



Medical and laboratory equipment landscape in East Africa

How to benefit from East Africa's potential?

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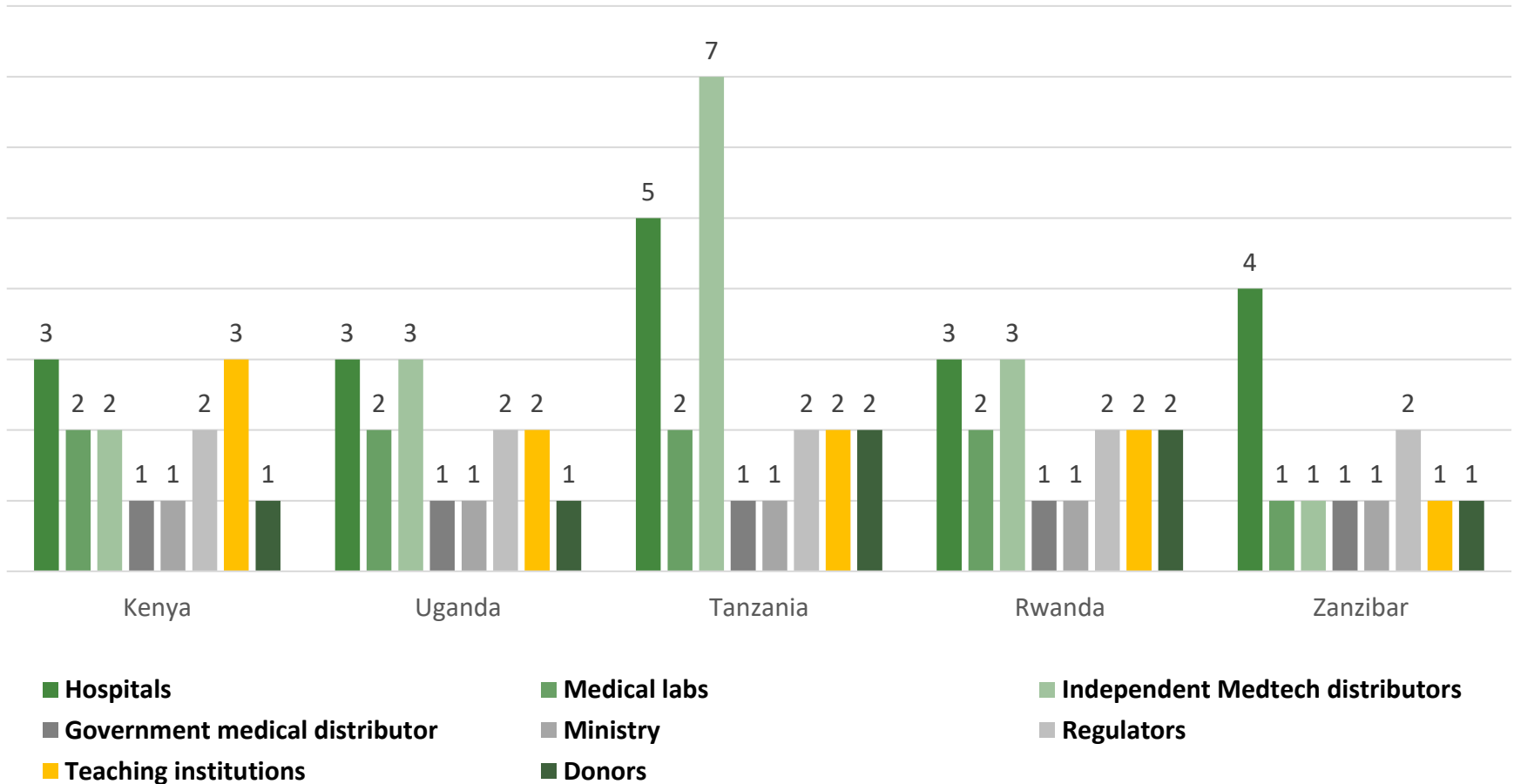
A. Project Overview

The project objective was to identify gaps and trends in the Medtech sector by interviewing the relevant stakeholders in East Africa.



A total of 80 interviews were successfully conducted across Kenya, Uganda, Tanzania, Rwanda and Zanzibar.

