% in US dollar terms, taking the value of the market to USD3.8mn by 2023. Dental X-ray will record the fastest growth.

Almost all of the market is reliant on imports. China is the dominant supplier, accounting for nearly 90% of imports in 2017, while the EU-28 contributed less than 3%.

Instruments & Supplies

We forecast that the market for instruments & supplies will grow at a 2018-2023 CAGR of 14.7% in US dollar terms, which will take the value of the market to USD2.8mn by 2023. Other dental fittings will register the fastest growth.

The market is largely reliant on imports. Over 70% of imports in 2017 came from Ireland with Taiwan and China smaller suppliers.

DENTAL PRODUCTS MARKET, 2013-2023 (USDMN)											
	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
DENTAL PRODUCTS	**3.0**	**3.6**	**3.9**	**2.9**	**5.3**	**4.1**	**4.7**	**5.1**	**5.3**	**5.9**	**6.6**
CAPITAL EQUIPMENT	0.9	1.8	2.2	1.3	2.3	2.7	3.0	3.2	3.3	3.5	3.8
Dental drills	0.3	0.3	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.3	0.3
Dental chairs	0.3	1.2	2.0	1.1	2.1	2.3	2.6	2.8	2.9	3.0	3.2
Dental X-ray	0.2	0.3	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.3
INSTRUMENTS & SUPPLIES	2.1	1.8	1.7	1.5	3.1	1.4	1.7	1.8	2.0	2.3	2.8
Dental cements	0.7	0.8	0.8	0.5	0.5	0.5	0.6	0.7	0.7	0.8	0.8
Dental instruments	1.3	0.8	0.6	0.7	0.7	0.8	0.9	1.0	1.0	1.1	1.2
Teeth & other fittings	0.2	0.3	0.2	0.2	1.9	0.1	0.1	0.2	0.3	0.4	0.7
Artificial teeth	*0.0*	*0.1*	*0.0*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*
Other dental fittings	*0.1*	*0.1*	*0.2*	*0.2*	*1.8*	*0.0*	*0.1*	*0.1*	*0.2*	*0.3*	*0.7*

Source: National Statistics, Fitch Solutions

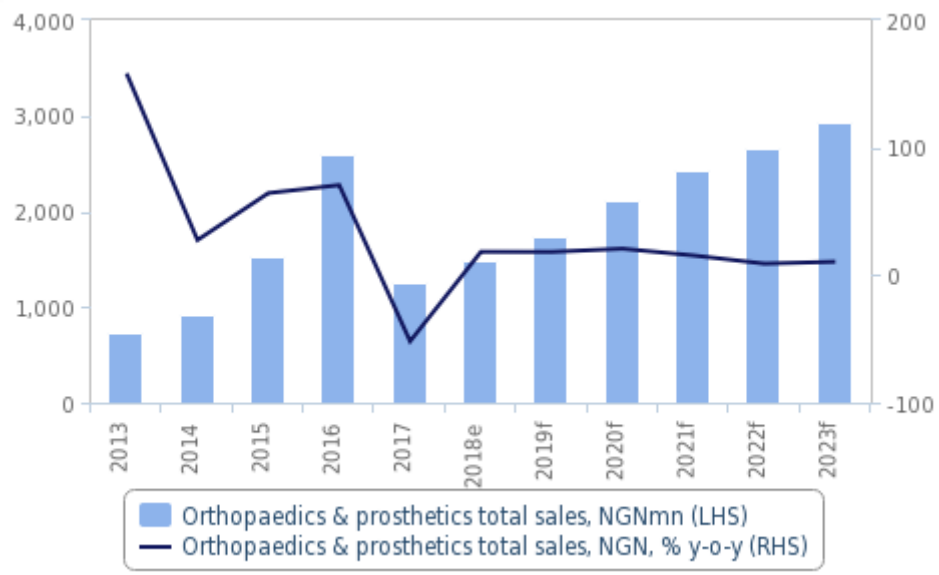
Orthopaedics And Prosthetics Forecast

Latest Updates

We maintain our CAGR forecast in local currency terms and project that the market will grow at a 2018-2023 CAGR of 14.7% which should see it rise to NGN2.9bn by 2023. The market offers huge untapped potential, but will remain disproportionately small, accounting for less than 4.0% of the total medical device market.

The market will be driven by the availability of funds, investment in healthcare infrastructure, the rising population and the increasing incidence of non-communicable diseases, but will be constrained by the relatively youthful demographic profile. Additionally, despite Nigeria's economic recovery after the recession in 2016, any protracted policymaking uncertainty following the February 2019 elections will deter both local and foreign investors.

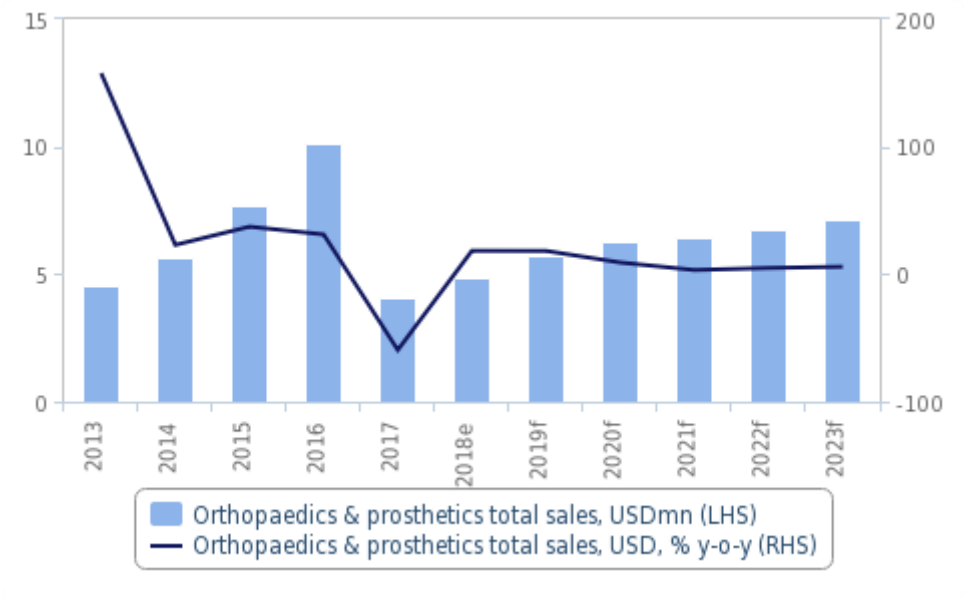
Orthopaedics & Prosthetics Market, Local Currency
(2013-2023)



Source: National Statistics, Fitch Solutions

We maintain our CAGR forecast in US dollar terms and project that the market will grow at a 2018-2023 CAGR of 8.1% to reach USD7.2mn by 2023.The lower US dollar rate reflects ongoing currency weakness with the naira set to continue on its downward trajectory against the US dollar over the forecast period. That said, the market will see double-digit growth in 2019.

Orthopaedics & Prosthetics Market, US Dollar
(2013-2023)



Source: National Statistics, Fitch Solutions

Structural Trends

The market is almost totally fulfilled by imports which have been highly volatile in recent years. China supplied almost half of the total imports in 2017, while the EU-28 supplied a further 25%.

Fixation Devices

We forecast that the fixation devices market will increase by a US dollar 2018-2023 CAGR of 8.3%. The market value will rise to USD4.2mn by 2023, representing more than half of the orthopaedics & prosthetics market.

Imports supply virtually all the market. China supplied more than 60% of all imports in 2017.

Artificial Joints

We forecast that the artificial joints product market will increase at a US dollar 2018-2023 CAGR of 7.7%. This will raise the market to USD2.7mn by 2023.

Imports supply virtually all the market. Belgium supplied nearly 50% of all imports in 2017 and China a further 30%.

Other Artificial Body Parts

Other artificial body parts will be the strongest growing segment of the orthopaedics & prosthetics market. We forecast the market will increase at a US dollar 2018-2023 CAGR of 8.7% but will remain the smallest segment valued at just USD0.3mn in 2023.

Imports supply virtually all the market. Principal suppliers have been inconsistent in recent years; in 2017 India supplied over 70% of total imports, up from only 4% in the previous year.

ORTHOPAEDICS & PROSTHETICS MARKET, 2013-2023 (USDMN)

	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
ORTHOPAEDICS & PROSTHETICS	**4.6**	**5.6**	**7.7**	**10.1**	**4.1**	**4.9**	**5.7**	**6.3**	**6.5**	**6.8**	**7.2**
FIXATION DEVICES	3.5	4.9	7.2	7.2	2.3	2.8	3.4	3.7	3.8	4.0	4.2
ARTIFICIAL JOINTS	0.6	0.5	0.2	1.7	1.7	1.9	2.2	2.4	2.5	2.6	2.7
OTHER ARTIFICIAL BODY PARTS	0.5	0.3	0.3	1.2	0.2	0.2	0.2	0.2	0.2	0.2	0.3

Source: National Statistics, Fitch Solutions

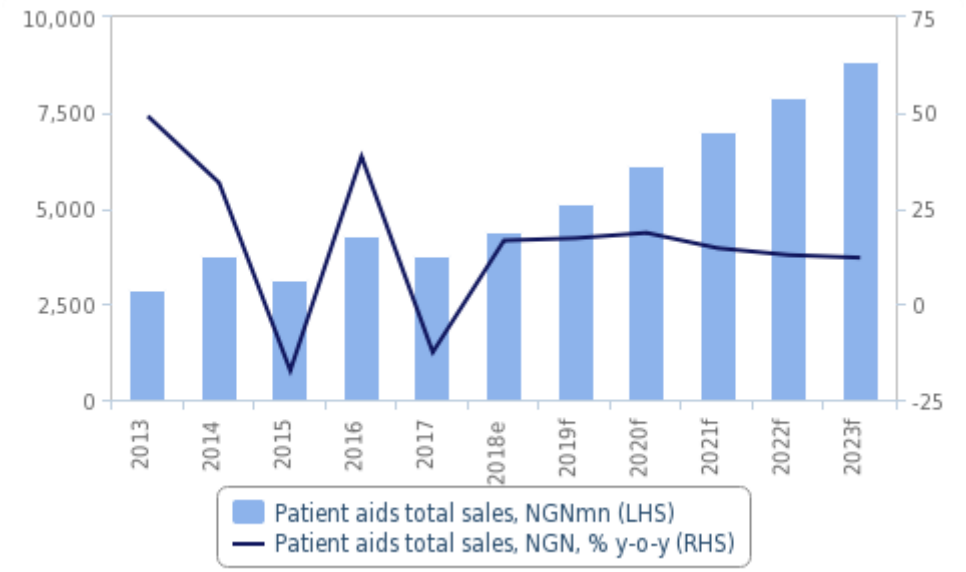
Patient Aids Forecast

Latest Updates

We maintain our CAGR forecast in local currency terms and project that the market will grow at a 2018-2023 CAGR of 15.0% which should see it rise to NGN8.7bn by 2023. Patients aids will be one of the fastest growing product areas, but per capita spending levels will remain very low.

Offering great potential, the market will be driven by the availability of funds, the rising population and the increasing incidence of non-communicable diseases. However, despite Nigeria's economic recovery after the recession in 2016, any protracted policymaking uncertainty following the February 2019 elections will deter both local and foreign investors.

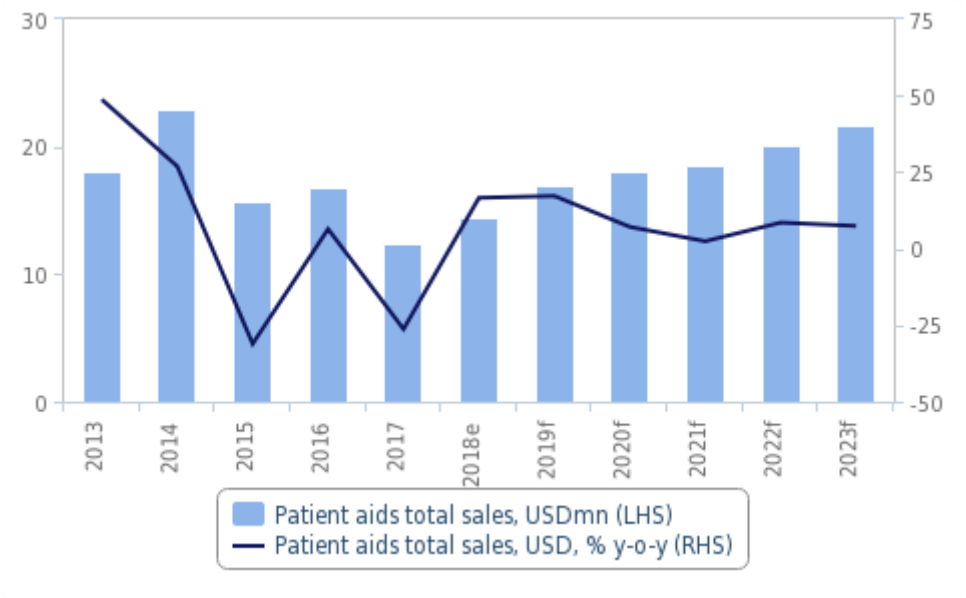
Patient Aids Market, Local Currency
(2013-2023)



Source: National Statistics, Fitch Solutions

We maintain our CAGR forecast in US dollar terms and project that the market will grow at a 2018-2023 CAGR of 8.4% to reach USD21.6mn by 2023. The lower US dollar CAGR reflects ongoing currency weakness with the naira set to continue on its downward trajectory against the US dollar over the forecast period. That said, the market will see double-digit growth in 2019 and mostly high single-digit growth from 2020.

Patient Aids Market, US Dollar
(2013-2023)



Source: National Statistics, Fitch Solutions

Structural Trends

The market is heavily import reliant. China is the leading supplier, accounting for around 75% of total imports in 2017 due to its dominance in the therapeutic appliances sector, while the EU-28 supplied nearly 15%.

Portable Aids

The portable aids market will remain proportionately small. We forecast that the market will grow at a 2018-2023 CAGR of 9.6% in US dollar terms, taking it to a value of USD4.3mn by 2023. Hearing aids will record the fastest growth.

Imports supply virtually all the market. The EU-28 supplied over half of the total imports in 2017, led by the UK. China and India were smaller suppliers.

Therapeutic Appliances

Therapeutic appliances represent the bulk of the patient aids market. We forecast this sector will grow at a CAGR of 8.1% over the 2018-2023 period, taking its value to USD17.3mn by 2023. Mechano-therapy apparatus will record the fastest growth.

The market is totally reliant on imports. China is the dominant supplier accounting for almost 90% of imports in 2017.

PATIENT AIDS MARKET, 2013-2023 (USDMN)											
	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
PATIENT AIDS	**18.0**	**22.9**	**15.8**	**16.8**	**12.4**	**14.4**	**16.9**	**18.1**	**18.6**	**20.1**	**21.6**
PORTABLE AIDS	1.9	3.0	2.5	3.6	2.3	2.7	3.2	3.5	3.7	4.0	4.3
Hearing aids	0.4	0.4	0.2	0.2	0.2	0.2	0.3	0.3	0.3	0.4	0.4
Pacemakers	0.5	0.4	0.8	0.5	0.4	0.4	0.5	0.6	0.6	0.6	0.7
Other portable aids	1.1	2.3	1.5	2.9	1.8	2.1	2.4	2.6	2.7	3.0	3.2
THERAPEUTIC APPLIANCES	16.1	19.8	13.3	13.2	10.1	11.7	13.7	14.6	14.9	16.2	17.3
Mechano-therapy apparatus	14.9	14.0	9.7	10.0	9.4	10.9	12.8	13.7	13.9	15.1	16.2
Therapeutic respiration apparatus	1.3	5.8	3.5	3.2	0.7	0.8	0.9	0.9	0.9	1.0	1.1

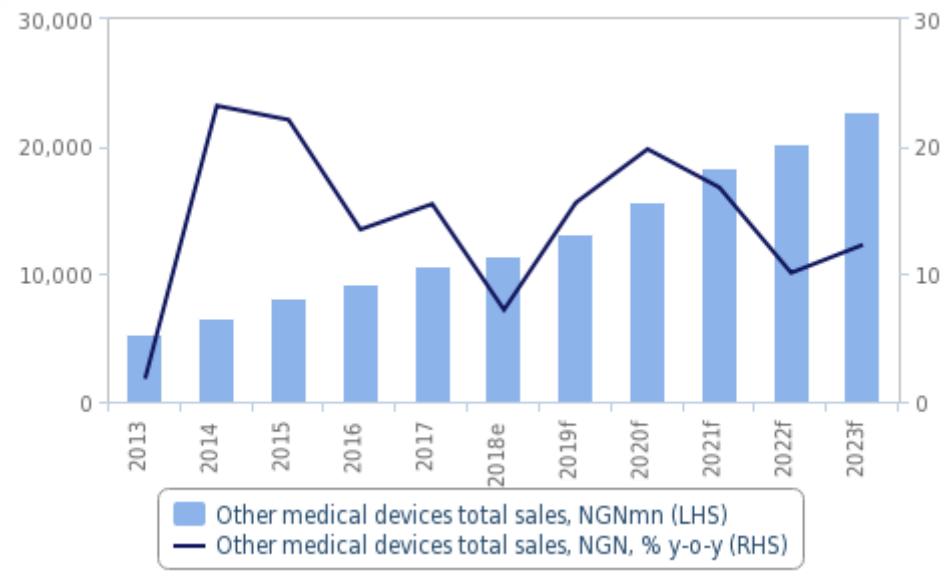
Source: National Statistics, Fitch Solutions

Other Medical Devices Forecast

Latest Updates

We maintain our forecast CAGR in local currency terms and project the market will grow at a 2018-2023 CAGR of 14.9% which should see it rise to NGN22.8bn by 2023. Offering huge untapped potential, the market will be driven by the availability of funds, investment in healthcare infrastructure, the rising population and the increasing incidence of non-communicable diseases. However, despite Nigeria's economic recovery after the recession in 2016, any protracted policymaking uncertainty following the February 2019 elections will deter both local and foreign investors.

Other Medical Devices Market, Local Currency
(2013-2023)

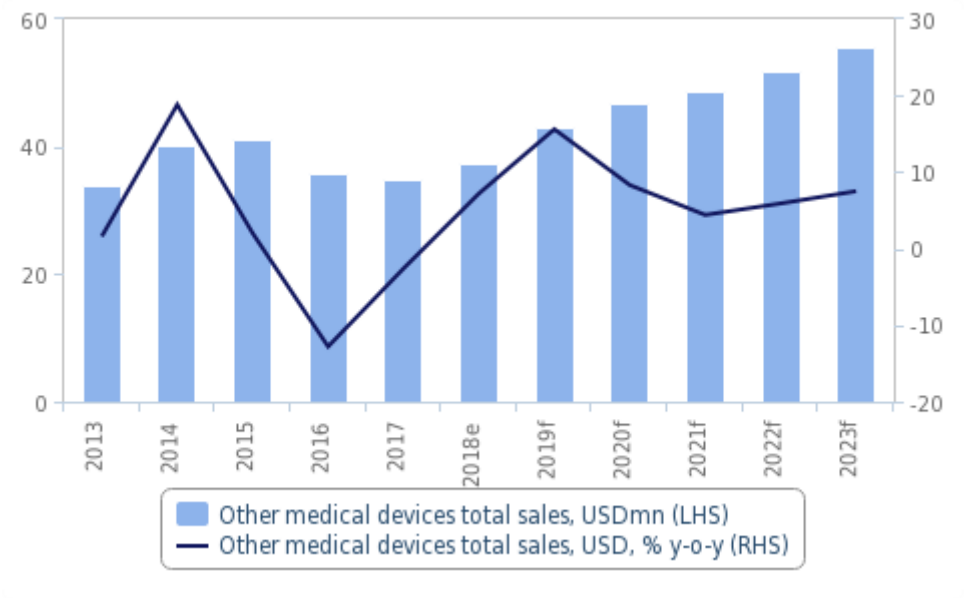


Source: National Statistics, Fitch Solutions

We maintain our CAGR forecast in US dollar terms and project that the market will grow at a 2018-2023 CAGR of 8.3% to reach USD55.5mn by 2023. The lower US dollar rate reflects ongoing currency weakness with the naira set to continue on its downward trajectory against the US dollar over the forecast period. That said, the market will see double-digit growth in 2019.

Other instruments & appliances and hospital furniture will continue to account for the majority of the market, while ophthalmic instruments will have the highest CAGR.

Other Medical Devices Market, US Dollar
(2013-2023)



Source: National Statistics, Fitch Solutions

Structural Trends

Imports supply almost all of the market. China accounted for nearly 50% of imports in 2017, while the EU-28 contributed a further 25%.

OTHER MEDICAL DEVICES MARKET, 2013-2023 (USDMN)

	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
OTHER MEDICAL DEVICES	**33.9**	**40.2**	**41.0**	**35.8**	**34.9**	**37.3**	**43.2**	**46.7**	**48.8**	**51.7**	**55.5**
WHEELCHAIRS	2.3	4.9	3.7	2.8	1.1	1.7	2.1	2.3	2.4	2.5	2.6
Wheelchairs, not mechanically propelled	1.0	1.8	1.7	1.8	0.6	0.8	0.9	1.0	1.0	1.0	1.0
Wheelchairs, mechanically propelled	1.3	3.1	2.0	0.9	0.6	1.0	1.2	1.4	1.4	1.5	1.6
OPHTHALMIC INSTRUMENTS	2.2	2.5	2.2	1.9	3.9	2.0	2.4	2.8	3.1	3.7	4.4
HOSPITAL FURNITURE	6.4	8.3	8.8	8.5	7.5	8.3	9.5	10.1	10.4	11.4	12.4
MEDICAL, SURGICAL STERILISERS	5.4	3.6	5.4	4.2	3.6	4.1	4.8	5.1	5.3	5.7	6.2

	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
ULTRA-VIOLET OR INFRA-RED RAY APPARATUS	0.4	0.4	0.8	0.3	0.2	0.3	0.4	0.4	0.4	0.5	0.5
OTHER INSTRUMENTS & APPLIANCES	17.2	20.5	20.1	18.0	18.6	20.9	24.0	25.9	27.2	27.9	29.4

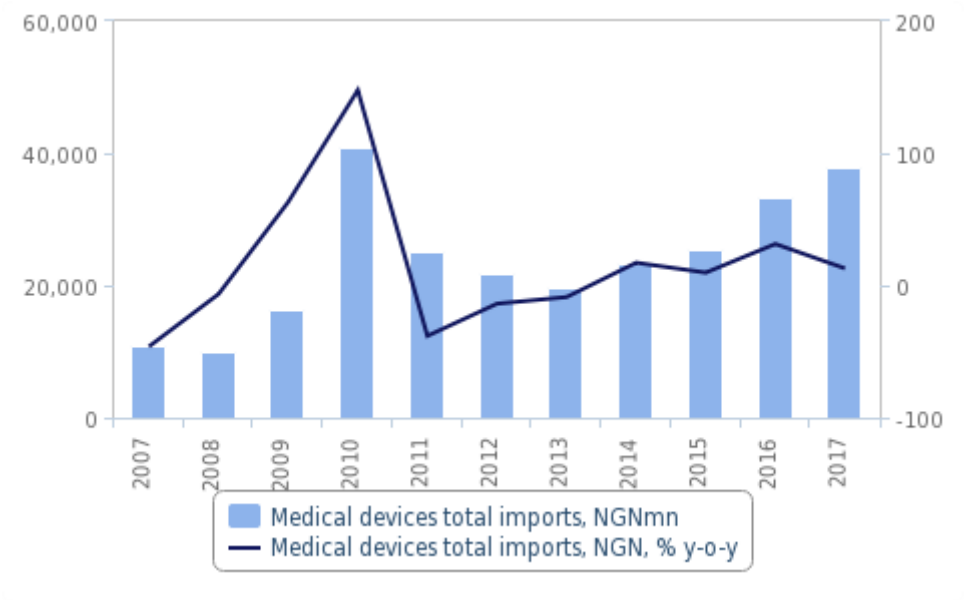
Source: National Statistics, Fitch Solutions

Medical Devices Annual Imports

Latest Updates

Nigerian medical device imports have a tendency to be erratic from year to year, hindered by economic fragility and currency weakness. In local currency terms, imports grew by 12.9% to NGN37.8bn in 2017. Imports grew at a 2012-2017 CAGR of 11.7% with increases in 2014, 2015, 2016 and 2017 offset by contractions in 2012 and 2013.

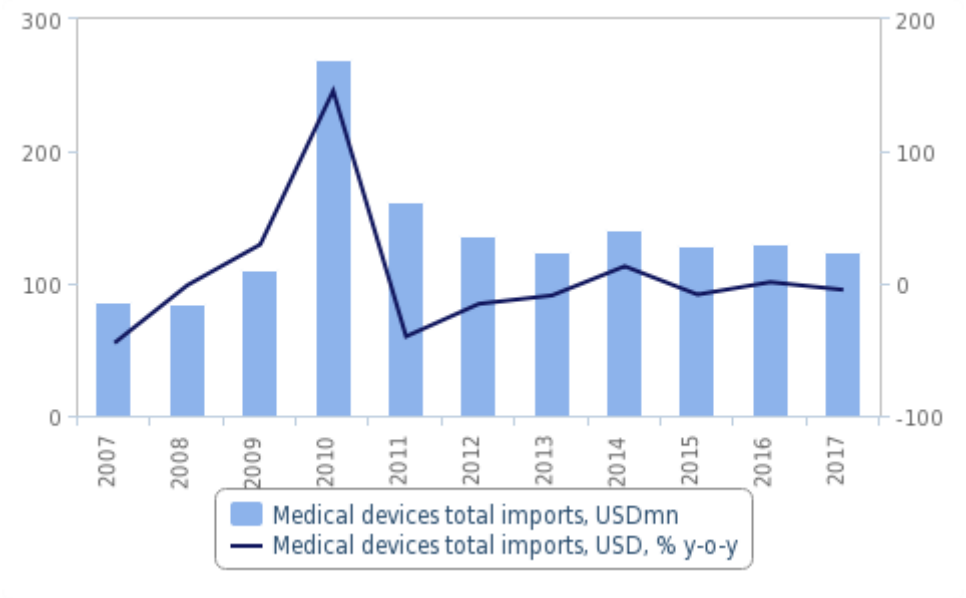
Medical Device Imports, Local Currency
(2007-2017)



Source: ITC, Fitch Solutions

In US dollar terms, imports fell by 4.8% to USD123.8mn in 2017. Performance in the preceding five years was largely negative, apart from a 13.0% rise in 2014 and a 1.0% increase in 2016, resulting in a 2012-2017 CAGR of -2.0%.

Medical Device Imports, US Dollar
(2007-2017)



Source: ITC, Fitch Solutions

Structural Trends

Consumables represents the largest product area, accounting for more than 35% of imports in 2017, followed by other medical devices, diagnostic imaging, patients aids and dental products. Orthopaedics & prosthetics is the smallest product area representing less than 5% of imports in 2017.

Dental products was the best performing product area in 2017, growing by at least four times in both local currency and US dollar terms. Consumables recorded a double- digit rise in both local currency terms and in US dollar terms. Other medical devices recorded lower growth in local currency terms but contracted in US dollar terms. Orthopaedics & prosthetics was the weakest product area.

Over the past five years orthopaedics & prosthetics has been the most dynamic product area, albeit growing from a very low level, registering a 2012-2017 CAGR in excess of 40% in both local currency and US dollar terms. Dental products has been the second fastest growing product area, followed by patient aids, diagnostic imaging and consumables. Other medical devices has been the weakest product area.

Leading Destinations

China is the leading supplier of medical devices to Nigeria, with an import share of just over 55% in 2017. China was the main supplier in all product areas, notably patient aids and consumables where it supplied about 75% of total imports.

The EU-28 accounted for almost 20% of imports in 2017 led by Germany and Ireland.

The position of smaller suppliers is subject to volatility due to the impact of one-off shipments. In 2017, India was the second largest supplier with a 7.0% share. In third place, the US supplied almost 5% of the import total.

TOP 20 MEDICAL DEVICE SUPPLIERS, 2017 (USD000S)

	Country	2017	% Total
1	China	69,112	55.8
2	India	8,650	7.0
3	US	6,102	4.9
4	Germany	5,669	4.6
5	Ireland	5,343	4.3
6	Belgium	3,339	2.7
7	UK	2,956	2.4
8	France	2,321	1.9
9	Malaysia	2,300	1.9
10	Japan	2,054	1.7
11	Netherlands	1,487	1.2
12	Turkey	1,471	1.2
13	Israel	1,403	1.1
14	South Africa	1,332	1.1
5	Taiwan	1,125	0.9
16	Thailand	1,101	0.9
17	South Korea	1,036	0.8
18	Austria	961	0.8
19	UAE	736	0.6
20	China	643	0.5
	Subtotal	**119,141**	**96.2**
	Others	**4,697**	**3.8**
	Total	**123,838**	**100.0**

Source: ITC, Fitch Solutions

DETAILED MEDICAL DEVICE IMPORTS BY PRODUCT AREA, 2013-2017 (USD000S)					
	2013	2014	2015	2016	2017
CONSUMABLES	**34,601**	**40,824**	**34,544**	**40,539**	**45,082**
BANDAGES & DRESSINGS	5,286	8,880	7,282	8,823	14,800
Medical dressings (adhesive)	2,093	5,265	4,105	3,280	4,411
Medical dressings (non-adhesive)	3,193	3,615	3,177	5,543	10,389
SUTURING MATERIALS	1,053	1,507	1,294	3,544	1,482
SYRINGES, NEEDLES & CATHETERS	13,492	21,879	17,171	20,496	22,260
Syringes (with/without needles)	6,995	9,082	10,085	12,996	13,477
Tubular metal needles/needles for sutures	1,057	1,489	1,849	1,330	1,414
Other needles, catheters, cannulae etc	5,440	11,308	5,237	6,170	7,369
OTHER CONSUMABLES	14,770	8,558	8,797	7,676	6,540
Blood-grouping reagents	139	358	229	270	20
First-aid boxes & kits	515	457	1,718	2,356	1,039
Ostomy products	14	9	9	44	3
Surgical gloves	14,102	7,734	6,841	5,006	5,478
DIAGNOSTIC IMAGING	**16,633**	**26,907**	**27,613**	**26,222**	**19,352**
ELECTRODIAGNOSTIC APPARATUS	7,423	13,075	10,489	13,765	10,625
Electrocardiographs	414	427	564	177	310
Ultrasound	1,613	1,208	1,974	2,907	5,170
MRI	1,777	5,280	3,436	4,940	3,088
Scintigraphic apparatus	11	127	233	79	4
Other electrodiagnostic apparatus	3,608	6,033	4,282	5,662	2,053
RADIATION APPARATUS	3,867	6,622	13,183	9,162	4,950
CT scanners	2,625	4,302	7,651	6,779	2,301
Other medical X-ray apparatus	792	1,968	5,172	2,152	2,597
A, B, C ray apparatus	450	352	360	231	52
IMAGING PARTS & ACCESSORIES	5,343	7,210	3,941	3,295	3,777
Contrast media	773	1,451	556	912	977

	2013	2014	2015	2016	2017
Medical X-ray film (flat)	455	862	518	1,180	715
Medical X-ray film (rolled)	1,545	324	599	245	204
X-ray tubes	569	159	100	201	401
Other imaging parts & accessories	2,001	4,414	2,168	757	1,480
DENTAL PRODUCTS	**817**	**1,766**	**2,589**	**1,927**	**9,640**
CAPITAL EQUIPMENT	445	1,252	2,147	1,320	2,217
Dental drills	0	0	28	134	9
Dental chairs	349	1,240	2,028	1,128	2,093
Dental X-ray	96	12	91	58	115
INSTRUMENTS & SUPPLIES	372	514	442	607	7,423
Dental cements	87	77	133	9	483
Dental instruments	110	357	198	537	473
Teeth & other fittings	175	80	111	61	6,467
Artificial teeth	*89*	*34*	*0*	*1*	*19*
Other dental fittings	*86*	*46*	*111*	*60*	*6,448*
ORTHOPAEDICS & PROSTHETICS	**7,083**	**5,400**	**7,586**	**10,092**	**4,076**
FIXATION DEVICES	6,916	4,919	7,197	7,162	2,265
ARTIFICIAL JOINTS	5	452	189	1,746	1,656
OTHER ARTIFICIAL BODY PARTS	162	29	200	1,184	155
PATIENT AIDS	**17,071**	**22,659**	**15,752**	**16,533**	**12,354**
PORTABLE AIDS	1,371	2,868	2,490	3,404	2,307
Hearing aids	61	215	237	4	191
Pacemakers	461	403	760	531	361
Other portable aids	849	2,250	1,493	2,869	1,755
THERAPEUTIC APPLIANCES	15,700	19,791	13,262	13,129	10,047
Mechano-therapy apparatus	14,856	14,005	9,748	9,986	9,367
Therapeutic respiration apparatus	844	5,786	3,514	3,143	680
OTHER MEDICAL DEVICES	**48,142**	**43,008**	**40,652**	**34,703**	**33,334**

	2013	2014	2015	2016	2017
WHEELCHAIRS	18,105	8,530	3,697	2,760	1,102
Wheelchairs, not mechanically propelled	16,770	5,414	1,655	1,840	555
Wheelchairs, mechanically propelled	1,335	3,116	2,042	920	547
OPHTHALMIC INSTRUMENTS	1,242	2,513	2,226	1,898	3,909
HOSPITAL FURNITURE	6,360	8,227	8,741	8,412	7,243
MEDICAL, SURGICAL STERILISERS	5,406	3,616	5,367	4,233	3,532
ULTRA-VIOLET OR INFRA-RED RAY APPARATUS	198	213	1,292	340	224
OTHER INSTRUMENTS & APPLIANCES	16,831	19,909	19,329	17,060	17,324
TOTAL	**124,347**	**140,564**	**128,736**	**130,016**	**123,838**

Source: ITC, Fitch Solutions

DETAILED LEADING MEDICAL DEVICE SUPPLIERS BY PRODUCT AREA, 2017 (USD000S)

	China	India	US	Germany	Ireland	EU-28
CONSUMABLES	**33,426**	**4,131**	**158**	**902**	**0**	**3,081**
BANDAGES & DRESSINGS	12,147	1,525	3	40	0	782
Medical dressings (adhesive)	2,710	1,290	0	39	0	179
Medical dressings (non-adhesive)	9,437	235	3	1	0	603
SUTURING MATERIALS	833	69	1	0	0	502
SYRINGES, NEEDLES & CATHETERS	17,254	2,380	141	855	0	1,681
Syringes (with/ without needles)	11,660	782	61	98	0	383
Tubular metal needles/needles for sutures	974	173	38	10	0	200