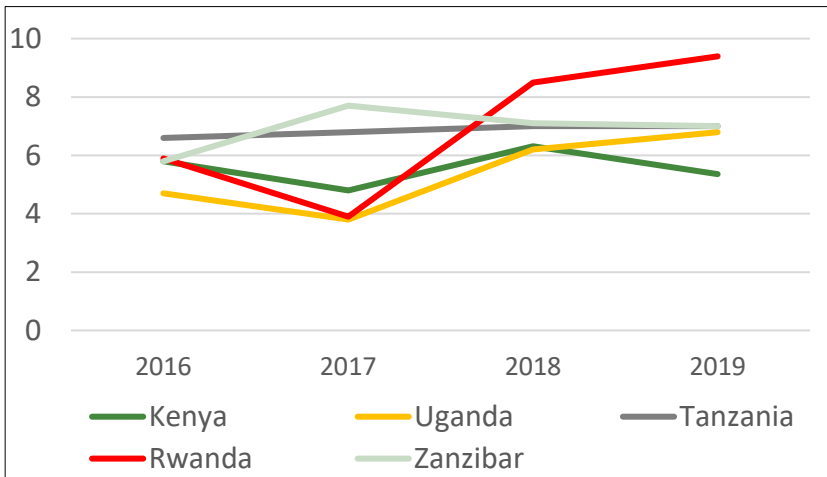
Interview status



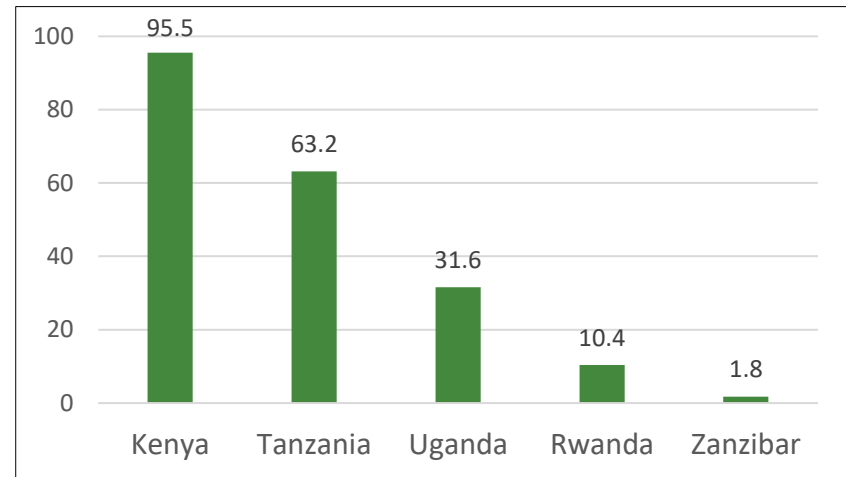
B. Macro overview

Kenya is East Africa's largest economy by GDP but has been underperforming compared by its neighbors in terms of growth.

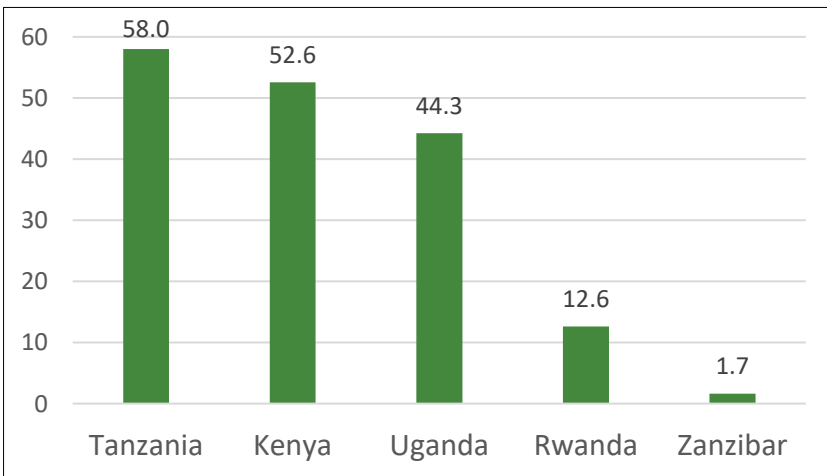
Real GDP growth % (y-o-y)



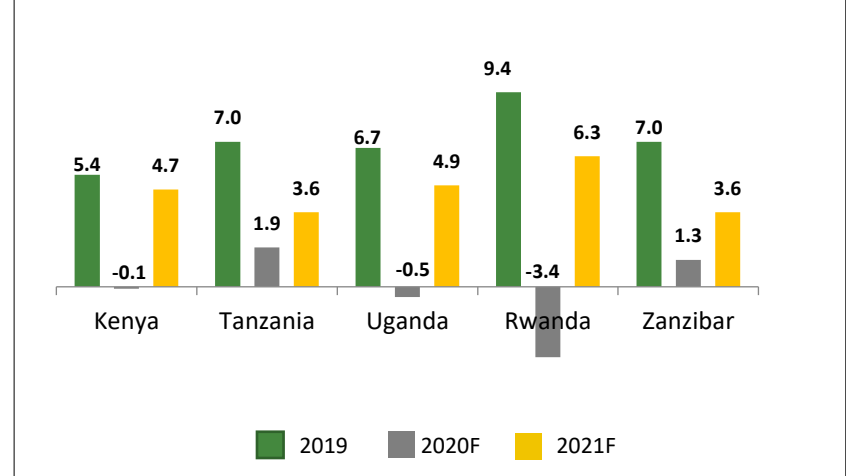
Total GDP (in current USD bn, 2019)



Population (2020)