	China	India	US	Germany	Ireland	EU-28
Other needles, catheters, cannulae etc	4,620	1,425	42	747	0	1,098
OTHER CONSUMABLES	3,192	157	13	7	0	116
Blood-grouping reagents	0	0	1	0	0	18
First-aid boxes & kits	937	0	12	7	0	81
Ostomy products	3	0	0	0	0	0
Surgical gloves	2,252	157	0	0	0	17
DIAGNOSTIC IMAGING	**6,108**	**1,077**	**3,820**	**1,022**	**59**	**4,188**
ELECTRODIAGNOSTIC APPARATUS	3,694	280	3,161	487	30	1,649
Electrocardiographs	24	10	28	179	10	227
Ultrasound	1,254	190	2,734	22	0	457
MRI	1,627	0	181	103	0	274
Scintigraphic apparatus	0	1	0	0	0	3
Other electrodiagnostic apparatus	789	79	218	183	20	688
RADIATION APPARATUS	1,086	458	521	56	28	1,124
CT scanners	150	349	120	20	0	394
Other medical X-ray apparatus	936	105	374	36	28	716
A, B, C ray apparatus	0	4	27	0	0	14
IMAGING PARTS & ACCESSORIES	1,328	339	138	479	1	1,415
Contrast media	499	216	0	37	0	199
Medical X-ray film (flat)	61	29	0	315	0	533
Medical X-ray film (rolled)	0	35	0	1	1	17
X-ray tubes	96	17	0	27	0	155

	China	India	US	Germany	Ireland	EU-28
Other imaging parts & accessories	672	42	138	99	0	511
DENTAL PRODUCTS	**2,739**	**60**	**197**	**77**	**5,229**	**5,423**
CAPITAL EQUIPMENT	1,945	0	172	18	0	62
Dental drills	0	0	0	4	0	9
Dental chairs	1,945	0	66	8	0	45
Dental X-ray	0	0	106	6	0	8
INSTRUMENTS & SUPPLIES	794	60	25	59	5,229	5,361
Dental cements	449	7	3	23	0	24
Dental instruments	247	5	20	5	0	57
Teeth & other fittings	98	48	2	31	5,229	5,280
Artificial teeth	*8*	*1*	*1*	*9*	*0*	*9*
Other dental fittings	*90*	*47*	*1*	*22*	*5,229*	*5,271*
ORTHOPAEDICS & PROSTHETICS	**1,943**	**197**	**46**	**167**	**9**	**1,048**
FIXATION DEVICES	1,400	81	46	95	9	155
ARTIFICIAL JOINTS	524	2	0	62	0	873
OTHER ARTIFICIAL BODY PARTS	19	114	0	10	0	20
PATIENT AIDS	**9,298**	**362**	**258**	**107**	**0**	**1,719**
PORTABLE AIDS	361	281	93	21	0	1,217
Hearing aids	12	9	30	2	0	138
Pacemakers	4	28	0	0	0	135
Other portable aids	345	244	63	19	0	944
THERAPEUTIC APPLIANCES	8,937	81	165	86	0	502
Mechano-therapy apparatus	8,849	28	10	22	0	256
Therapeutic respiration apparatus	88	53	155	64	0	246

	China	India	US	Germany	Ireland	EU-28
OTHER MEDICAL DEVICES	**15,598**	**2,823**	**1,623**	**3,394**	**46**	**8,300**
WHEELCHAIRS	872	4	72	19	9	104
Wheelchairs, not mechanically propelled	377	0	66	19	9	92
Wheelchairs, mechanically propelled	495	4	6	0	0	12
OPHTHALMIC INSTRUMENTS	136	653	134	1,730	1	2,144
HOSPITAL FURNITURE	2,857	421	531	269	23	1,319
MEDICAL, SURGICAL STERILISERS	2,650	221	114	36	0	148
ULTRA-VIOLET OR INFRA-RED RAY APPARATUS	82	55	15	57	0	66
OTHER INSTRUMENTS & APPLIANCES	9,001	1,469	757	1,283	13	4,519
TOTAL	**69,112**	**8,650**	**6,102**	**5,669**	**5,343**	**23,759**

Source: ITC, Fitch Solutions

Medical Devices Monthly Imports

The latest monthly mirror trade data reveal that imports fell by 6.9% y-o-y to USD35.4mn in Q418. Dental products fell by over 40%, followed by other medical devices and consumables. Orthopaedics & prosthetics, diagnostic imaging and patient aids grew.

Imports grew by 0.2% y-o-y in the 12 months to December 2018, taking the running annual total to USD113.5mn. Patient aids and other medical devices were the only product areas to post growth, all other product areas fell. Consumables remained the largest product area.

MONTHLY MEDICAL DEVICE IMPORTS BY PRODUCT AREA, YEAR ENDING DECEMBER 2018 (USDMN)

	Consumables	Diagnostic	Dental	Orthopaedics	Patient Aids	Others	Total
Quarter to							
Dec-17	12.8	10.8	2.4	0.9	1.9	9.2	38.0
Dec-18	11.1	11.9	1.3	1.1	1.9	8.0	35.4
Qtr % +/-	*-12.9*	*9.9*	*-44.8*	*21.9*	*3.9*	*-13.3*	*-6.9*
Year to							
Dec-17	37.4	29.5	4.9	4.1	6.3	31.0	113.2
Dec-18	37.9	29.2	3.9	3.5	6.7	32.3	113.5
12 months % +/-	*1.1*	*-1.1*	*-19.1*	*-14.9*	*5.1*	*4.4*	*0.2*

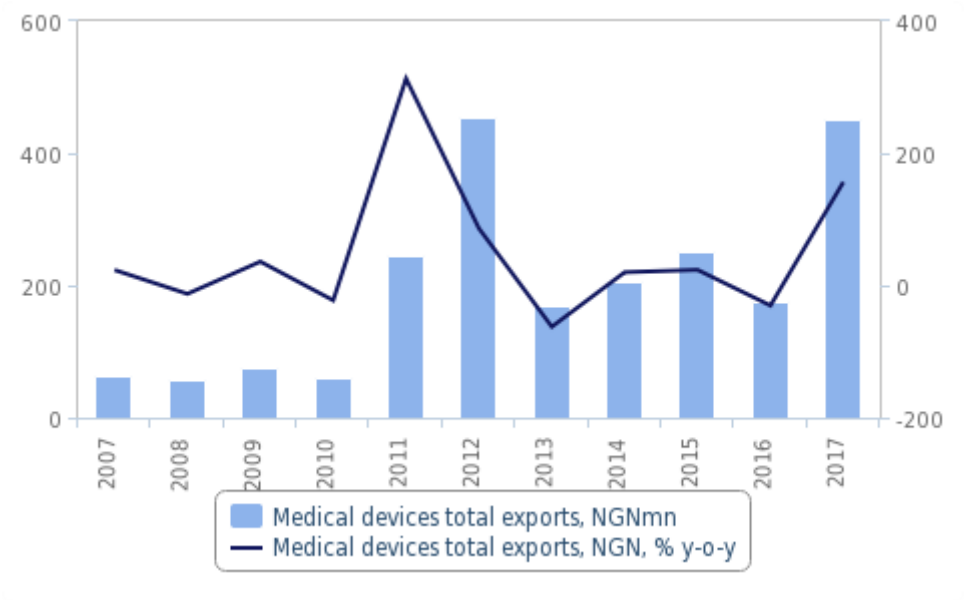
Source: ITC, Fitch Solutions

Medical Devices Annual Exports

Latest Updates

Nigerian exports of medical devices are very low and fluctuate from year to year, indicating that a proportion may be re-exports. In 2017, exports grew by 156.4% to NGN451.4mn. We note that exports peaked at NGN455.0mn in 2012, but fell sharply again in 2013. The 2012-2017 CAGR was negative at -0.2%.

Medical Device Exports, Local Currency
(2007-2017)

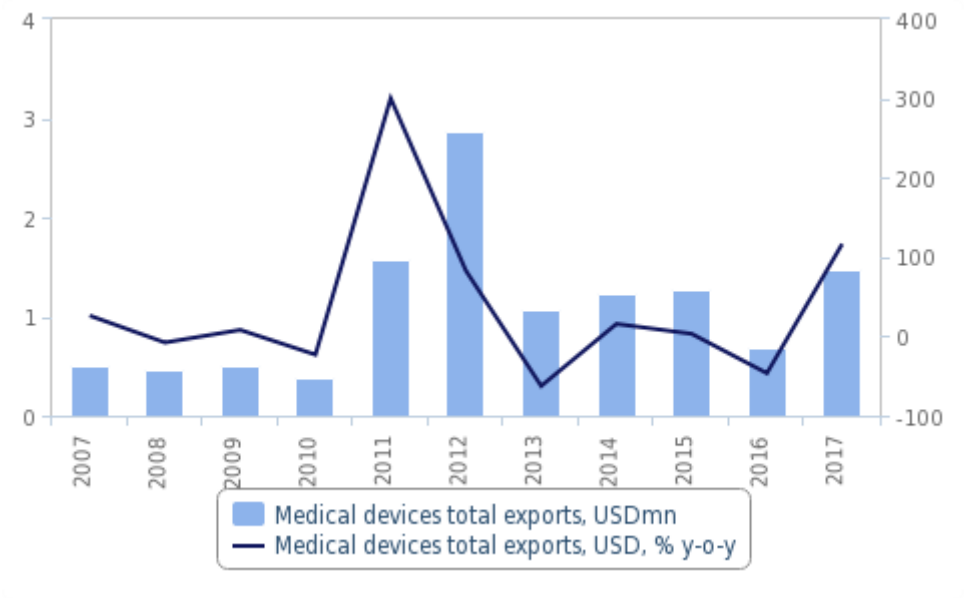


Source: ITC, Fitch Solutions

Exports peaked at USD2.9mn in 2012 but fell sharply in 2013, followed by a mixed performance thereafter. Exports grew by 116.4% to USD1.5mn in 2017. The 2012-2017 CAGR was negative at -12.4%.

With very limited domestic production, Nigeria maintains a negative balance of trade in all product areas. In 2017, the trade deficit amounted to USD122.4mn.

Medical Device Exports, US Dollar
(2007-2017)



Source: ITC, Fitch Solutions

Structural Trends

Other medical devices is the largest product area, accounting for around 75% of the export total in 2017. Diagnostic imaging is the second largest product area, followed by dental products. Consumables, orthopaedics & prosthetics and patient aids were the smallest product areas, each representing between 1- 3% of the export total in 2017.

Other medical devices was the fastest growing product area in 2017, expanding by almost three times in local currency terms. Orthopaedics & prosthetics and dental products also performed very well. Patient aids was the weakest product category.

Dental products has been the most dynamic product area over the past five years, recording a double-digit 2012-2017 CAGR in both local currency and US dollar terms. The other product areas had negative 2012-2017 CAGRs in US dollar terms.

Leading Destinations

Côte d'Ivoire was the leading medical device export destination in 2017, accounting just over 20% of the total. The same amount was shipped to the EU-28. The UK and France were the principal EU destinations.

The remainder of the shipments were sent primarily to markets in Africa, notably Sudan, South Africa, Ghana, Benin, Kenya and Niger.

LEADING MEDICAL DEVICE DESTINATIONS, 2017 (USD000S)

	Country	2017	% Total
1	Côte d'Ivoire	336	21.1
2	Sudan	250	15.7
3	South Africa	229	14.4
4	Ghana	214	13.4
5	UK	146	9.2
6	France	118	7.4
7	US	80	5.0
8	Benin	53	3.3
9	Netherlands	51	3.2
10	Kenya	40	2.5
11	Niger	33	2.1
12	Belgium	12	0.8
13	Cameroon	5	0.3
14	Zambia	4	0.3
15	Germany	3	0.2
16	Israel	3	0.2
17	Namibia	3	0.2
18	Uganda	3	0.2
19	Burkina Faso	2	0.1
20	Tanzania	2	0.1
	Subtotal	**1,587**	**99.7**
	Others	**5**	**0.3**
	Total	**1,592**	**100.0**

Source: ITC, Fitch Solutions

DETAILED MEDICAL DEVICE EXPORTS BY PRODUCT AREA, 2013-2017 (USD000S)	2013	2014	2015	2016	2017
CONSUMABLES	**197**	**79**	**46**	**41**	**45**
BANDAGES & DRESSINGS	48	25	31	29	19
Medical dressings (adhesive)	16	16	8	4	11
Medical dressings (non-adhesive)	32	9	23	25	8
SUTURING MATERIALS	132	1	1	3	3
SYRINGES, NEEDLES & CATHETERS	5	36	3	0	3
Syringes (with/without needles)	5	36	3	0	3
Tubular metal needles/needles for sutures	0	0	0	0	0
Other needles, catheters, cannulae etc	0	0	0	0	0
OTHER CONSUMABLES	12	17	11	9	20
Blood-grouping reagents	0	0	0	4	14
First-aid boxes & kits	1	6	1	1	2
Ostomy products	0	0	0	0	0
Surgical gloves	11	11	10	4	4
DIAGNOSTIC IMAGING	**277**	**228**	**370**	**211**	**162**
ELECTRODIAGNOSTIC APPARATUS	96	48	7	111	73
Electrocardiographs	1	6	0	0	1
Ultrasound	18	24	7	4	2
MRI	0	0	0	0	0
Scintigraphic apparatus	0	0	0	0	0
Other electrodiagnostic apparatus	77	18	0	107	70
RADIATION APPARATUS	1	6	2	3	53
CT scanners	0	0	0	0	0
Other medical X-ray apparatus	1	6	2	3	53
A, B, C ray apparatus	0	0	0	0	0
IMAGING PARTS & ACCESSORIES	180	174	361	97	36
Contrast media	0	1	0	0	3
Medical X-ray film (flat)	15	0	0	0	0

	2013	2014	2015	2016	2017
Medical X-ray film (rolled)	0	0	0	0	1
X-ray tubes	5	7	1	23	1
Other imaging parts & accessories	160	166	360	74	31
DENTAL PRODUCTS	**264**	**306**	**256**	**54**	**125**
CAPITAL EQUIPMENT	0	0	0	0	0
Dental drills	0	0	0	0	0
Dental chairs	0	0	0	0	0
Dental X-ray	0	0	0	0	0
INSTRUMENTS & SUPPLIES	264	306	256	54	125
Dental cements	0	0	0	0	0
Dental instruments	264	306	256	54	125
Teeth & other fittings	0	0	0	0	0
Artificial teeth	*0*	*0*	*0*	*0*	*0*
Other dental fittings	*0*	*0*	*0*	*0*	*0*
ORTHOPAEDICS & PROSTHETICS	**0**	**0**	**11**	**6**	**15**
FIXATION DEVICES	0	0	11	6	15
ARTIFICIAL JOINTS	0	0	0	0	0
OTHER ARTIFICIAL BODY PARTS	0	0	0	0	0
PATIENT AIDS	**128**	**15**	**4**	**28**	**15**
PORTABLE AIDS	97	1	3	15	12
Hearing aids	2	1	3	11	8
Pacemakers	0	0	0	0	0
Other portable aids	95	0	0	4	4
THERAPEUTIC APPLIANCES	31	14	1	13	3
Mechano-therapy apparatus	2	13	0	7	3
Therapeutic respiration apparatus	29	1	1	6	0
OTHER MEDICAL DEVICES	**205**	**611**	**592**	**344**	**1,118**

	2013	2014	2015	2016	2017
WHEELCHAIRS	3	5	1	1	3
Wheelchairs, not mechanically propelled	0	5	1	0	0
Wheelchairs, mechanically propelled	3	0	0	1	3
OPHTHALMIC INSTRUMENTS	40	4	70	63	244
HOSPITAL FURNITURE	10	24	8	17	122
MEDICAL, SURGICAL STERILISERS	1	8	135	11	5
ULTRA-VIOLET OR INFRA-RED RAY APPARATUS	0	0	0	0	0
OTHER INSTRUMENTS & APPLIANCES	151	570	378	252	744
TOTAL	**1,071**	**1,239**	**1,279**	**684**	**1,480**

Source: ITC, Fitch Solutions

DETAILED LEADING MEDICAL DEVICE DESTINATIONS BY PRODUCT AREA, 2017 (USD000S)

	Côte d'Ivoire	Sudan	South Africa	Ghana	UK	EU-28
CONSUMABLES	**52**	**0**	**0**	**2**	**0**	**1**
BANDAGES & DRESSINGS	14	0	0	2	0	0
Medical dressings (adhesive)	9	0	0	1	0	0
Medical dressings (non-adhesive)	5	0	0	1	0	0
SUTURING MATERIALS	2	0	0	0	0	0
SYRINGES, NEEDLES & CATHETERS	21	0	0	0	0	1
Syringes (with/ without needles)	3	0	0	0	0	0
Tubular metal needles/needles for sutures	10	0	0	0	0	0
Other needles, catheters, cannulae etc	8	0	0	0	0	1
OTHER CONSUMABLES	15	0	0	0	0	0
Blood-grouping reagents	13	0	0	0	0	0
First-aid boxes & kits	2	0	0	0	0	0
Ostomy products	0	0	0	0	0	0
Surgical gloves	0	0	0	0	0	0
DIAGNOSTIC IMAGING	**45**	**0**	**6**	**57**	**0**	**15**
ELECTRODIAGNOSTIC APPARATUS	35	0	5	1	0	0
Electrocardiographs	0	0	0	0	0	0
Ultrasound	1	0	0	1	0	0
MRI	1	0	0	0	0	0

	Côte d'Ivoire	Sudan	South Africa	Ghana	UK	EU-28
Scintigraphic apparatus	0	0	0	0	0	0
Other electrodiagnostic apparatus	33	0	5	0	0	0
RADIATION APPARATUS	0	0	0	53	0	0
CT scanners	0	0	0	0	0	0
Other medical X-ray apparatus	0	0	0	53	0	0
A, B, C ray apparatus	0	0	0	0	0	0
IMAGING PARTS & ACCESSORIES	10	0	1	3	0	15
Contrast media	0	0	0	0	0	0
Medical X-ray film (flat)	0	0	0	0	0	0
Medical X-ray film (rolled)	0	0	0	1	0	0
X-ray tubes	0	0	0	0	0	1
Other imaging parts & accessories	10	0	1	2	0	14
DENTAL PRODUCTS	**9**	**0**	**0**	**2**	**9**	**109**
CAPITAL EQUIPMENT	4	0	0	2	0	0
Dental drills	0	0	0	0	0	0
Dental chairs	3	0	0	2	0	0
Dental X-ray	1	0	0	0	0	0
INSTRUMENTS & SUPPLIES	5	0	0	0	9	109
Dental cements	2	0	0	0	9	9
Dental instruments	2	0	0	0	0	73
Teeth & other fittings	1	0	0	0	0	27
Artificial teeth	*1*	*0*	*0*	*0*	*0*	*0*
Other dental fittings	*0*	*0*	*0*	*0*	*0*	*27*
ORTHOPAEDICS &	**0**	**0**	**1**	**0**	**0**	**20**

	Côte d'Ivoire	Sudan	South Africa	Ghana	UK	EU-28
PROSTHETICS						
FIXATION DEVICES	0	0	1	0	0	11
ARTIFICIAL JOINTS	0	0	0	0	0	0
OTHER ARTIFICIAL BODY PARTS	0	0	0	0	0	9
PATIENT AIDS	**30**	**0**	**1**	**0**	**0**	**1**
PORTABLE AIDS	30	0	0	0	0	1
Hearing aids	8	0	0	0	0	0
Pacemakers	21	0	0	0	0	0
Other portable aids	1	0	0	0	0	1
THERAPEUTIC APPLIANCES	0	0	1	0	0	0
Mechano-therapy apparatus	0	0	1	0	0	0
Therapeutic respiration apparatus	0	0	0	0	0	0
OTHER MEDICAL DEVICES	**200**	**250**	**221**	**153**	**137**	**186**
WHEELCHAIRS	1	0	0	0	0	0
Wheelchairs, not mechanically propelled	0	0	0	0	0	0
Wheelchairs, mechanically propelled	1	0	0	0	0	0
OPHTHALMIC INSTRUMENTS	24	0	194	0	0	26
HOSPITAL FURNITURE	5	0	0	39	64	64
MEDICAL, SURGICAL STERILISERS	4	0	0	0	0	0

	Côte d'Ivoire	Sudan	South Africa	Ghana	UK	EU-28
ULTRA-VIOLET OR INFRA-RED RAY APPARATUS	0	0	0	0	0	0
OTHER INSTRUMENTS & APPLIANCES	166	250	27	114	73	96
TOTAL	**336**	**250**	**229**	**214**	**146**	**332**

Source: ITC, Fitch Solutions

Medical Devices Monthly Exports

Nigerian medical device exports are very low and prone to sudden fluctuations indicating that some export activity may be due to one-off re-exports. The latest monthly mirror trade data show that exports grew by 42.3% y-o-y to USD0.2mn in Q418. Patient aids grew rapidly.

Exports fell by 44.6% y-o-y to USD0.6mn in the 12 months to December 2018. Patient aids and consumables were the only product areas to record rises. The other four product areas fell.

MONTHLY MEDICAL DEVICE EXPORTS BY PRODUCT AREA, YEAR ENDING DECEMBER 2018 (USDMN)

	Consumables	Diagnostic	Dental	Orthopaedics	Patient Aids	Others	Total
Quarter to							
Dec-17	0.0	0.1	0.0	0.0	0.0	0.1	0.2
Dec-18	0.0	0.0	0.0	0.0	0.1	0.1	0.2
Qtr % +/-	*-100.0*	*-81.3*	*-100.0*	*~*	*2,333.3*	*45.9*	*42.3*
Year to							
Dec-17	0.1	0.1	0.2	0.0	0.0	0.7	1.1
Dec-18	0.1	0.1	0.0	0.0	0.2	0.3	0.6
12 months % +/-	*83.6*	*-52.7*	*-92.5*	*-66.7*	*275.6*	*-61.0*	*-44.6*

Source: ITC, Fitch Solutions

Industry Risk/Reward Index

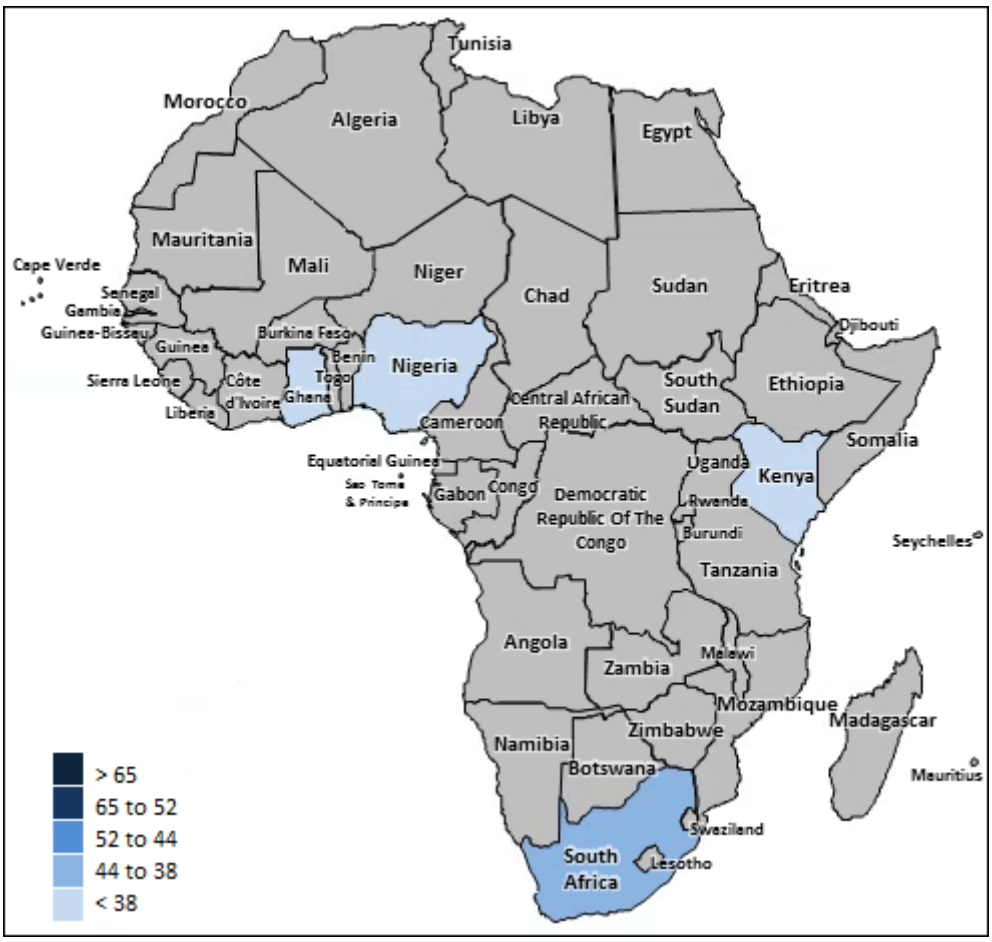
SSA Medical Devices Risk/Reward Index: South Africa Presents Highest Rewards

Key View

- Sub-Saharan Africa (SSA) is the least attractive region in our Medical Devices Rewards Index.
- South Africa presents the highest Rewards, supported by a large market size, some domestic production and a larger urban population compared to its peers.
- Nigeria, Kenya and Ghana have low Rewards, hindered by small market sizes, low per capita expenditures and large rural and predominantly youthful populations.

SSA: Underdeveloped Market With Growth Potential

SSA Medical Devices Risk/Reward Index Heat Map



Scores Out Of 100. Higher Score = Lower Risk. Source: Fitch Solutions Risk/Reward Index

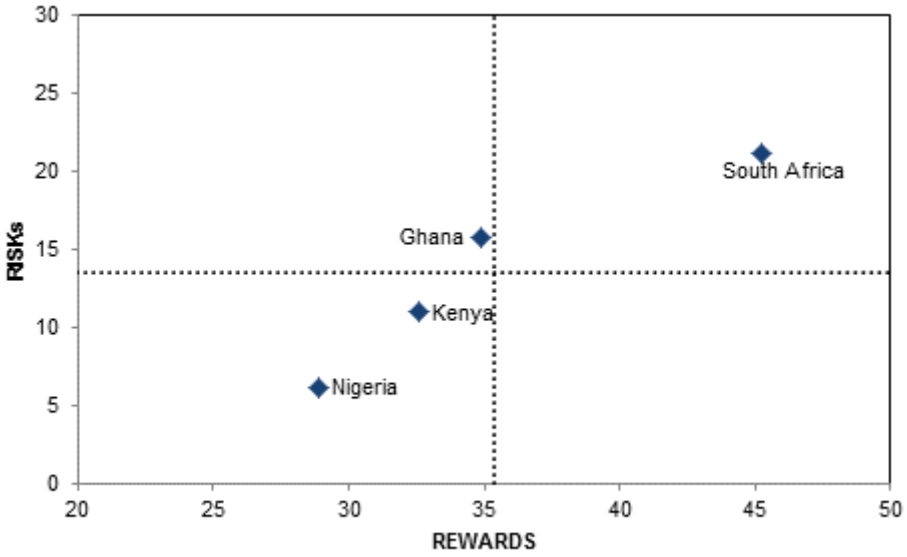
Main Regional Features & Latest Updates

- **SSA** underperforms the global scores in our Medical Devices Rewards Index. It has the smallest market in the global context and is heavily reliant on imports, restricting the Industry Rewards. Despite a combined population of over 300mn, a young population and very low urbanisation rates bring down the Country Rewards.

- **South Africa** presents the highest prospects in our SSA Medical Devices Rewards Index. It has by far the largest market in the region and the highest per capita spending, with some domestic production, which support the Industry Rewards. The country also has a large population and higher urbanisation levels than its peers.
- **Nigeria** sits at the bottom of the Rewards Index, just behind Kenya and Ghana. Small market sizes and very low per capita values in these three countries hinder their Industry Rewards scores. In addition, these three countries have low Country Rewards scores on account of their very low urbanisation rates and small elderly populations.

SSA: South Africa Is A Key Target Market

SSA Medical Devices Risk/Reward Index



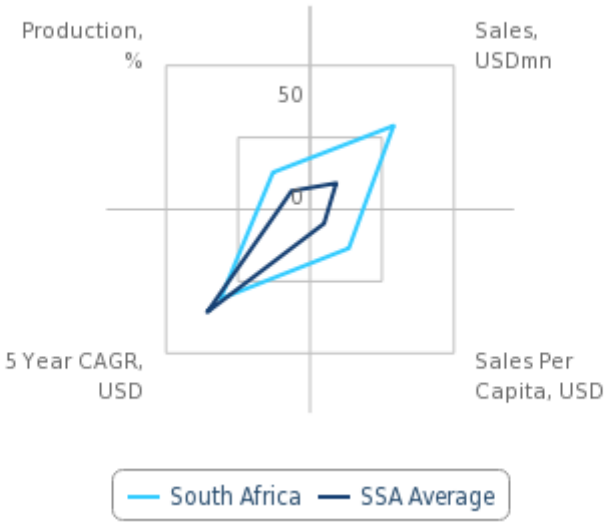
Scores Out Of 100. Higher Score = Lower Risk. Source: Fitch Solutions Risk/Reward Index

Outperformer: South Africa Tops SSA's Rewards

- **South Africa** tops our SSA Medical Devices Rewards Index. It has the largest medical device market in SSA with the highest per capita spending and operates some local medical device manufacturing, which results in South Africa having by far the highest Industry Rewards score for the region. Population growth is below average for the region but the proportion aged 65 and over is the highest, which boosts the Country Rewards score. In addition, South Africa scores above its peers for urbanisation, which tends to facilitate access to healthcare, although this remains below the global average as only the wealthier sections of society have access to advanced medical services, leaving large sections of the urban poor underserved. The government is committed to providing universal healthcare, with the National Health Insurance Bill put out to public consultation in June 2018.

South Africa Driven By Market Size

South Africa And SSA Average Medical Devices Industry Reward Scores



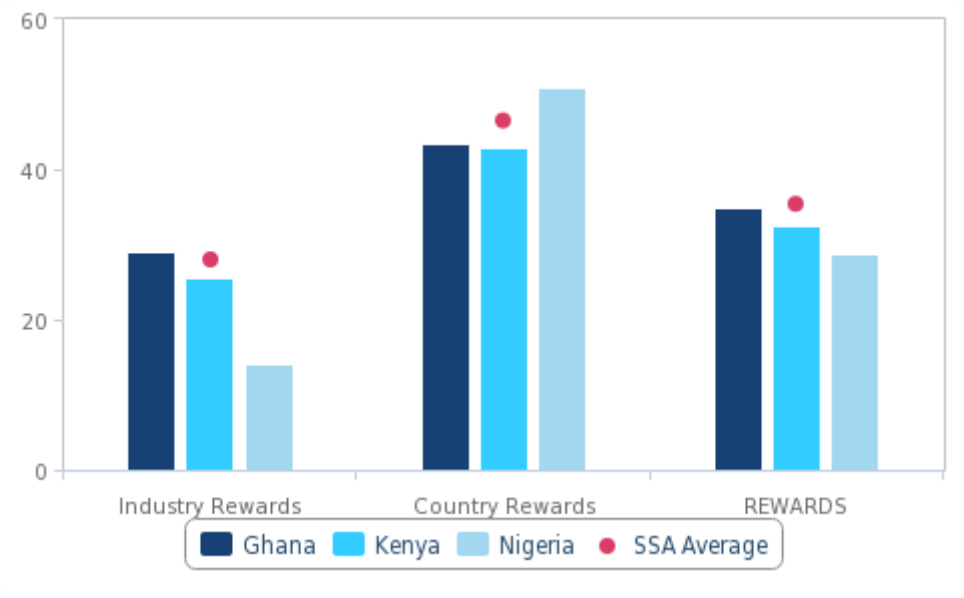
Scores Out Of 100. Higher Score = Higher Reward. Source: Fitch Solutions Risk/Reward Index

Underperformers: Nigeria, Kenya And Ghana Offer Low Rewards

- **Nigeria** is the least attractive market in our SSA Medical Devices Rewards Index. It has the lowest Industry Rewards score despite having the highest Country Rewards. Nigeria is hindered by the lowest per capita spending in the region, very low production and a small market size. However, despite its young population and low urbanisation rate, Nigeria has the highest Country Rewards score, supported by a very large and fast growing population.
- **Kenya** is the second least attractive market in our SSA Medical Devices Rewards Index. The country has a low Industry Rewards score, hindered by its small market size and low medical device spending. The country has the lowest Country Rewards score in the region, restricted by very low urbanisation as nearly three quarters of the population still live in rural areas. The country also has a young population.
- **Ghana** is the third least attractive market in our SSA Medical Devices Rewards Index. The country's Industry Rewards score is driven by rapid market growth, which will be the fastest in SSA due to strong GDP and health expenditure growth. This counterbalances the smallest market size in the region and low medical device spending. High population growth and a degree of urbanisation boost Ghana's Country Rewards, despite a small population size.