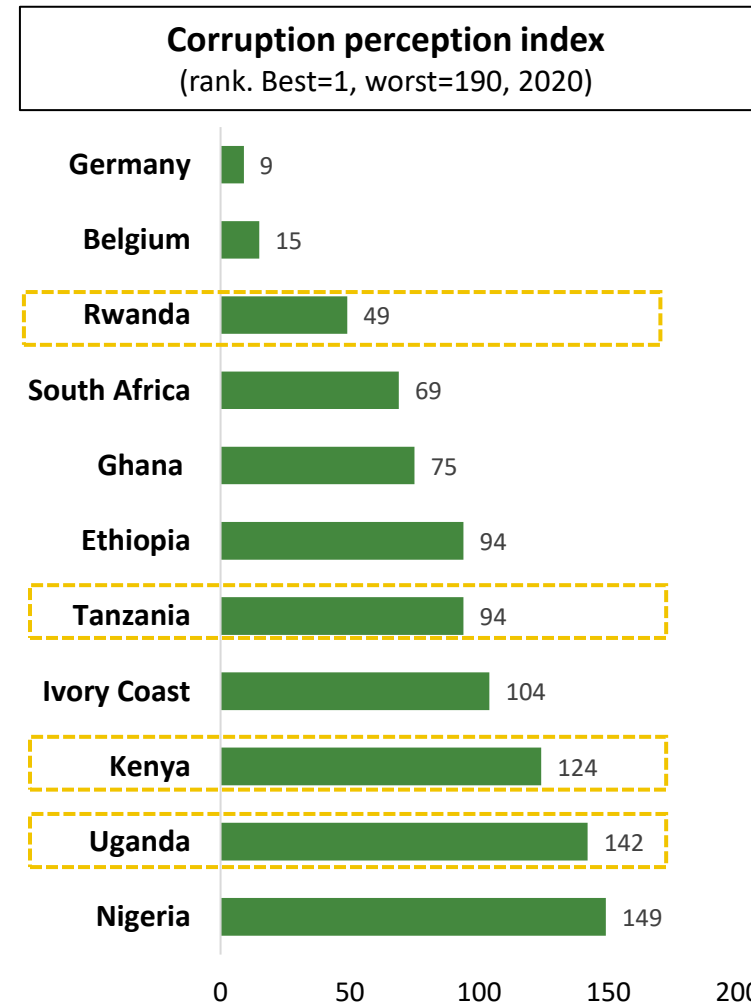
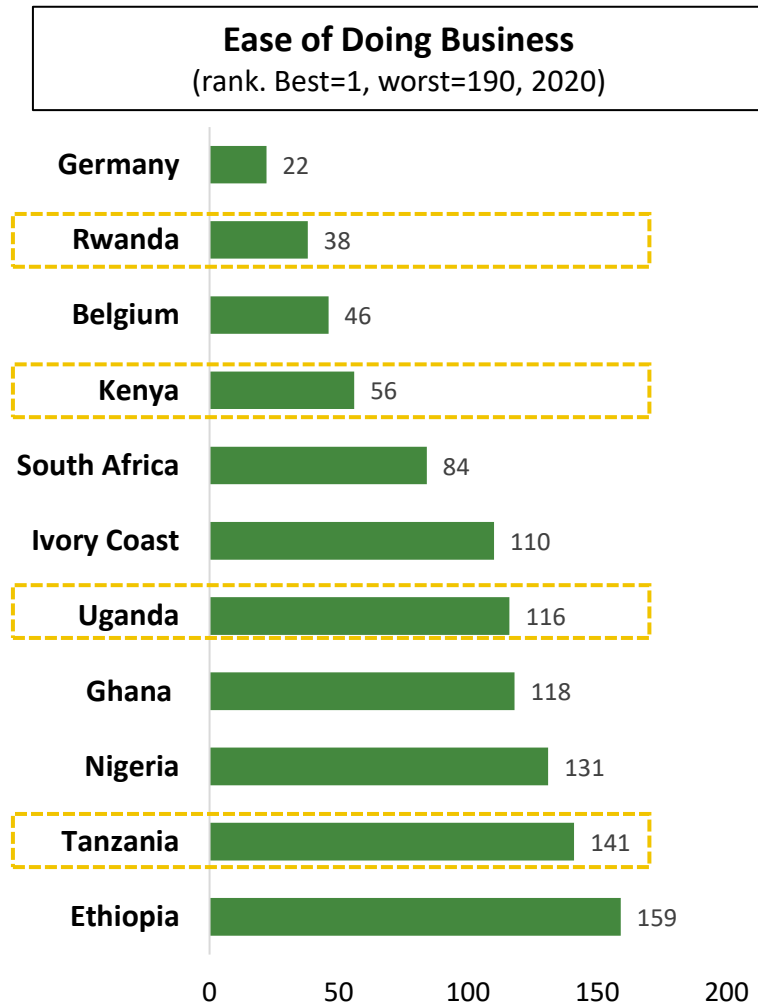


GDP growth Forecast (2021, in %)



Ease of doing business & corruption perception index

Rwanda ranks favourably in both ease of doing business and low corruption rate. Uganda and Tanzania rank in the bottom half in both metrics.



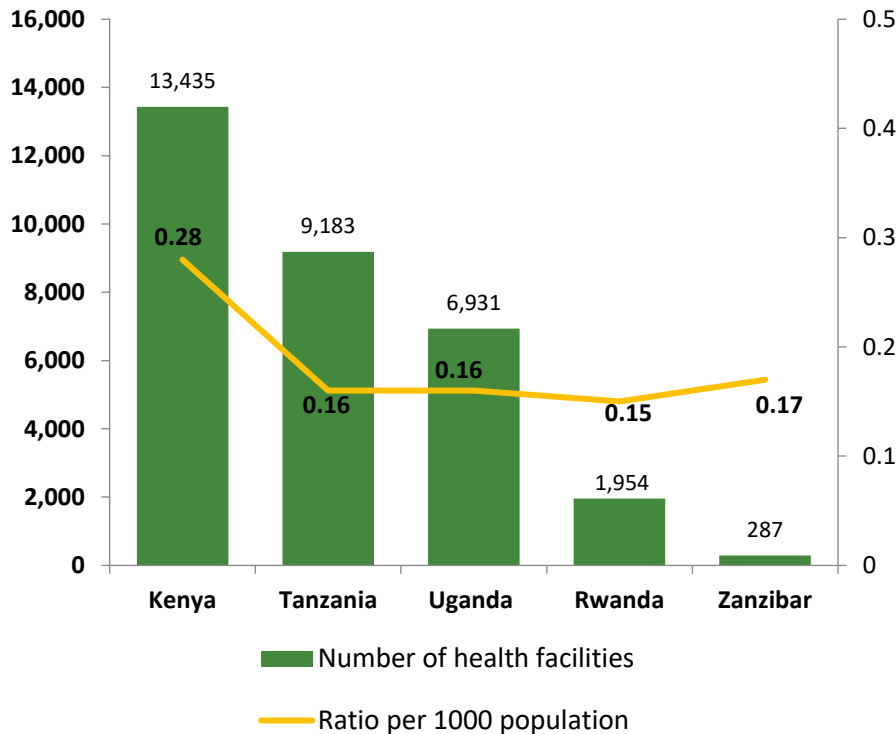
Sources: World Bank Group (2020), Transparency International (2020)

C. Overview of the Healthcare sector

East Africa struggles from inadequate health facilities and shortage of health workers, with the situation more extreme in Tanzania and Uganda.