Nigeria, Kenya And Ghana Offer Poor Industry Rewards

Nigeria, Kenya, Ghana And SSA Average Medical Devices Reward Scores



Scores Out Of 100. Higher Score = Higher Reward. Source: Fitch Solutions Risk/Reward Index

SSA: Scores Well Below Global Average

SSA Medical Devices Risk/Reward Index

	Industry Rewards	Country Rewards	REWARDS	Industry Risks	Country Risks	RISKs	RRI	Regional Rank	Global Rank
South Africa	43.2	48.3	45.3	16.2	25.9	21.1	38.0	1	62
Ghana	29.1	43.6	34.9	1.4	30.1	15.7	29.1	2	71
Kenya	25.7	42.9	32.6	10.1	11.7	10.9	26.1	3	75
Nigeria	14.2	51.0	28.9	2.5	9.8	6.1	22.1	4	77
Global Average	50.0	50.0	50.0	50.0	50.0	50.0	50.0	~	~
Regional Average	28.0	46.5	35.4	7.5	19.4	13.5	28.8	~	~

Scores Out Of 100. Higher Score = Lower Risk. Source: Fitch Solutions Risk/Reward Index

SSA: South Africa Offers The Best Rewards

SSA Medical Devices Industry And Country Rewards Scores

	Sales, USDmn	Sales Per Capita, USD	5 Year CAGR, USD	Production, %	Industry Rewards	Population, mn	Population, % y-o-y	65+ Years, %	Urban Population, %	Country Rewards	REWARDS	RRI	Regional Rank	Global Rank
South Africa	58.1	27.0	62.2	25.7	43.2	73.0	71.6	20.3	28.4	48.3	45.3	38.0	1	62
Ghana	2.7	6.8	100.0	6.8	29.1	51.4	93.2	10.8	18.9	43.6	34.9	29.1	2	71
Kenya	5.4	5.4	75.7	16.2	25.7	70.3	95.9	5.4	0.0	42.9	32.6	26.1	3	75
Nigeria	6.8	0.0	47.3	2.7	14.2	91.9	97.3	4.1	10.8	51.0	28.9	22.1	4	77
Global Average	50.0	50.0	50.0	50.0	50.0	50.0	50.0	50.0	50.0	50.0	50.0	50.0	≈	≈
Regional Average	18.2	9.8	71.3	12.8	28.0	71.6	89.5	10.1	14.5	46.5	35.4	28.8	≈	≈

Scores Out Of 100. Higher Score = Higher Reward. Source: Fitch Solutions Risk/Reward Index

SSA: Nigeria Poses Highest Risks

SSA Medical Devices Industry And Country Risks Scores

	Healthcare Access	Regulation	P&R	Industry Risks	L-T Economic	S-T Economic	L-T Political	S-T Political	Operational Risk	Country Risks	RISKs	RRI	Regional Rank	Global Rank
South Africa	12.8	18.9	16.9	16.2	27.0	20.3	25.7	33.8	24.3	25.9	21.1	38.0	1	62
Ghana	0.7	1.4	2.0	1.4	17.6	23.0	56.8	53.4	14.9	30.1	15.7	29.1	2	71
Kenya	12.8	9.5	8.1	10.1	14.9	14.2	18.9	8.8	6.8	11.7	10.9	26.1	3	75
Nigeria	0.7	4.7	2.0	2.5	24.3	25.7	4.1	4.7	0.0	9.8	6.1	22.1	4	77
Global Average	50.0	50.0	50.0	50.0	50.0	50.0	50.0	50.0	50.0	50.0	50.0	50.0	≈	≈
Regional Average	6.8	8.6	7.3	7.5	20.9	20.8	26.4	25.2	11.5	19.4	13.5	28.8	≈	≈

Scores Out Of 100. Higher Score = Lower Risk. Source: Fitch Solutions Risk/Reward Index

Market Overview

Medical Devices Overview

- Fourth smallest market in the Middle East and Africa (MENA) region.
- Per capita spending of less than USD1 is the lowest in the MENA region.
- High single-digit US dollar 2018-2023 CAGR, and higher growth in local currency terms due to naira weakness
- Consumables is the largest product area.
- The dental market is particularly under-developed.
- Most requirements need to be imported as domestic production is negligible.
- Despite efforts to achieve universal health coverage and raise investment levels, the health sector is massively underfunded.

MEDICAL DEVICE MARKET, KEY RATIOS, 2018

	2018
Market size (USDmn)	134.7
% health expenditure	0.9
% GDP	<1
% world market	<1
% supplied by imports	99.1
% projected CAGR	8.4
Per capita (USD)	0.7

Source: National Statistics, Fitch Solutions

MEDICAL DEVICE MARKET BY PRODUCT AREA, 2018

	Total (USDmn)	% Total Market	Per Capita (USD)	Total (Local Currency mn)	Per Capita (Local Currency)
Consumables	51.5	38.2	0.3	15,709.0	80.2
Diagnostic imaging	22.5	16.7	0.1	6,875.1	35.1
Dental products	4.1	3.0	0.0	1,245.9	6.4
Orthopaedics & prosthetics	4.9	3.6	0.0	1,479.5	7.6
Patient aids	14.4	10.7	0.1	4,399.5	22.5
Other medical devices	37.3	27.7	0.2	11,391.9	58.2
Total	**134.7**	**100.0**	**0.7**	**41,100.9**	**209.8**

Source: National Statistics, Fitch Solutions

Healthcare Overview

Health Status

Nigeria is the most populous country in Africa. Using data from the UN we estimate Nigeria's population to be 195.9mn in 2018. The population is relatively young; just 2.7% are aged 65 and over. Life expectancy is one of the lowest in the world at an estimated 53.5 years for men and 55.2 years for women. Infant and maternal mortality is extremely high compared to Western standards, although some progress has been made in lowering these rates in recent years.

The country is estimated to have around 10% of the world's total burden of disease due to its large population and high incidence of communicable diseases, as well as a rising incidence of cancer, diabetes and hypertension. These poor outcomes are the result of woefully inadequate primary healthcare services, particularly in rural areas, which is restricting access to immunisation programmes and basic mother and child care.

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 medical devices companies whose product portfolios include treatments for non-communicable diseases.

Healthcare System

Organisation

The Nigerian healthcare system comprises a three-tier structure with responsibilities at federal, state and local government levels. All three levels are involved in healthcare financing and health service provision.

Federal Level

Responsibility at federal level lies with the Federal Ministry of Health (FMOH), which is responsible for policy making and technical support to the overall health system, health management information at national level and the provision of health services through teaching hospitals, other tertiary facilities and national laboratories. The FMOH has ten departments.

The FMOH is assisted in its work by a number of semi-autonomous agencies, the most important of which are:

National Primary Health Care Development Agency (NPHCDA)

NPHCDA is a parastatal organisation of Nigeria's FMOH with a mandate to develop national primary health care (PHC) policy and to support states and Local Government Areas (LGAs) in their implementation. Their stated mission is to "provide technical and programmatic support to states, LGAs, and other stakeholders in the functioning, planning, implementation, supervision and monitoring of PHC services in Nigeria".

National Health Insurance Scheme Agency

This agency is responsible for managing the national health insurance scheme and working to ensure access to adequate and affordable healthcare for all Nigerians.

National Agency for Food and Drug Administration and Control (NAFDAC)

This agency is responsible for the regulation and control of the manufacture, importation, exportation, distribution, advertisement, sale and use of food, drugs, cosmetics, chemicals, medical devices and packaged water.

State Level

Each of the 36 states retains considerable autonomy in the field of healthcare and has a state ministry of health, which is responsible for managing secondary healthcare facilities, such as general hospitals, and for the regulation and technical support of primary healthcare services.

Local Government Level

The 774 LGAs are responsible for providing primary healthcare services. Each LGA has 7-15 districts, known as wards, with a development committee responsible for healthcare services within their area.

Private Sector

The private sector is the predominant provider of care in many areas, accounting for around 40% of all health facilities in Nigeria. Many doctors employed in government hospitals also work in private hospitals, often facilities which they own, a practice which was recently condemned by the Nigerian Medical Association.

National Health Act

Nigeria's prospects of attaining national health coverage will largely depend upon the success of the National Health Act. This, however, will continue to face a number of challenges that have previously led to delays in its implementation. The eventual rollout of the act will make Nigerian medical device market a more attractive prospect over the long-term, though political and fiscal barriers limit the successful likelihood of its implementation and subsequent investment opportunities.

The National Health Act was signed into law in December 2014. The act promises a framework to regulate, develop and manage the national health system through the creation of a healthcare fund. The act pledges a budget of around NGN60bn (USD380mn) for primary healthcare each year:

- 50% towards the NHIS
- 20% towards vaccines, essential drugs, and commodities
- 10% to boosting human resources at healthcare facilities
- 5% towards laboratory facilities, infrastructure in hospitals
- 5% to emergency medicine at tertiary facilities

The Act prohibits a health care provider, health worker or health establishment from refusing a person on emergency medical treatment for any reason whatsoever.

We believe that the successful implementation of the act will be dependent upon Nigeria's economic stability, which is vulnerable to crude oil prices, and also upon President Buhari's ability to galvanise stakeholder support for the legislation.

National Strategic Health Development Plan (NSHDP)

Nigeria adopted a National Strategic Health Development Plan (NSHDP) in 2010, which ran until 2015 with the aim of significantly improving health status through the development of a strengthened and sustainable primary healthcare delivery system. A new plan, NSHDP 2, was approved in June 2018, after almost two years of delay. The NGN6.0trn (USD16.7mn) plan covers the period between 2018 to 2022, and involves the 36 states of the Federation and the Federal Capital Territory (FCT).

The plan has five strategic pillars and 15 priority areas, including strengthening the health system and health financing. We note, however, that the previous Plan 1 had 52 targets but the government was only able to achieve less than two of the 52 targets.

Healthcare Funding

Despite a commitment to universal health insurance by 2015, health insurance cover remains very low leaving the bulk of healthcare funding reliant on private sources, principally out-of-pocket payments.

Health Insurance

Nigeria first launched a National Health Insurance Scheme (NHIS) in 1999. The NHIS initiative includes various schemes to cover the formally employed, the urban self-employed, university students (tertiary insurance programme) and since 2010 a rural community-based social health insurance programme (RCSHIP), which is being implemented in 12 pilot states. However uptake of health insurance has been slow. At the end of 2015, the NHIS was estimated to only cover about 7.9mn people, equal to less than 5% of the population, despite a presidential directive in 2005 that universal coverage should be achieved by 2015. This target was revised to 30% coverage in 2015, in line with WHO recommendations and downgraded further to 25% by the end of 2016. The NHIS launched an insurance coverage programme aiming to enrol 40 to 45mn Nigerians under its cover by 2016.

The aim of the NHIS is to oblige all public and private employees to contribute 5% of their salary (with a further 10% provided by employers) to a Health Maintenance Organisation (HMO), which is then to arrange the necessary healthcare.

The contribution paid covers the employee, spouse and four children. Additional contributions can be paid to cover more dependents. The benefits package covers:

- Outpatient care, including necessary consumables;
- Prescribed drugs, pharmaceutical care and diagnostic tests as contained in the National Essential Drugs List and Diagnostic Test Lists;
- Maternity care for up to four live births for every insured contributor/couple in the Formal Sector Programme;
- Preventive care, including immunisation, as it applies in the National Programme on Immunization, health education, family planning, antenatal and post-natal care;
- Consultation with specialists, such as physicians, paediatricians, obstetricians, gynaecologists, general surgeons, orthopaedic surgeons, ENT surgeons, dental surgeons, radiologists, psychiatrists, ophthalmologists, physiotherapists, etc.;
- Hospital care in a standard ward for a stay limited to cumulative 15 days per year. Thereafter, the beneficiary and/or the employer pays. However the primary provider shall pay per diem for bed space for a total 15 days cumulative per year;
- Eye examination and care, excluding the provision of spectacles and contact lenses;
- A range of prostheses (limited to artificial limbs produced in Nigeria); and
- Preventive dental care and pain relief (including consultation, dental health education, amalgam filling, and simple extraction).

The NHIS is now going through a period of evaluation to review the benefit package for its members and the different modalities for contribution of premiums. Several proposals to increase coverage include a proposal to make NHIS registration mandatory for federal government employees.

Another bill, known as the "NHIS reform bill" was tabled in the National Assembly in early 2013 and proposes the creation of a health fund that would be financed from a 2% health tax on the value of luxury goods and any other funds appropriate for this purpose. The health fund would be used to fund the health insurance contributions of a defined group of citizens: children under five, senior citizens above 65, physically challenged or disabled individuals, prison inmates, and indigent persons on incomes below NGN30,000 (USD188), as well as pregnant women requiring maternity care.

Mobile health insurance is another initiative introduced to address the lack of health insurance cover. Under various schemes launched by NHIS in partnership with leading mobile network operators, mobile subscribers can sign up for affordable health insurance cover via their mobile phones. Nigeria has over 120mn mobile phone subscribers so mobile technology potentially has an important role to play in delivering affordable health insurance cover to large sections of the population that remain uninsured. However, uptake has been slow due to high administrative charges and bureaucracy.

Healthcare Expenditure

Using data from the World Health Organization, we estimate healthcare expenditure totalled USD15.3bn in 2018, equal to USD78 per capita. Due to currency depreciation, spending in US dollar terms has fallen in recent years, while per capita spending has contracted at a 2013-2018 CAGR of 6.3%. We estimate that public spending accounted for about 21.4% of spending in 2018, leaving the bulk of expenditure financed privately, principally through out-of-pocket spending. The rebasing of the Nigerian economy since 2010 means that healthcare expenditure now represents less than 4.0% of GDP. This is one of the lowest ratios in Africa.

Budget Continues To Restrict Market Growth

Nigeria's health budget will continue to restrict the country's medical device market. A reduction of funds allocated to capital expenditure in 2019 will hinder investment of capital equipment and this will limit the overall market growth. President Muhammadu Buhari proposed a recurrent operating expenditure of NGN315.6bn (USD1.0bn) for the Ministry of Health (MoH) in Nigeria's 2019 appropriation bill, up from NGN269.3bn (USD0.9bn) in 2018. This represented a NGN46.3bn increase over the 2018 budget, but very little gain in real terms since most requirements are imported and the naira remains weak against the US dollar.

Capital expenditure for the Ministry was allocated NGN50.2bn (USD0.16bn), down from NGN71.1bn (USD0.23bn) in 2018. This will mean that the government will spend less on capital equipment in 2019 and this will cause financial pressures on medical device suppliers. We note that the 2019 cut in capital expenditure follows a 27.9% rise in 2018 and nearly a double increase the previous year.

Health projects in the 2019 budget include: NGN51.2bn for the implementation of the National Health Act; NGN21.2bn for GAVI/ Immunisation; NGN1.26bn for the procurement of Non Polio SIA Vaccine; NGN1.12bn for the procurement of Kits And Commodities For Community Health Influencers; NGN78mn for the establishment of chemotherapy centres in UBTH, UITH, ABUTH, UMTH, OAUTH, UNTH, UPTH, FMC Owerri, FMC Abeokuta; NGN7.6bn for procurement of RI vaccines and devices; and NGN3.5bn for counterpart funding including global fund/health.

Healthcare Resources

Infrastructure

Nigeria's healthcare infrastructure is inadequate, particularly in rural areas. We estimate 3,605 hospitals in 2018, of which 970 were in the public sector. These include 55 federal tertiary hospitals comprising 20 teaching hospitals, 22 federal medical centres, three national orthopaedic hospitals, the National Eye Centre, the National ENT Centre and eight psychiatric hospitals, which are overseen by the Hospital Services Department of the FMOH.

The private sector is the dominant provider of care in many areas, accounting for the greater part of secondary care facilities.

We estimate 192,709 hospital beds in 2018, equal to 1.0 per thousand population, well below the rate for the African region. The number of hospital beds is estimated to have grown at a CAGR of 5.9% since 2013, above the rate of population growth, but not at a rate high enough to have a significant impact on the bed to population ratio.

Primary Healthcare Centres

We note that the Nigerian government has been expanding primary healthcare services, which will enhance medical equipment market growth. We highlight the federal government's policy of revitalising 10,000 primary healthcare centres across the country, and the launch of the saving one million lives programme, for which the federal government has disbursed USD1.5mn to the states to improve primary healthcare centres. As of April 2019, the government has rebuilt over 4,000 PHCs across the federation in line with the 10,000 rehabilitation target of the President Muhammadu Buhari administration. However, it was reported by media sources in March 2019 that despite having about 30,000 PHCs across Nigeria, only about 20% are functional.

Heath Sector Modernisation Will Be Key to Growth

The Nigerian Sovereign Investment Authority (NSAIA) in May 2016 said it had commenced a massive healthcare investment programme that would cover all the six geo-political regions in the country. The Managing Director of NSIA, Uche Orji, confirmed the development in a statement issued in Abuja. We note that there is plenty room for modernisation of Nigeria's health sector, and this will continue to be a key driver to growth.

Uche Orji said the aim of the investment programme was to stimulate private sector investment to bridge the healthcare infrastructure gap. This, according to him, will contribute to the reduction in the burden of diseases and facilitate improvement of healthcare in the country.

In addition, he said that the investment programme would assist the country reverse the outflow of the over NGN1bn (USD4.1mn) spent by Nigerians on medical tourism annually. The healthcare projects, according to the statement, are being developed by the NSIA in partnership with Federal Government teaching hospitals and medical centres located in each of the six geo-political zones of the country.

Under the partnership, specialist hospitals and modern diagnostic centres, which will provide advanced medical care and modern diagnostic services, are being developed. The statement said currently, 10 memorandum of cooperation had been signed, adding that six agreements were at advanced stages.

It quoted Uche Orji to have said, 'The NSIA seeks to transform Nigeria's healthcare sector by facilitating private sector participation and working closely with federal healthcare institutions. We expect that these investments will expand the capabilities of the federal healthcare institutions by providing world class equipment and the very best in private sector operations and management. This is part of a broader set of objectives designed to help build human and institutional capacity across the healthcare sector in Nigeria.'

The statement also quoted the Minister of Health, Prof. Isaac Adewole, saying that the investment demonstrated the Federal Government's desire to modernise and expand the country's healthcare sector. 'These projects will attract investments into Nigeria's healthcare sector and demonstrate the Federal Ministry of Health's ability to work effectively with institutions such as the NSIA to ensure that Nigerians have access to world class medical services.

Cancer Centre Upgrade Will Invest In Additional Radiotherapy Machines

In 2017, the Federal Government revealed plans to upgrade cancer centres across the country to increase capacity and provide a back-up in the event of equipment breakdown. The Health Minister, Isaac Adewole, announced that Nigeria needs nearly 200 radiotherapy machines, but only has seven. In August 2017, the health minister confirmed that the government had made plans for

additional radiotherapy machines in the 2017 budget under strategic intervention for tertiary hospitals, which received a budget of NGN9bn (USD29.8mn). According to the minister, the government is also partnering with the NSAIA which will also put about NGN2bn (USD6.6mn) into the project. The eight benefitting tertiary hospitals will be the UNTH in Enugu, UBTH in Benin, UCH in Ibadan, ABUTH in Zaria, UNIMTH in Maiduguri, OAUTH in Ife, National Hospital in Abuja, and LUTH in Lagos.

Lagos State Medical Park Will Bring Business Opportunities

The establishment of the Lagos State Medical Park will provide business opportunities to medical device companies, as well as benefit Medipark International Limited Consortium, which will partner with the government to construct the facility. According to the government, the development will be a healthcare facility like no other in Sub-Saharan Africa.

The Lagos State Government in early 2016 planned to commence the construction of a world class Medical Park under a Public Private Partnership (PPP) arrangement. The project has been awarded to a consortium of US healthcare companies, which comprises of Medipark International Limited, Cleveland Clinics Ohio USA, St. Barnabas Healthcare System New Jersey and American Hospital Management Company Washington DC in a joint venture with Ibile Holdings.

The project is expected to be completed in 20 months at a cost of NGN49bn (USD202.4mn). The Medical Park will serve as a one stop medical facility offering spaces to primary care physicians, alongside in-house specialists, as well as ancillary services providing a full spectrum of high technology cutting-edge medical and diagnostic services tailored to meet the medical needs of Lagosians and Nigerians at large.

The Medical Park will be a milestone in healthcare delivery aimed at reducing medical tourism abroad. Medical facilities will include a clinic complex, theatre complex and procedure rooms, ward complex, trauma unit, emergency and ambulance services and helipad. The facility will also incorporate a conference and seminar complex, medical goods and lifestyle shopping centre, stress management and lifestyle improvement unit, data cabling/integrated IT system, staff quarters and hotel.

Healthcare Activity

We estimate the number of hospital admissions to have grown at a CAGR of 5.3% since 2013, reaching 13.3mn in 2018. This equates to just 68 admissions per thousand population compared to a rate of about 99 per thousand population for South Africa. The number of outpatient visits is estimated to have grown at a similar rate, reaching 444.7mn in 2018, equal to 2,270 visits per thousand population compared to a rate of around 3,288 visits per thousand population for South Africa.

Healthcare Personnel

We estimate the number of doctors to have grown at a CAGR of 2.7% since 2013, reaching 73,928 in 2018. Numbers have grown in line with population growth meaning that the rate per thousand population has remained at 0.4, which compares to 1.0 doctors per thousand population in South Africa. Provision of nurses is also limited with 1.6 nurses per thousand population equal to 315,752. The number of dentists is extremely low with less than 2,500 registered in 2018.

Key Healthcare Data

KEY HEALTHCARE DATA, 2013-2018							
Health Status	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**CAGR**
Population (mn)	171.8	176.5	181.2	186.0	190.9	195.9	2.7
Population growth (%)	2.7	2.7	2.7	2.7	2.6	2.6	-0.7
% of population aged 65+	2.8	2.8	2.7	2.7	2.8	2.7	-0.1
Live Births (000s)	6,930.5	7,038.1	7,140.6	7,239.7	7,337.9	7,437.4	1.4
Per 000 population	40.3	39.8	39.4	38.9	38.4	37.9	-1.2
Deaths (000s)	2,303.9	2,311.2	2,317.1	2,321.8	2,326.2	2,330.7	0.2
Per 000 population	13.4	13.1	12.8	12.5	12.2	11.9	-2.4
Infant mortality/000 live births	74.8	72.1	69.5	67.0	64.7	62.6	-3.5
Male life expectancy at birth	51.4	51.8	52.2	52.7	53.1	53.5	0.8
Female life expectancy at birth	52.9	53.3	53.8	54.2	54.7	55.2	0.9
Healthcare Funding	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**CAGR**
Health Expenditure (USDbn)	18.5	18.9	17.6	15.3	14.1	15.3	-3.8
Per capita (USD)	107.9	107.1	96.9	82.2	73.6	78.1	-6.3
Health expenditure % of GDP	3.6	3.5	3.6	3.8	3.9	3.7	0.1
Public % of health expenditure	21.0	23.4	21.0	19.9	20.7	21.4	0.5
Social security % of public	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Private % of health expenditure	79.0	76.6	79.0	80.1	79.3	78.6	-0.1
Out of pocket % of private	84.2	90.7	89.3	89.2	n/a	n/a	n/a
Private insurance % of private	0.0	0.1	0.3	0.7	n/a	n/a	n/a
Exchange rate, national currency/USD	159.2	165.2	197.8	257.4	305.0	305.0	13.9
Healthcare Resources	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**CAGR**
Hospitals (excluding primary)	3,516	3,534	3,552	3,569	3,587	3,605	0.5
Public	946	950	955	960	965	970	0.5

Health Status	2013	2014	2015	2016	2017	2018	CAGR
Private (hospitals and clinics)	2,571	2,584	2,597	2,610	2,622	2,635	0.5
Beds	144,721	153,275	162,303	171,827	181,973	192,709	5.9
Per 000 population	0.8	0.9	0.9	0.9	1.0	1.0	3.2
Healthcare Activity	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**CAGR**
Inpatient admissions (000s)	10,281.1	10,832.5	11,411.3	12,018.4	12,662.3	13,340.0	5.3
Per 000 population	59.8	61.4	63.0	64.6	66.3	68.1	2.6
Average length of stay (days)	5.3	5.3	5.3	5.2	5.2	5.2	-0.5
Surgical procedures (000s)	3,392.8	3,574.7	3,765.7	3,966.1	4,178.6	4,402.2	5.3
Outpatient visits (000s)	342,703.3	361,083.3	380,376.1	400,614.3	422,076.4	444,667.2	5.3
Per 000 population	1,994.4	2,046.3	2,099.4	2,154.0	2,211.1	2,270.2	2.6
Healthcare Personnel	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**CAGR**
Physicians (registered)	64,829	66,555	68,326	70,145	72,011	73,928	2.7
Per 000 population	0.4	0.4	0.4	0.4	0.4	0.4	0.0
Nurses	276,645	284,101	291,703	299,443	307,497	315,752	2.7
Per 000 population	1.6	1.6	1.6	1.6	1.6	1.6	0.0
Dentists (registered)	2,429	2,429	2,429	2,429	2,422	2,414	-0.1
Per 000 population	0.01	0.01	0.01	0.01	0.01	0.01	-2.7
Pharmacists (registered)	18,743	19,870	21,060	22,317	23,657	25,076	6.0
Per 000 population	0.1	0.1	0.1	0.1	0.1	0.1	3.3

Source: UN, WHO, National Sources, Fitch Solutions

Industry Trends And Developments

Medical Devices Industry Trends And Developments

Buhari Victory Signals Slow Progress On Reform In Nigeria

At Fitch Solutions we expect Nigeria to experience some localised instability in the short term, as the outcome of the February 23 elections are disputed in the courts, and on the streets. Although such political unrest is unlikely to persist, we expect overall political risk to remain elevated throughout 2020, acting as a headwind to investment. The re-elected incumbent, Muhammudu Buhari, is likely to maintain his previous policy stances, suggesting only slow progress on key oil sector legislation and broader reforms. While the start-up of the Egina offshore oilfield in December 2018 and the planned opening of the Dangote oil refinery in 2020 should see real GDP expand at a more rapid rate than in Buhari's first term, low capital investment and high borrowing costs will act as headwinds to growth in the years ahead.

Modest Uptick In Economic Growth But Hydrocarbons Dependence Will Persist

Nigeria's recovery from recession in 2016 will continue in 2019, with higher fiscal spending around the February elections and upturns in oil supply helping to drive expansion. However, any protracted policymaking uncertainty following February 16 elections will deter both local and foreign investors, while high local borrowing costs will act as a further constraint. Overall growth will remain tepid, with real GDP expanding by some 2.2%, the fastest rate since 2015, but well below the government's official 3.0% projection, and long-term averages. Prospects for broad-based expansion remain weak given continued dependence on the hydrocarbons sector, leaving longer-term growth vulnerable to external commodity developments.

Budget Will Continue To Restrict Medical Device Market Growth

Nigeria's health budget will continue to restrict the country's medical device market. A reduction of funds allocated to capital expenditure in 2019 will hinder investment of capital equipment and this will limit the overall market growth.

President Muhammadu Buhari proposed a recurrent operating expenditure of NGN315.6bn (USD1.0bn) for the Ministry of Health (MoH) in Nigeria's 2019 appropriation bill, up from NGN269.3bn (USD0.9bn) in 2018. This represented a NGN46.3bn increase over the 2018 budget, but very little gain in real terms since most requirements are imported and the naira remains weak against the US dollar.

Capital expenditure for the Ministry was allocated NGN50.2bn (USD0.16bn), down from NGN71.1bn (USD0.23bn) in 2018. This will mean that the government will spend less on capital equipment in 2019 and this will cause financial pressures on medical device suppliers. We note that the 2019 cut in capital expenditure follows a 27.9% rise in 2018 and nearly a double increase the previous year.

Health projects in the 2019 budget include:

- NGN51.2bn for the implementation of the National Health Act
- NGN21.2bn for GAVI/Immunisation
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- NGN1.12bn for the procurement of Kits And Commodities For Community Health Influencers
- NGN78mn for the establishment of chemotherapy centres in UBTH, UITH, ABUTH, UMTH, OAUTH, UNTH, UPTH, FMC Owerri, FMC Abeokuta
- NGN7.6bn for procurement of RI vaccines and devices
- NGN3.5bn for counterpart funding including global fund/health.

Improving Economy Will Support Import Performance In 2019

The recovering economy will support medical devices import growth in 2019, although further depreciation of the naira will be a restraining factor. A tough economic performance has restricted import growth in the previous quarters.

The latest monthly mirror trade data reveal that imports fell by 6.9% y-o-y to USD35.4mn in Q418. In the 12 months to December 2018, imports grew by 0.2% y-o-y taking the running annual total to USD113.5mn.

Annual trade data from the National Bureau of Statistics indicates that imports grew by 1.0% to USD130.0mn in 2016 and recorded a 2011-2016 CAGR of -4.3%. In local currency terms, imports grew by 31.9% to NGN33.6bn in 2016 and recorded a 2011-2016 CAGR of 5.9%.

Exports Will Remain Very Low

Nigerian medical device exports will remain prone to sudden fluctuations indicating that some export activity may be due to one-off re-exports. The establishment of a large syringe factory serving markets in West Africa will boost exports of consumables but the overall level of exports will remain very low.

The latest monthly mirror trade data show that exports grew by 42.3% y-o-y to USD0.2mn in Q418. Patient aids grew rapidly. Before this, exports posted double-digit contractions in every quarter in 2018. In the 12 months to December 2018, exports fell by 44.6% y-o-y to USD0.6mn.

Annual mirror trade data indicates that exports fell by 47.1% to USD0.7mn in 2016 and recorded a 2011-2016 CAGR of -17.8%. In local currency terms, exports fell by 30.9% to NGN176.9mn in 2016 and recorded a 2011-2016 CAGR of -9.1%.

Duty Reduction Would Benefit Nigeria's Medical Devices

A reduction in medical devices import duty, would increase market access and make imports more affordable. A recovering economy will also support medical device import growth in 2019. Medical device exports will remain very low and prone to sudden fluctuations.

A reduction in import duty on medical, surgical and dental equipment will increase medical device market access and make imports more affordable. It was reported at the end of January 2019 that the Lagos Chamber of Commerce and Industry (LCCI) has advised the Federal Government to revise downwards import duty on medical, surgical and dental equipment as a matter of urgency. If implemented, we believe that this will benefit the medical device market which remains almost entirely reliant on imports. Multinational companies such as GE Healthcare, Philips and Trivitron, among others, who are active in the market will benefit from greater affordability which will drive sales. We highlight that the President of the Chamber revealed that they were concerned about the sharp increase in import duty on medical, surgical and dental equipment to 70% and they are requesting a revision of the duty to 10%.

GE Healthcare Will Remain An Important Supplier In Nigeria

General Electric (GE) Healthcare will continue to be one of the leading medical device suppliers to Nigeria. In order to maintain its status in the country, GE will continue to collaborate and partner with the Federal Government in various projects.

It was reported in March 2019 that GE Healthcare partnered with the Nigeria Sovereign Investment Authority (NSIA) to supply latest

technology in computed tomography (CT) and Discovery RT, to Lagos University Teaching Hospital (LUTH), for its NSIA-LUTH Cancer Center which was commissioned by President Muhammadu Buhari in February 2019.

The Discovery RT, a simulation CT machine, is the first of such technology to be installed in the country. It enables doctors to determine the exact location, shape, and size of tumors. As part of the partnership, GE Healthcare will also provide servicing of the equipment and deliver hands-on training for the hospital's radiology staff on the new technology.

Regulatory Development

Medical Devices Regulatory Development

Competent Authority

Medical device regulation is the responsibility of the National Agency for Food and Drug Administration and Control (NAFDAC). The NAFDAC was established by Decree 15 of 1993 as amended by Decree 19 of 1999 and Act Cap N1 Laws of the Federation of Nigeria (LFN) 2004, to regulate and control the manufacture, importation, exportation, distribution, advertisement, sale and use of food, drugs, cosmetics, chemicals, medical devices and packaged water (known as regulated products).

In accordance with the enabling laws, NAFDAC is authorised to:

- Regulate and control the importation, exportation, manufacture, advertisement, distribution, sale and use of regulated products.
- Conduct appropriate tests and ensure compliance with standard specifications.
- Undertake appropriate investigation of the production premises and raw materials of regulated products.
- Compile standard specifications, regulations, and guidelines for the production, importation, exportation, sale and distribution of regulated products.
- Control the exportation and issue quality certification of regulated products intended for export.
- Establish and maintain relevant laboratories for the performance of its functions.
- Ensure that the use of narcotic drugs and psychotropic substances are limited to medical and scientific use only.
- Undertake the registration of food, drugs, medical devices, bottled water and chemicals.
- Undertake inspection of imported regulated products.
- Pronounce on the quality and safety of regulated products after appropriate analysis.

Product Registration

Guidelines for the registration of imported medical devices are governed by NAFDAC/RR/007/00, which states that no medical device shall be manufactured, imported, exported, advertised, sold or distributed in Nigeria unless it has been registered in accordance with the provisions of Act Cap F33 LFN 2004 (formerly decree 19 of 1993) and the accompanying guidelines.

APPLICATIONS/DOCUMENTATION

1 (a) An application for registration of a medical device shall be made by the Manufacturer.

(b) In case of a manufacturer outside Nigeria such shall be represented in Nigeria by a duly registered company or individual with facilities to effect a recall of the product when necessary.

(c) An applicant for a manufacturer outside Nigeria must file an evidence of Power of Attorney from the manufacturer which authorises him to speak for his principal on all matters relating to the latter's specialties. The original Power to Attorney is to be notarised and submitted to NAFDAC.

Or:

Contract Manufacturing Agreement (where applicable). This should be notarised by a notary public in the country of manufacture and submitted to NAFDAC.

NOTE**:** The representative in Nigeria, whether a corporate body or an individual with the power of attorney, will be held responsible for ensuring that the competent authority in the country is informed of any serious hazard newly associated with a product imported under the provisions of the Act or of any criminal abuse of the certificate in particular to the importation of falsely labeled, spurious, counterfeited or sub-standard medical devices.

(d) The manufacturer, in the case of imported products, must show evidence that they are licensed to manufacture medical devices for sale in the country of origin (Certificate of Manufacturer and Free Sale). Such evidence must be issued by the Competent Authority of the country of manufacture, and shall be authenticated by the Nigerian Mission in that country. In countries where no Nigerian Embassy or High Commission exists, any other Embassy or High Commission of any Commonwealth or West African country can authenticate.

2 (a) The applicant shall submit to the office of the Director (Registration and Regulatory Affairs) NAFDAC, a written application, stating name of the manufacturer, generic name (brand name, where applicable) of the products, and obtain the prescribed application form which must be properly filled with all required information.

(b) A separate application form shall be submitted for each regulated product.

3 Evidence of Trade mark approval for brand name from the Federal Ministry of Commerce in Nigeria shall be submitted.

4 Comprehensive Certificate of Analysis of the batch of product to be registered.

5 Certificate of Business Incorporation of the importing company with the Corporate Affairs commission in Nigeria.

PRODUCT

1 An applicant shall not be allowed to register a product in more than one brand name, except in cases where the manufacturers are different having different brand names for the same formulation.

LABELING

1 Labelling shall be informative, clear and accurate.

2 Minimum requirements on the package label:

(a) Name of product- brand name (where applicable) must appear in bold letters.

(b) Name and full location address of the manufacturer.

(c) Provision for NAFDAC registration number.

(d) Batch number, manufacturing date and expiry date.

(e) Net contents

(f) Directions for safe use (where necessary) on the information panel (IP) or on the package insert (PI)

3 Any regulated product which is labelled in a foreign language shall NOT be considered for registration unless an English translation is included on the label and package insert (where applicable).