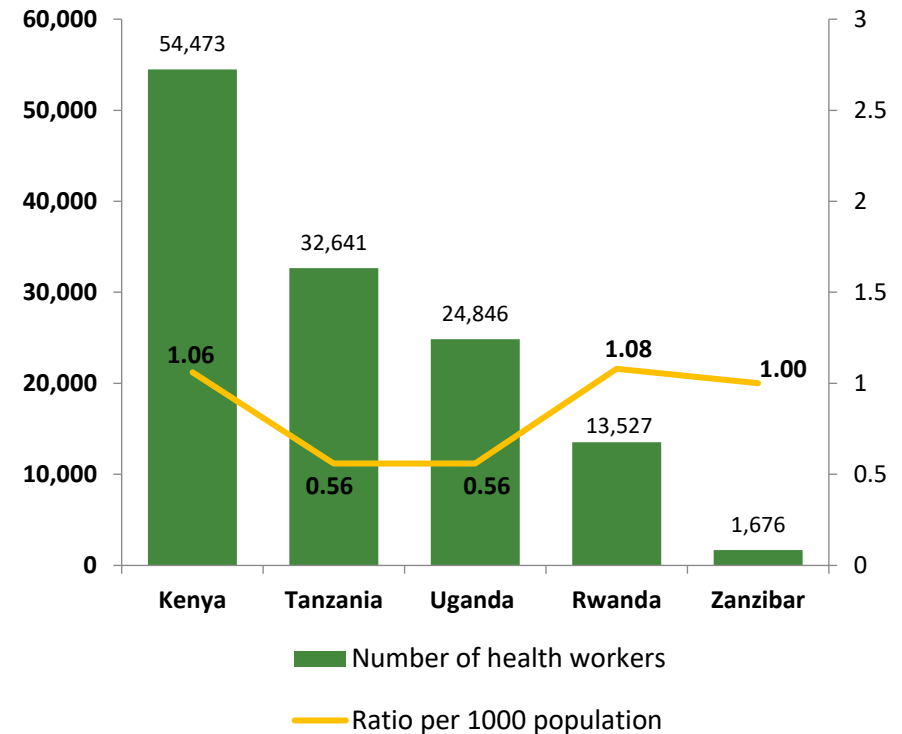
Health facilities in East Africa

(In total no. of health facilities and ratio per 1000 population, 2021)



Health workers in East Africa

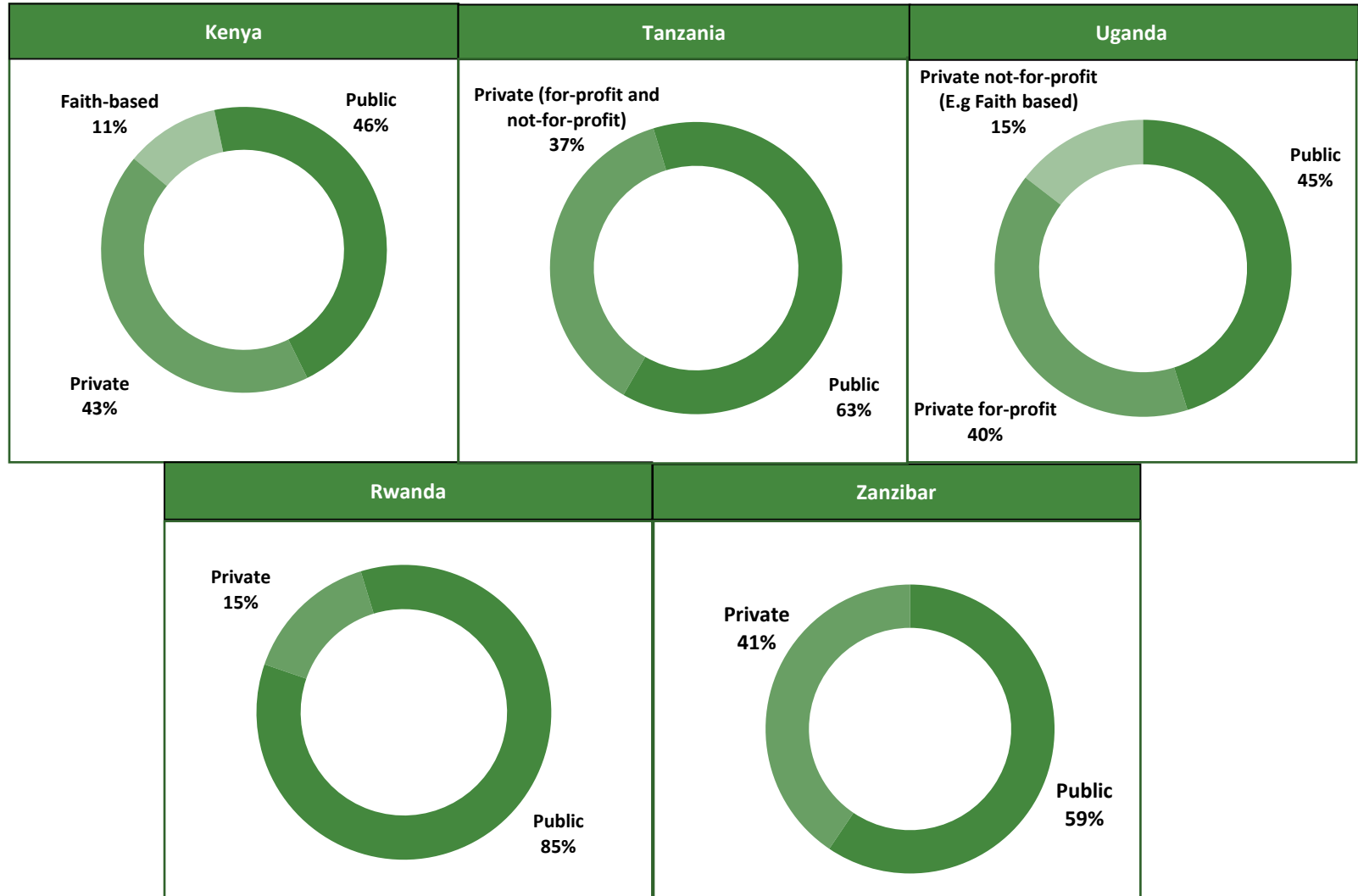
(In total no. of health workers and ratio per 1000 population, 2021)