TARIFF

1 Application form: NGN250

2 Per Medical device: NGN250 + 5% VAT

NOTE

1 The registration timeline after submission of samples is 80 work days.

2 Failure to comply with these requirements may result in the disqualification of the application or lead to considerable delay in processing of registration.

3 A successful application attracts a Certificate of Registration with a validity period of five years.

4 Registration of a product does not automatically confer Advertising permit. A separate approval by the Agency shall be required if the product is to be advertised.

5 NAFDAC may withdraw the certificate of Registration in the event that the product is advertised without express approval from Agency.

6 NAFDAC reserves the right to revoke, suspend or vary the certificate during its validity period.

7 Filling an application form or paying for an application form does not confer registration status.

Procurement Policy

In response to the proliferation of dysfunctional and obsolete equipment in Nigerian hospitals, the FMOH has issued guidelines regarding the policy for procurement of health and medical equipment in Nigeria. The policy aims to ensure value for money, substantially improve the quality of healthcare resources, enhance the standardisation of medical equipment and discourage the dumping of obsolete and derelict medical equipment.

The policy states:

(a) The policy shall be applicable to all Health and Medical Equipment including donated ones;

(b) International standards are to be adopted for medical products, measuring devices and instruments, which currently are not covered by standards issued by the Standards Organisation of Nigeria (SON), but subject to confirmation by SON, any Testing body or Certification body accredited by SON (TUV-Certification for Germany, Intertek, and Lloyds Register of Quality for UK amongst others). In the absence of Nigerian or International Standard, the Analysis Certificate accompanying the product shall be used;

(c) The Bureau of Public Procurement (BPP) shall publish annually the updated list of manufacturers/suppliers that demonstrate compliance with preferred and fundamental standards, who can be selected for the procurement of their medical devices;

(d) The manufacturer/supplier shall have a service centre or service agent resident in Nigeria and shall be fully represented directly or through a trained and reputable local representative;

(e) Selection of health and medical equipment to be procured shall be based on the guidelines in the generic list proposed by World Health Organization (WHO) and their specific functionality regarding the disease pattern in the country and having competent professional for management of the equipment;

All health and medical equipment shall be registered with SON subject to meeting registration requirements such as:

- Offshore Standards Organisation of Nigeria Conformity Assessment Programme (SONCAP) Certification;
- Evidence of ISO 13485 Quality Management System Certification by a recognised Certification body;

(iii) Approval Certificate given by the FMOH or NAFDAC or Nigerian Nuclear Regulatory Authority (NNRA) for all medical devices and equipment with radiation sources;

(iv) Guaranty Certificate in English language;

(v) Evidence of demonstrable and appropriate competency for the servicing/repair of equipment in a service centre in Nigeria and for the training of personnel of the appropriate users in operations and management of the equipment including the validity period of qualification.;

(vi) Assurance that medical devices powered by electricity are rated on 220 -240 V, in addition to applicable safety regulations;

(g) The point of importation of health and medical equipment into Nigeria shall be restricted to all international airports and seaports;

(h) Procurement and tender notices shall give comprehensive information such as size, capacity, necessary spares parts and accessories, temperature requirements of the equipment and also the available electrical and water supplies where applicable; the location for delivery and installation of equipment and the training required by the users to manage and maintain the equipment after installation and commissioning.

Competitive Landscape

Medical Devices Production

Medical device production is at an embryonic stage with output of less than USD5mn. Production is focused on consumables and basic medical devices. Consumables production is set to expand with the establishment of Nigeria's first production facility for disposable syringes which commenced operations in September 2017. The company, Jubilee Syringe Manufacturing (JSM), aims to become the largest manufacturer of syringes in Africa and over the longer term make Nigeria self-sufficient in syringe production. JSM cited the investment-friendly policies of the Akwa Ibom State government and the enormous potential of the large Nigerian market as key factors in the decision to establish manufacturing operations in Nigeria. The company also hopes to benefit from a government executive order that prioritises purchases of made-in-Nigeria products by government institutions.

Nigeria Medical Devices National Manufacturers

Jubilee Syringe

Overview: Jubilee Syringe Manufacturing Company Limited was established in 2016 by Turkish entrepreneur Onur Kumral with production beginning in September 2017. The company aims to become the largest manufacturer of syringes in Africa and make Nigeria self-sufficient in syringe production.

Product Portfolio: Jubilee Syringe produces three types of disposable syringe: 2ml, 5ml and 10ml.

Manufacturing: Jubilee Syringe's factory is located in Akwa-Ibom State and consists of 8,000m^2 of indoor space and 42,000m^2 of outdoor space. The company is not yet operating at its full capacity but it already produces over 350 million syringes yearly with plans to double output to 700mn units within the first year of operation and then scale up to 1.0bn units. Two-thirds of the raw materials used in the production of syringes will be sourced locally. Production is primarily for the domestic market with some exports to other markets in West Africa. The company would need to produce around 4.0bn syringes per annum to meet the needs of the Nigerian population.

Medical Device Plastics

Overview: Medical Plastics Limited (MPL) was registered in January 2007. The company forms part of Abuja-based Acacia Holdings Limited which groups together four Nigerian companies including furniture manufacturer; Hits furniture Nigeria, and private hospital operator; Reliance Referral Hospitals.

Product Portfolio: MPL is a manufacturer of disposable syringes and needles.

Manufacturing: MPL's factory in Kano State comprises a 5,588m2 production unit, 883m2 clean house unit and 745m2 administration block. The production plant has capacity for 200mn units of disposable syringes and needles.

Nigeria Medical Devices Multinational Activity

Very few multinationals have dedicated operations in Nigeria. The exceptions are GE and Siemens, although this is largely due to their activities outside the health sector, such as oil & gas and power generation. Several multinationals, including GE Healthcare, Johnson & Johnson and Philips HealthTech have been actively supporting mother and child care programmes aimed at helping Nigeria to achieve its Millennium Development health targets. Major multinationals with no manufacturing presence are listed below with their respective representation in the market.

Canon

Overview: Canon established a direct presence in Nigeria in October 2016. Canon Nigeria Imaging Solutions based in Lagos will focus on the company's photography business.

Acquisition: Canon announced the corporate name change of Toshiba Medical Systems, acquired in December 2016, to Canon Medical Systems in January 2018. The healthcare business in Nigeria is represented by JNC International Limited, based in Lagos.

Product Portfolio: Canon Medical Systems develops and manufactures diagnostic imaging systems, including CT, MRI, ultrasound and X-ray systems, and clinical laboratory systems.

Fresenius Medical Care

Overview: Fresenius Medical Care (FMC) has no direct presence in Nigeria. The company is represented by its long-term partner, Adcem Health Care, the leading provider of renal care services in Nigeria. Through Adcem, Fresenius has supplied renal equipment to 14 teaching hospitals under a contract won by Vamed Engineering Nigeria Ltd. Adcem also manages dialysis centres set up as a PPP project with the MTN Foundation in 12 tertiary and secondary hospitals across the country.

Product Portfolio: FMC is one of the four business segments operated by Fresenius. It focuses on products for haemodialysis, peritoneal dialysis, further home therapies, acute dialysis, other blood cleansing procedures; and dialysis drugs.

GE Healthcare

Overview: GE has been active in Nigeria for more than four decades and currently has over 350 employees. The company's Nigerian operations are headquartered in Lagos. Nigeria will benefit from GE Healthcare's decision to establish a new Sustainable Healthcare Solutions (SHS) business, which will combine GE Healthcare's operations in India, South Asia, Africa and Southeast Asia. The new business will focus on the expansion of GE Healthcare's affordable healthcare portfolio including the development of high value, low-cost technologies and healthcare delivery solutions across multiple care settings. The new organisation will invest USD300mn as part of a multi-phase effort to develop a more robust affordable healthcare portfolio for customers and increase access for people without basic healthcare services.

Spin-off: In February 2019, GE announced the USD21.4bn sale of its Biopharma Business to Danaher. In June 2018, GE announced that Healthcare will become a standalone company.

Divestiture: In April 2018, GE announced an agreement to sell GE Healthcare's Value-Based Care Division to Veritas Capital for USD1.1bn.

Product Portfolio: GE Healthcare operates three main segments: Healthcare Systems, Life Sciences and Healthcare Digital. Healthcare Systems provides diagnostic imaging systems (X-ray, digital mammography, CT, MR, surgical and interventional imaging and molecular imaging), clinical systems (ultrasound, ECG, bone densitometry, patient monitoring, incubators and infant warmers, respiratory care and anaesthesia management) and remote diagnostic and repair services for medical equipment manufactured by GE and others. Life Sciences specialises in products, services and manufacturing solutions for drug discovery, the biopharmaceutical industry, and cellular and gene therapy technologies; and innovative imaging agents used during medical scanning procedures to highlight organs, tissue and functions inside the human body. Healthcare Digital provides medical technologies, software, analytics and cloud solutions.

Local Partnerships: GE has had a long period of collaboration with the Federal Government under which GE has invested in key sectors of the economy. GE Healthcare's MOU with the Federal Government is focused on 5 areas for healthcare infrastructure development in Nigeria: developing diagnostic centers and specialist hospitals; rural health solutions; smallholder medical facility scheme; and the exploration and execution of co-location model PPP projects.

In November 2016, the Kaduna State Ministry of Health and GE Healthcare signed a partnership to expand primary and referral care services and equip 255 primary healthcare centers and 23 secondary healthcare hospitals across the state. The programme also included a package of training healthcare professionals and a three-year maintenance agreement for the equipment. Kaduna State equipped units with relevant medical technology including ultrasound, heart monitors, neonatal incubators and anaesthesia machines.

In October 2017, GE Healthcare signed a partnership agreement with the Northern States Governors Forum (NSGF) with the aim of upgrading the region's healthcare infrastructure. The two parties will collaborate in several areas including the establishment of new hospitals and diagnostic centres, improved training and skills for healthcare staff, the management of equipment including new technology implementation and maintenance, and the exploration of local bio-manufacturing solutions.

GE Healthcare has also been active in supporting mother and child care projects, in training local staff and providing frontline support. In May 2014, GE Healthcare in partnership with USAID signed a USD20mn agreement with the Federal Ministry of Health to reduce preventable child and maternal deaths in Nigeria. The Healthymagination Mother & Child initiative supports the ongoing efforts of the Federal Ministry of Health's "Save One Million Lives" programme by bringing funding, technology and expertise to improve primary healthcare infrastructure and build capacity for maternal and infant care. Specifically, the initiative will bring together mobile and alternative powered health technology, including GE's portable pocket-sized Vscan ultrasound system. The aim is to expand access to prenatal screenings to more than 2mn expectant mothers in Nigeria by 2020.

Deux Project Ltd, one of Nigeria's leading construction and engineering companies also selected GE Healthcare as its equipment supplier for health projects.

Johnson & Johnson

Overview: Johnson & Johnson has no direct representation in Nigeria. Between 2010 and 2012, the company funded an Emergency Obstetric and Newborn Care programme in the Federal Capital Territory.

Divestitures: In April 2019, J&J completed the USD2.8bn divestiture of Advanced Sterilization Products (ASP), a division of Ethicon, to Fortive Corporation. In October 2018, J&J completed the USD2.1bn divestiture of its LifeScan business, specialised in blood glucose monitoring products, to Platinum Equity. In October 2017, J&J completed the USD1.0bn divestiture of its Codman Neurosurgery business to Integra LifeSciences. In October 2015, J&J completed the USD2.0bn divestiture of its Cordis business to Cardinal Health. In 2014, J&J divested the Ortho-Clinical Diagnostics business.

Acquisitions: In April 2019, J&J announced that Ethicon has completed the acquisition of robotics company Auris Health for USD3.4bn in cash and up to USD2.4bn in additional contingent payments. In June 2017, J&J's DePuy Synthes acquired Innovative

Surgical Solutions. In February 2017, J&J's Ethicon announced a deal to acquire Torax Medical. In February 2017, J&J completed the USD4.3bn acquisition of Abbott Medical Optics (AMO).

Product Portfolio: J&J is organised into three business segments: Consumer, Pharmaceutical and Medical Devices. The Medical Devices segment includes a broad range of products used in the cardiovascular, diabetes care, diagnostics, orthopaedics (hips, knees, trauma and spine & other), surgery (advanced, general and specialty) and vision care markets. The company's largest markets are surgery and orthopaedics.

In July 2017, J&J presented Cerenovus, its new neurovascular business, which was expanded with the acquisitions of Pulsar Vascular in December 2016 and Neuravi in April 2017. Cerenovus is part of DePuy Synthes Products, within the Medical Devices Companies segment.

Medtronic

Overview: Medtronic has no direct representation in Nigeria. Medtronic exhibited at the West African Health Expo in Lagos in September 2013.

Divestiture: In July 2017, Medtronic completed the sale of its Patient Care, Deep Vein Thrombosis (Compression) and Nutritional Insufficiency businesses within the Patient Monitoring & Recovery (PMR) division of its Minimally Invasive Therapies Group (MITG) to Cardinal Health for USD6.1bn.

Acquisitions: In January 2019, Medtronic announced the acquisition of US-based EPIX Therapeutics to expand its cardiac ablation portfolio. In December 2018, Medtronic completed the USD1.7bn acquisition of Israel-based Mazor Robotics. In August 2016, Medtronic acquired HeartWare International for USD1.1bn. In February 2016, Medtronic acquired Italian haemodialysis treatment company Bellco. Overall, Medtronic has strengthened its global position following the USD50bn acquisition of Covidien in January 2015.

Product Portfolio: Medtronic operates four business groups: Cardiac and Vascular Group (CVG), Diabetes Group, Restorative Therapies Group (RTG) and MITG which represents 90% of Covidien's revenues. Covidien's Peripheral Vascular business has been integrated into CVG, while Covidien's Neurovascular business has been integrated into RTG.

Philips

Overview: Philips has been active in Nigeria for a number of years, having set up the Philips Project Centre in 1991. It went on to equip the National Hospital Abuja commissioned in 1999, and also supplied equipment for the latest upgrade and for other tertiary government facilities. The company is now targeting smaller facilities in the private sector, which is the dominant provider of care in many areas, accounting for the greater part of secondary care facilities. In 2015, it was announced that Philips is partnering with Medical Credit Fund and Diamond Bank to provide loans to private clinics to enable them to acquire state-of-the-art diagnostic facilities. Through this initiative, small and medium-sized clinics that want to acquire innovative medical technologies and services from Philips can finance this purchase through the Diamond Mediloan QualityCare programme at preferential interest rates.

Acquisitions: In July 2018, Philips completed the acquisition of EPD Solutions, an Israeli developer of cardiac imaging and navigation systems for use in image-guided procedures to treat cardiac arrhythmia, which will further expand the company's image-guided therapy portfolio. In June 2018, Philips announced the acquisition of the UK's Remote Diagnostic Technologies to expand its position in the resuscitation and emergency care market. In 2017, Philips completed the USD2.2bn acquisition of Spectranetics to strengthen its image-guided therapy business group, and the acquisition of CardioProlific, which develops catheter-based thrombectomy products.

Product Portfolio: Philips focuses on three main businesses: Diagnosis & Treatment (diagnostic imaging, ultrasound, image-guided therapy, driven by the integration of Volcano including interventional X-ray and smart catheters); Connected Care & Health Informatics (patient monitoring, hospital ventilators, defibrillators, home and remote cardiac monitoring, healthcare IT and high-end radiology & cardiology informatics); and Personal Health (sleep & respiratory care, oral healthcare, mother & childcare, air purifiers and male grooming). The company has leading market positions in a number of areas, including cardiovascular X-ray, image-guided interventions, patient monitoring, and home healthcare.

In July 2014, Philips launched the Visiq ultra mobile ultrasound system during the Lagos leg of its annual pan-African Cairo to Cape Town Roadshow. Philips has also launched a portfolio of affordable medical products for mother and child care in the Nigerian market including the ClearVue ultrasound range and the Intellivue (MP20/30, MP40/50) patient monitors.

In 2011, Philips was selected by the FMOH to install six CT scanners, eight Digital Mammography systems and 17 Ultrasound systems at various tertiary hospitals throughout the country. Philips has also been active in supporting mother & child care development initiatives through clinical training workshops for doctors, clinicians and healthcare workers. In 2012, Philips announced that it was appointing a dedicated business development manager to be based in Nigeria to handle, support and drive ongoing collaborations with the local healthcare authorities.

Distribution: Philips is represented in Nigeria by a number of distributors, including its main local partner PPC Ltd (previously Philips Project Centre, which is now a 100% Nigerian entity following a management buyout). Others include El-Hanan Ventures Limited based in Abuja and Sleep Medix Nigeria Ltd. based in Lagos.

Siemens Healthineers

Overview: In May 2015, Siemens healthcare business started operations as an independent standalone legal entity and was rebranded Siemens Healthineers in May 2016. In March 2018, Siemens raised EUR4.2bn when it sold a 15% stake in Siemens Healthineers. This IPO will help target acquisitions in high growth areas.

Divestitures: In FY2015, Siemens sold its hearing aid and hospital information businesses.

Acquisitions: In November 2017, Siemens Healthineers closed the acquisition of Alere's point-of-care blood diagnostics subsidiary, Epocal. In June 2017, Siemens Healthineers closed the acquisition of Medicalis, which will strengthen its Population Health Management (PHM) offering.

Product Portfolio: Siemens Healthineers has six business areas: Diagnostic Imaging, Laboratory Diagnostics, Advanced Therapies, Ultrasound, Point of Care Diagnostics and Services.

Smith & Nephew

Overview: Smith & Nephew has no direct presence in Nigeria. The company is represented by Morison Industries PLC, a publicly quoted company on the Nigerian Stock Exchange which has worked with Smith & Nephew since 1980. Morison Industries primarily supplies S&N wouncare products, as well as products from BSN Medical.

Divestiture: In August 2016, Smith & Nephew concluded the USD350mn divestiture of its Gynaecology business to Medtronic.

Acquisitions: In December 2018, Smith & Nephew announced the USD105mn acquisition of Ceterix to expand its meniscal repair product offering. In December 2017, Smith & Nephew completed the acquisition of tissue regeneration technology developer Rotation Medical for USD125mn and up to USD85mn over the next five years. In January 2016, it completed the USD275mn

acquisition of Blue Belt Holdings, a firm specialising in orthopaedic robot-assisted surgery.

Product Portfolio: Smith & Nephew operates nine global product franchises: Knee Implants, Hip Implants, Sports Medicine Joint Repair, Arthroscopic Enabling Technologies, Trauma & Extremities, Other Surgical Businesses, Advanced Wound Care, Advanced Wound Devices and Advanced Wound Bioactives.

Trivitron Healthcare

Overview: Founded in 1997, Trivitron Healthcare is one of the leading manufacturers of medical devices in India, with more than 50,000 distribution sites located in 165 countries. In 2018, the company launched Trivitron Healthcare Africa BV (THA), a medical technology joint venture focused on the African continent. Trivitron Healthcare has a total of nine manufacturing sites in India, Turkey and Finland, and the company now aims to distribute its medical devices across Africa.

Financial Review: Trivitron had revenues in the region of USD100mn in FY2018. More than half of revenues come from international markets. Trivitron is targeting revenues of USD150mn, at which point founder and managing director GSK Velu has indicated that the company will seek an IPO listing.

Product Portfolio: Trivitron offers a wide range of products, covering cardiology and implantable devices, diagnostic imaging, clinical diagnostics, critical care & life support solutions, as well as ophthalmology.

Distribution: Initially headquartered in Dubai, the UAE, the newly established THA will open distribution hubs in major cities including Lagos, as well as Nairobi, Johannesburg and Algiers. The company expects to use these hubs to support neighbouring countries. The IFC, World Bank's private lending arm, will lend Trivitron Healthcare USD2.8mn to set up these distribution hubs, while Trivitron Healthcare and Dutch-based private equity fund IFHA will add a further USD7.3mn into the project.

Medical Devices Market Access

Market Environment

Situated on the West Coast of Africa, Nigeria has 36 states and a federal capital territory (FCT) grouped into six geo-political zones: South-South, South-East, South-West, North-East, North-West and the North Central zones. The country has a strong North-South divide with states in the North largely muslim and continues to experience longstanding ethnic and religious tensions.

Nigeria is experiencing rapid urbanisation (currently around 50%), as the economy moves away from an agrarian base towards a more service-oriented model. The country suffers from inadequate infrastructure although the government is working toward developing stronger public-private partnerships in the transportation and power sectors.

Distribution

Very few medical device companies have direct operations in Nigeria. The majority operate through agents & distributors. In order to supply to the public healthcare system companies are required to have a Service Centre or Service Agent resident in Nigeria and to be fully represented directly or through a trained and reputable local representative.

Trade Fair

- The next edition of the **Medic West Africa** Exhibition and Congress is scheduled for October 9-11 2019 at Eko Hotel Convention Centre in Lagos. The exhibition is organised by Informa Life Sciences exhibitions in partnership with Afrocet and claims to be the largest healthcare event in the region. Contact: mwa@informa.com, www.medicwestafrica.com.

Medical Devices Methodology

Forecast Methodology

Fitch Solutions uses a wide definition of medical device, similar to that used by the US FDA or EU EMA. In short, we define it as any piece of equipment or apparatus used to treat or diagnose an illness that comes into direct contact with the patient. Pharmaceuticals, IV diagnostics and laboratory equipment are not within the scope of our forecasts.

We have estimated national markets at ex-factory prices for the historical period in current local and USD terms. We have calculated the markets using a trade-based approach, looking at imports, and then adding in domestic production, minus any exports. We have sourced import and export data from national customs authorities, as compiled by the International Trade Centre (ITC).

We have estimated production data, considering factors such as the value of exports, taking into account re-exports, the known presence of local and multinational manufacturers, sales data when available, and officially published estimates of production, again when available.

We have forecast national markets at ex-factory prices for the forward period. Firstly, we have calculated growth rates in local currency terms for each product category using a linear regression method, and then converted the figures back to USD terms, using average exchange rate projections.

We have calculated growth rates by looking at a number of factors: macro-economic performance (private and government final consumption); demographic and epidemiological trends; healthcare trends and expenditure levels; medical device trade trends; and medical device manufacturing size.

Trade Code Classifications

International trade is universally classified according to the Harmonised System (HS). This began to be used in the 1990s, and is overseen by the World Customs Organization. Medical devices are generally well-defined in the HS. There is one major code, HS9018, named Medical Equipment, but there are a number of other codes for products with a specifically medical use. For the majority of countries, it is not possible to provide a more detailed breakdown than this.

We have rearranged the data from their original code order, to create six major product areas: CONSUMABLES, DIAGNOSTIC IMAGING, DENTAL PRODUCTS, ORTHOPAEDICS & PROSTHETICS, PATIENT AIDS AND OTHER MEDICAL DEVICES. We have sub-divided these into categories and sub-categories. We have used them to analyse medical device market and trade data. Their relation to the trade codes is shown on the following table.

REARRANGED HS TRADE CODES

Code	Product
	CONSUMABLES
	BANDAGES & DRESSINGS
'300510	Medical dressings (adhesive)
'300590	Medical dressings (non-adhesive)

Code	Product
'300610	SUTURING MATERIALS
	SYRINGES, NEEDLES & CATHETERS
'901831	Syringes (with/without needles)
'901832	Tubular metal needles/needles for sutures
'901839	Other needles, catheters, cannulae, etc
	OTHER CONSUMABLES
'300620	Blood-grouping reagents
'300650	First-aid boxes & kits
'300691	Ostomy products
'401511	Surgical gloves
	DIAGNOSTIC IMAGING
	ELECTRODIAGNOSTIC APPARATUS
'901811	Electrocardiographs
'901812	Ultrasound
'901813	MRI
'901814	Scintigraphic apparatus
'901819	Other electrodiagnostic apparatus
	RADIATION APPARATUS
'902212	CT scanners
'902214	Other medical x-ray apparatus
'902221	A, B, C ray apparatus
	IMAGING PARTS & ACCESSORIES
'300630	Contrast media
'370110	Medical X-ray film (flat)
'370210	Medical X-ray film (rolled)
'902230	X-ray tubes
'902290	Other imaging parts & accessories
	DENTAL PRODUCTS
	CAPITAL EQUIPMENT

Code	Product
'901841	Dental drills
'940210	Dental chairs
'902213	Dental X-ray
	INSTRUMENTS & SUPPLIES
'300640	Dental cements
'901849	Dental instruments
	Teeth & other fittings
'902121	Artificial teeth
'902129	Other dental fittings
	ORTHOPAEDICS & PROSTHETICS
'902110	FIXATION DEVICES
'902131	ARTIFICIAL JOINTS
'902139	OTHER ARTIFICIAL BODY PARTS
	PATIENT AIDS
	PORTABLE AIDS
'902140	Hearing aids
'902150	Pacemakers
'902190	Other portable aids
	THERAPEUTIC APPLIANCES
'901910	Mechano-therapy apparatus
'901920	Therapeutic respiration apparatus
	OTHER MEDICAL DEVICES
	WHEELCHAIRS
'871310	Wheelchairs, not mechanically propelled
'871390	Wheelchairs, mechanically propelled
'901850	OPHTHALMIC INSTRUMENTS

Code	Product
'940290	HOSPITAL FURNITURE
'841920	MEDICAL, SURGICAL STERILISERS
'901820	ULTRA-VIOLET OR INFRA-RED RAY APPARATUS
'901890	OTHER INSTRUMENTS & APPLIANCES
10 digit	Blood pressure monitors
10 digit	Endoscopy apparatus
10 digit	Dialysis apparatus
10 digit	Transfusion apparatus
10 digit	Anaesthetic apparatus & instruments

Source: ITC, Fitch Solutions

Sources

We have sourced historical and forecast political, macro-economic, demographic and healthcare data, where indicated, from Fitch Solutions.

We have analysed the medical device markets using, where possible, primary qualitative and quantitative data from local sources. These include:

- national ministries (or departments) of health,
- national statistical institutes,
- national medical device trade associations, and
- national and multinational medical device companies.

We may also make reference to a number of secondary sources, such as those listed below:

- Eurostat, http://epp.eurostat.ec.europa.eu/portal/page/portal/eurostat/home/
- Inter-American Development Bank (IDB), http://www.iadb.org
- International Trade Centre (ITC), http://www.intracen.org
- Organisation for Economic Co-operation and Development (OECD), http://www.oecd.org
- United Nations (UN), http://www.un.org
- World Bank (WB), http://www.worldbank.org
- World Customs Organization (WCO), http://www.wcoomd.org
- World Health Organization (WHO), http://www.who.org
- World Trade Organization (WTO), http://www.wto.org

Contact

We welcome feedback on all the medical device market reports. If you have any further questions, comments or suggestions about the contents of this report, please send them to:

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Risk/Reward Index Methodology

Our Medical Devices Risk/Reward Index (RRI) quantifies and ranks a country's attractiveness within the context of the Medical Devices industry, based on the balance between the Risks and Rewards of entering and operating in different countries.

We combine industry-specific characteristics with broader economic, political and operational market characteristics. We weight these inputs in terms of their importance to investor decision making in a given Industry. The result is a nuanced and accurate reflection of the realities facing investors in terms of: 1) the balance between opportunities and risks; and 2) between sector-specific and broader market traits. This enables users of the Index to assess a market's attractiveness in a regional and global context.

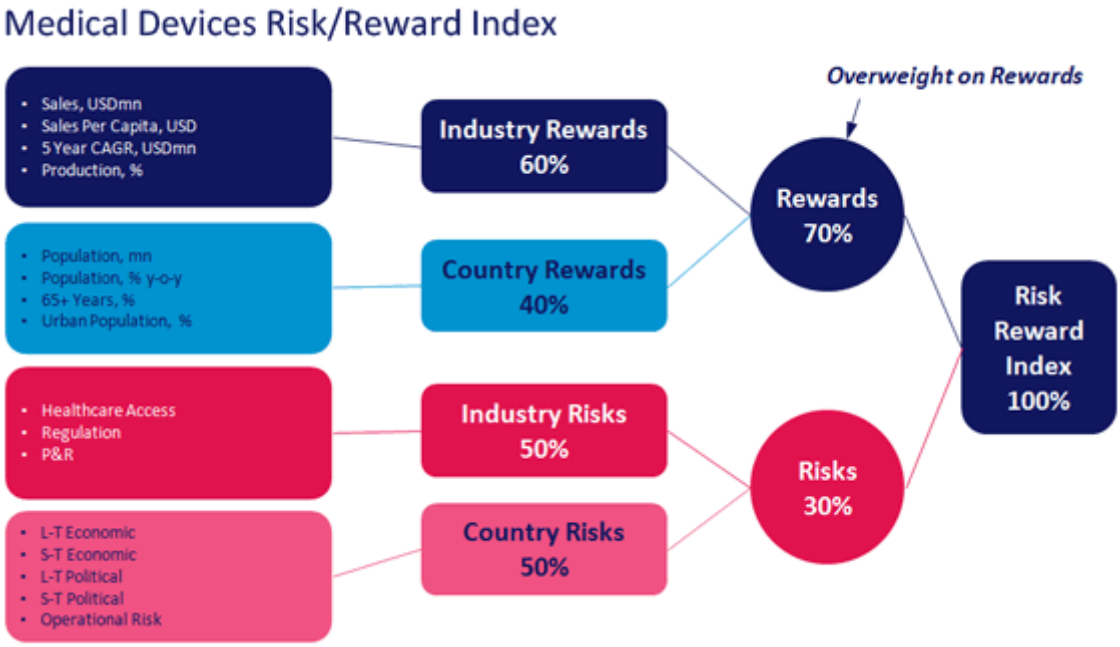
The Index uses a combination of our proprietary forecasts and analyst assessment of the regulatory climate. As regulations evolve and forecasts change, so the Index scores change providing a highly dynamic and forward-looking result.

The Medical Devices RRI universe comprises **75 countries**.

Benefits Of Using Fitch Solutions' Medical Devices RRI

- Global Index: One global table, ranking all the countries in Fitch Solutions' universe for Medical Devices from least (closest to zero) to most attractive (closest to 100).
- Accessibility: Easily accessible, top down view of the global, regional or sub-regional Risk/Reward profiles.
- Comparability: Identical methodology across 75 countries for Medical Devices 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.
- Quantification: Quantifies the Rewards and Risks of doing business in the Medical Devices sector in different countries around the world and helps identify specific flashpoints in the overall business environment.
- Comprehensiveness: Comprehensive set of indicators, assessing industry-specific Rewards and Risks alongside political, economic and operating risks.
- Entry Point: A starting point to assess the outlook for the Medical Devices sector, from which users can dive into more granular forecasts and analysis to gain a deeper understanding of the market.
- Balance: Multi-indicator structure prevents outliers and extremes from distorting final scores and rankings.
- Methodology: It is a combination of proprietary Fitch Solutions forecasts, analyst insights and globally acceptable benchmark indicators (for example, World Bank's Doing Business Scores, Transparency International's Corruption Perceptions Index).

Weightings Of Categories And Indicators



Source: Fitch Solutions

The RRI matrix divides into two distinct Categories:

Rewards:

Evaluation of an Industry's size and growth potential (**Industry Rewards)**, and also macro industry and/or country characteristics that directly impact on the size of business opportunities in a specific sector (**Country Rewards**).

Risks:

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

Our matrix is deliberately overweight on Rewards (70% of the final RRI score for a market) and within that, the Industry Rewards segment (60% of final Rewards score). 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 (demographic, labour statistics and infrastructure availability) 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 sizes 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

MEDICAL DEVICE RISK/REWARD INDEX, INDICATORS		
Indicator	**Rationale**	**Source**
	REWARDS	
Industry Rewards		
Sales, USDmn	Denotes breadth of the medical device market. Larger markets score higher than smaller ones.	Fitch Solutions Forecast
Sales Per Capita, USD	Denotes depth of the medical device market. High value markets score higher than low value ones.	Fitch Solutions Forecast
5 Year CAGR, USDmn	Denotes the projected performance of the medical device market. Markets with higher CAGRs score better than those with lower CAGRs.	Fitch Solutions Forecast
Production, %	Denotes medical device production within the medical device market. Markets with larger production capabilities score better than those with lower production capabilities.	Fitch Solutions Forecast
Country Rewards		
Population, mn	Evaluates medical device demand associated to population size. Countries with larger populations score higher.	Fitch Solutions Forecast
Population, % y-o-y	Evaluates long-term prospects associated to population growth. Fast-growing countries suggest better long-term growth across the medical device industry and score higher.	Fitch Solutions Forecast
65+ Years, %	Evaluates proportion of the population 65+ as an expenditure ratio. Countries with ageing populations tend to have higher per capita medical device expenditure and score higher.	Fitch Solutions Forecast
Urban Population, %	Evaluates urbanisation as a proxy for development of medical facilities. Predominantly urban countries score higher than rural countries.	Fitch Solutions Forecast
	RISKS	
Industry Risks		
Healthcare Access	Evaluates health policies, health insurance coverage, health expenditure and access to health resources, activity and personnel. Markets with a good healthcare access score higher.	Fitch Solutions Subjective Indicator
Regulation	Evaluates the strength of the competent authority, national regulations and regulations aligned regionally, if existing. Markets with a strong regulation score higher.	Fitch Solutions Subjective Indicator
P&R	Evaluates the level of government spending on medical devices and the attractiveness of P&R policies. Markets with good government spending and friendly P&R policies score higher.	Fitch Solutions Subjective Indicator
Country Risks		
L-T Economic	The LT ERI takes into account the structural characteristics of economic growth, the labour market, price stability, exchange rate stability and the sustainability of the balance of payments, as well as fiscal and external debt outlooks for the coming decade.	Fitch Solutions Country Risk Index
S-T Economic	The ST ERI seeks to define current vulnerabilities and assess real GDP growth, inflation, unemployment, exchange rate fluctuation, balance of payments dynamics, as well as fiscal and external debt credentials over the coming two years.	Fitch Solutions Country Risk Index
L-T Political	The LT PRI assesses a country's structural political characteristics based on our assumption that liberal, democratic states with no sectarian tensions and broad-based income equality	Fitch Solutions Country Risk Index

Indicator	Rationale	Source
	exhibit the strongest characteristics in favour of political stability, over a multiyear timeframe.	
S-T Political	The ST PRI assesses pertinent political risks to investment climate stability over a shorter time frame, up to 24 months forward.	Fitch Solutions Country Risk Index
Operational Risk	The ORI focuses on existing conditions relating to four main risk areas: Labour Market, Trade and Investment, Logistics, and Crime and Security.	Fitch Solutions Operational Risk Index

Source: Fitch Solutions

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