Health workforce density only considers doctors, nurses and midwives for comparison purposes.

Source: Ministry of health for the respective countries (2021), Master health facilities in the respective countries (2021)

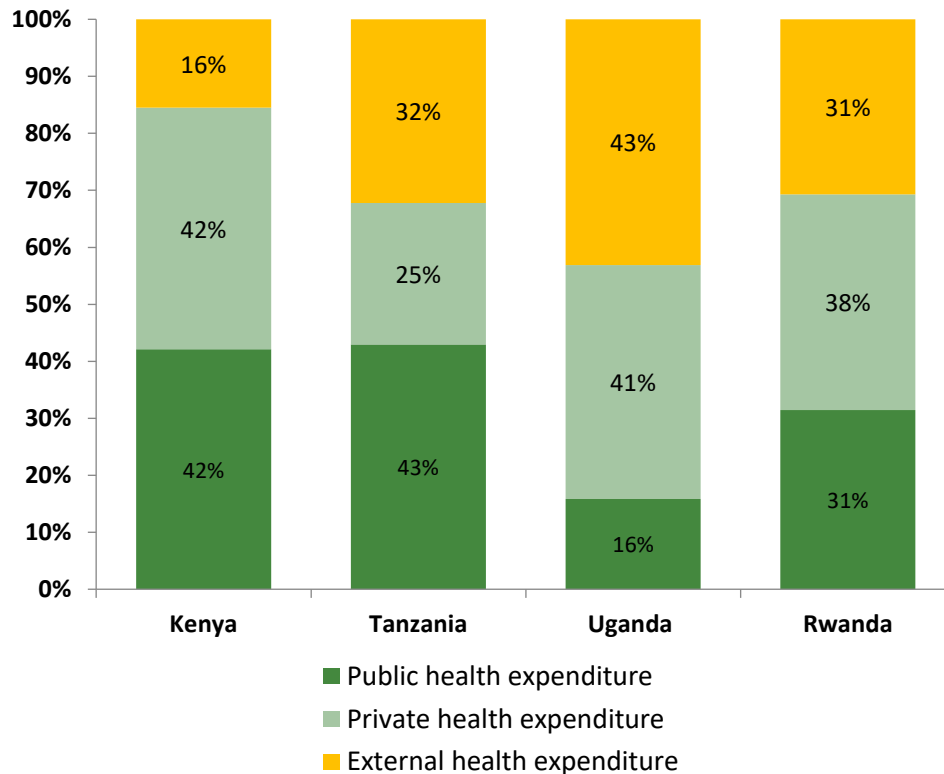
Government plays the largest role in health care in East Africa, but Kenya and Uganda have the largest private sector participation.



Source: Ministry of health of the respective countries (2021), Master health facilities of respective countries (2021)

Public health expenditure is not sufficient to meet health needs in East Africa and is therefore supplemented by private and external sources.

Current health expenditure by source
(In % of total current health expenditure, 2018)



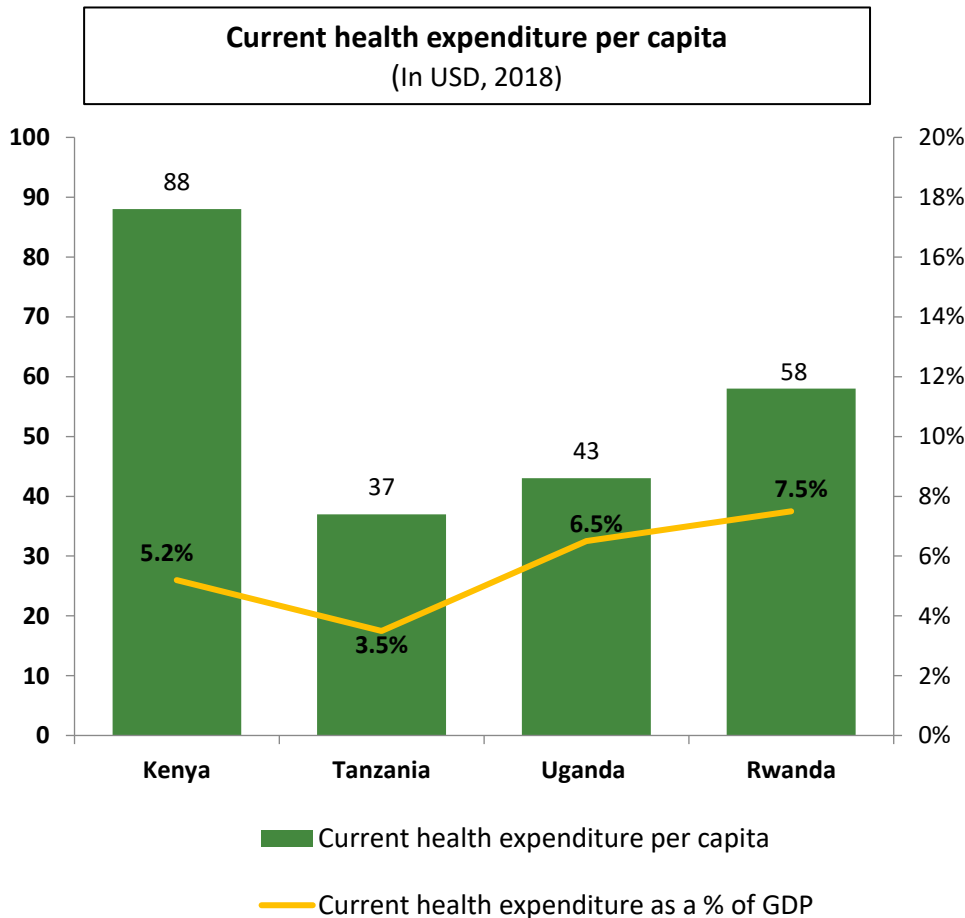
Comments

- Governments across East Africa cannot sufficiently meet the health needs of their population and therefore private and external sources play a critical role in filling the gap.
- Private health expenditure is high across East Africa since a lot of households pay out-of-pocket for health services with only a few having access to private health insurance schemes.
- External health expenditure comes in the form of donor funding. Donor dependency is very high across the region. However, Kenya is the least dependent on donors since it is classified as a low-middle income country which makes it ineligible for most donor assistance programs.

Current Health Expenditure (CHE) refers to the total value on healthcare goods and services consumed over one year

Current health expenditure – East Africa

Kenya on average spends the highest amount on health per capita, however Rwanda has the highest spending as a ratio of GDP.

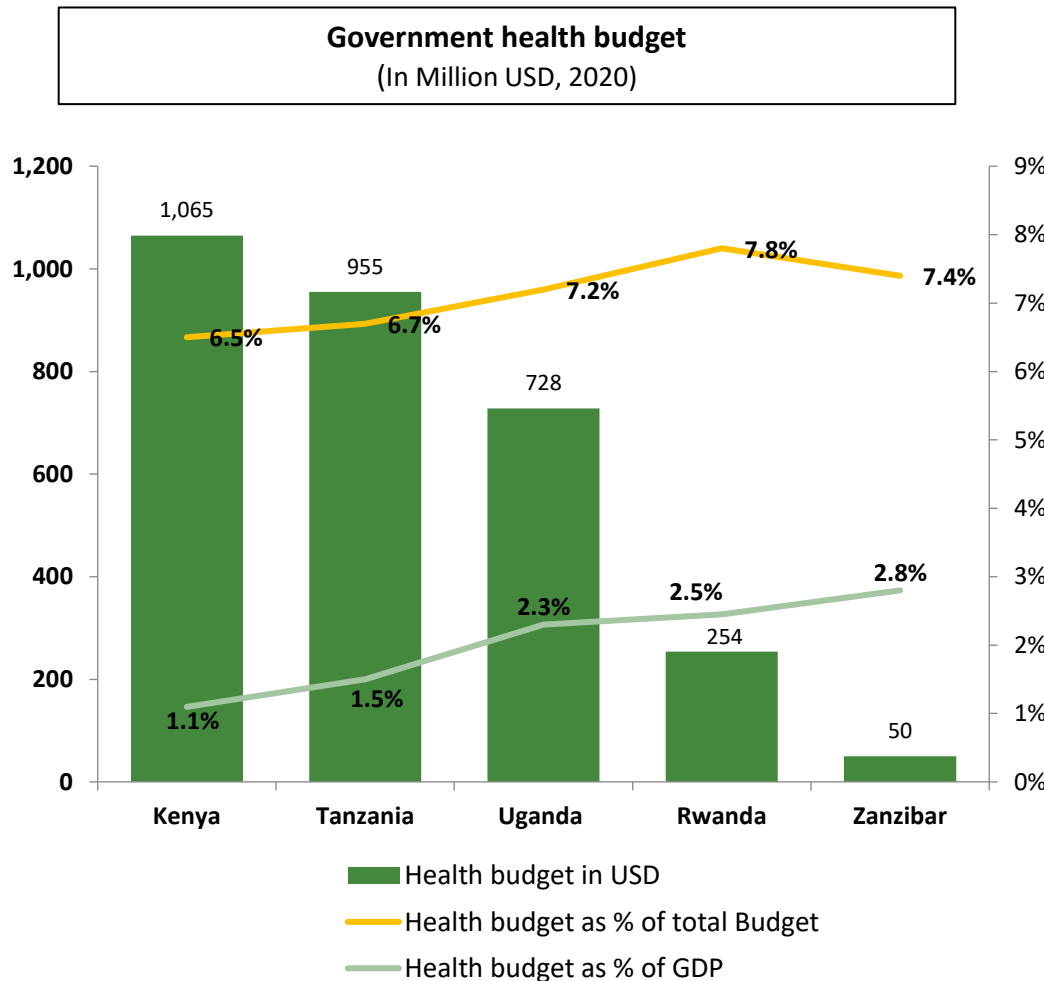


Comments

- Tanzania has the lowest health spending per capita compared to its East African neighbors. This can be attributed to the high public health spending, low private health spending and the large number of public hospitals which provide affordable health services.
- Kenya on the other hand has the highest rate of private health spending and largest number of private-for-profit hospitals which leads to a higher cost of healthcare and thus the highest health spending per capita in the region.

Current Health Expenditure (CHE) refers to the total value on healthcare goods and services consumed over one year

Kenya’s health budget is the highest among its neighbor and is also the lowest as a share of total government budget and GDP.



Comments

- Government health expenditure has been on the rise across all the 4 countries but the spending as a share of total government spending has been flat.
- Rwanda and Zanzibar have a higher health spending as a share of the government’s total budget compared to the rest of the countries due to the presence of universal health care and the high patronage of public hospitals.
- Kenya on the other hand is the opposite with the lowest health budget as a share of total government budget due to the larger private sector role in healthcare. Majority of working-class Kenyans prefer to patronize private hospital due to the long wait times and poor service in some public hospitals.

Deaths from infectious diseases have been declining over the past decade while the burden of non-communicable diseases increases.

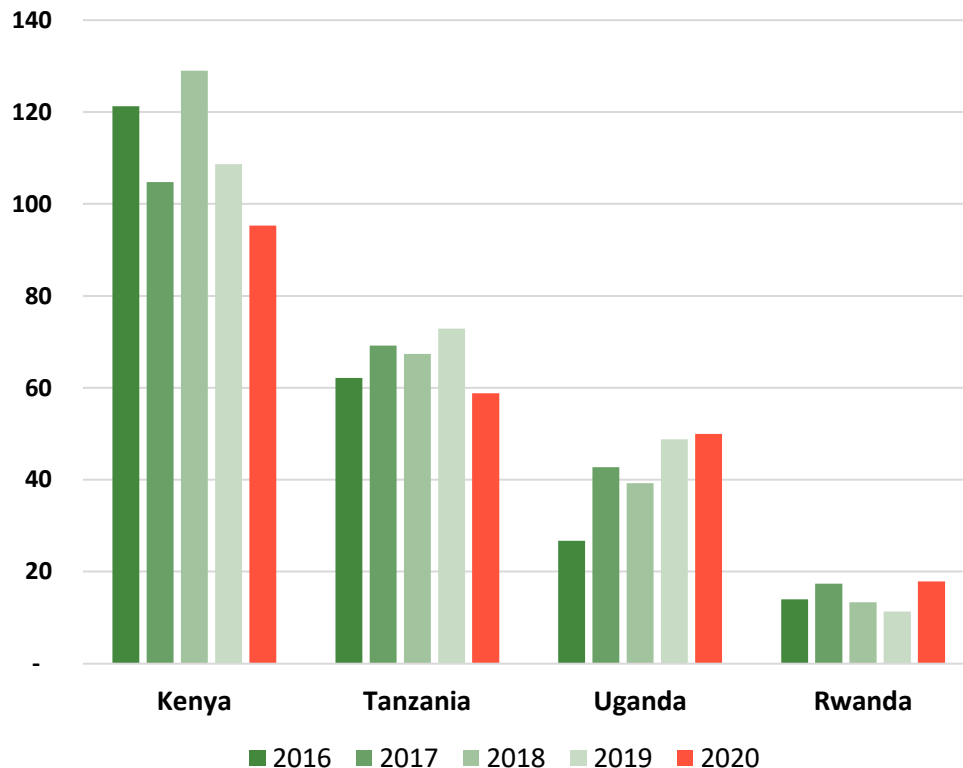
Kenya		Tanzania		Uganda		Rwanda		
	Top 10 diseases causing death 2019	% change in deaths 2009-2019	Top 10 diseases causing death 2019	% change in deaths 2009-2019	Top 10 diseases causing death 2019	% change in deaths 2009-2019	Top 10 diseases causing death 2019	% change in deaths 2009-2019
1	HIV/AIDS	-41.50%	Neonatal disorders	-4.80%	Neonatal disorders	-9.50%	Lower respiratory infections	-17.70%
2	Lower respiratory Infections	-4.90%	Low respiratory infections	-14.00%	Malaria	-44.40%	Neonatal disorders	-18.20%
3	Diarrheal diseases	-30.10%	HIV/AIDS	-68.80%	HIV/AIDS	-69.00%	Stroke	41.10%
4	Neonatal disorders	-11.30%	Stroke	23.70%	Lower respiratory infections	-7.40%	Tuberculosis	-14.50%
5	Stroke	27.70%	Tuberculosis	-4.90%	Tuberculosis	-7.00%	Ischemic heart diseases	56.90%
6	Tuberculosis	-4.50%	Ischemic heart diseases	37.90%	Stroke	-26.70%	Diarrheal diseases	-31.40%
7	Ischemic heart diseases	36.80%	Malaria	-12.10%	Diarrheal diseases	-10.50%	Malaria	-11.20%
8	Cirrhosis	21.40%	Diarrheal diseases	-21.50%	Ischemic heart diseases	32.50%	HIV/AIDS	-52.80%
9	Malaria	35.00%	Congenital defects	-8.50%	Congenital defects	-4.50%	Cirrhosis	33.80%
10	Diabetes	39.50%	Cirrhosis	4.7	STIs	93.10%	Congenital defects	-17.70%

D. Medical and laboratory equipment landscape

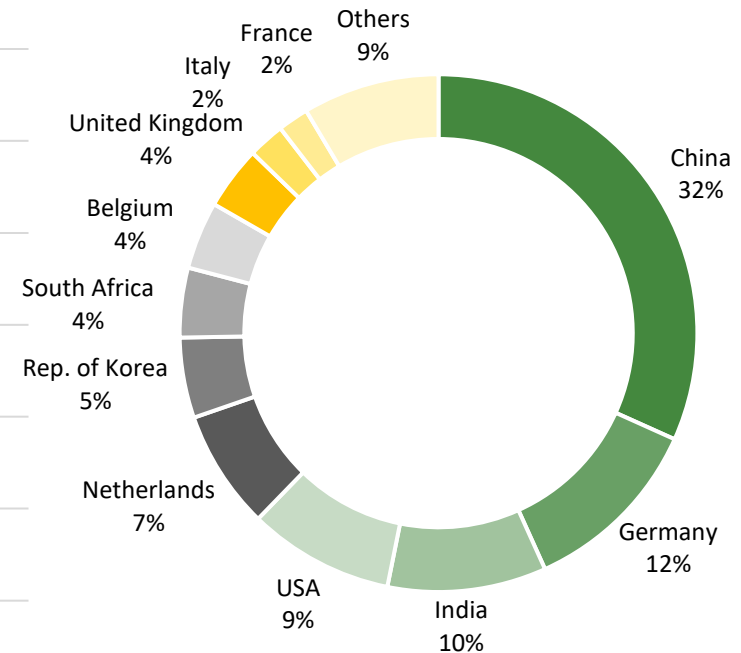
Medical equipment imports – East Africa

China was the largest source of medical equipment in 2020, but Western countries collectively still accounted for over 40% of imports.

The import value of medical equipment
(In million USD, 2016-2020)



Origin of medical equipment imports
(In % of total import value, 2020)

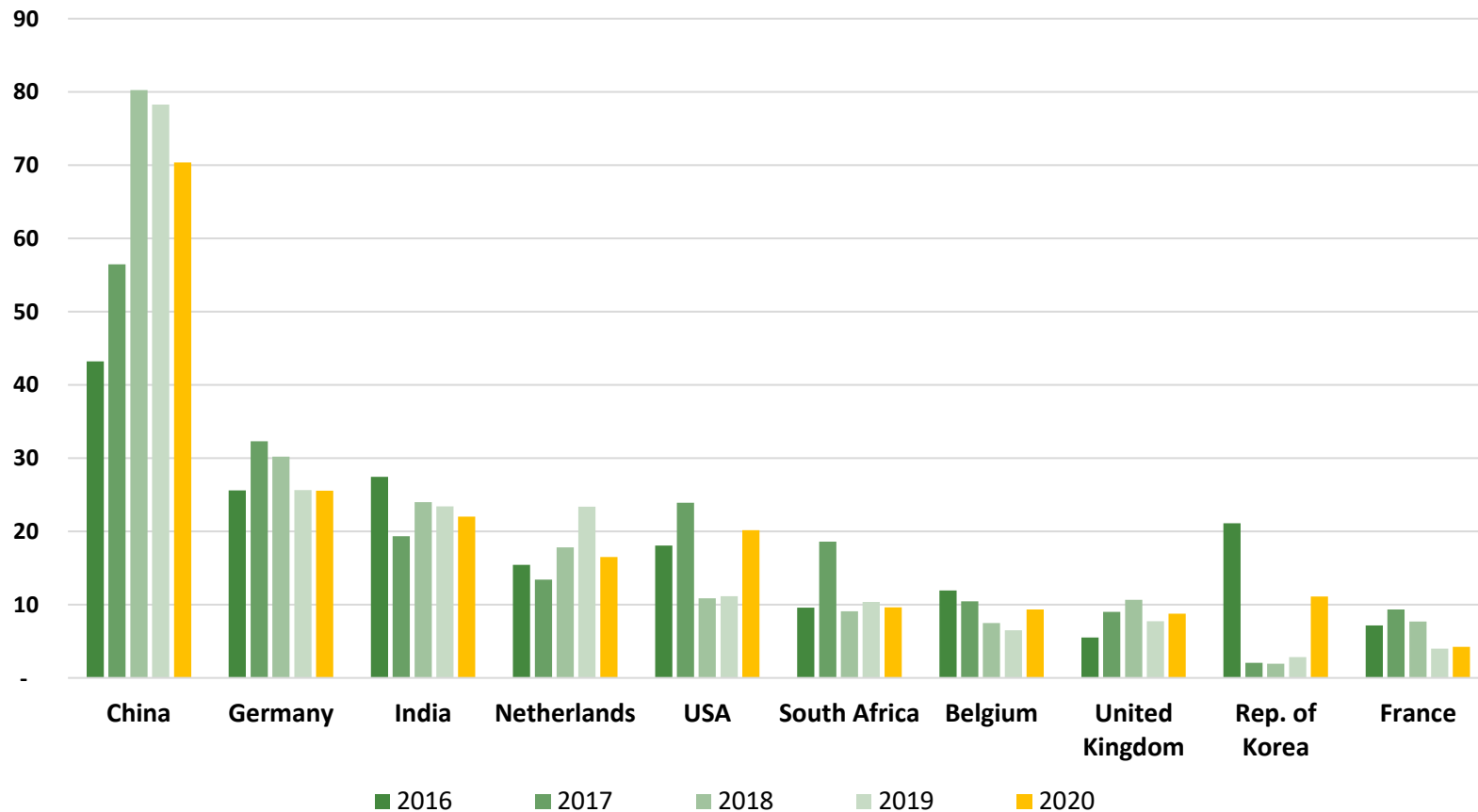


Imports also slightly declined in 2020 as a result of hospitals putting on hold large capital investments. However, the sector is expected to recover from 2021 from the is a one-time effect of COVID-19.

• Based on HS Code provided by Spectaris. See appendix

China's exports to East Africa grew at an average rate of 13% over the past 5 years while Western sources were mostly flat or declined.

Origin of medical equipment imports in East Africa
(In million USD, 2016-2020)

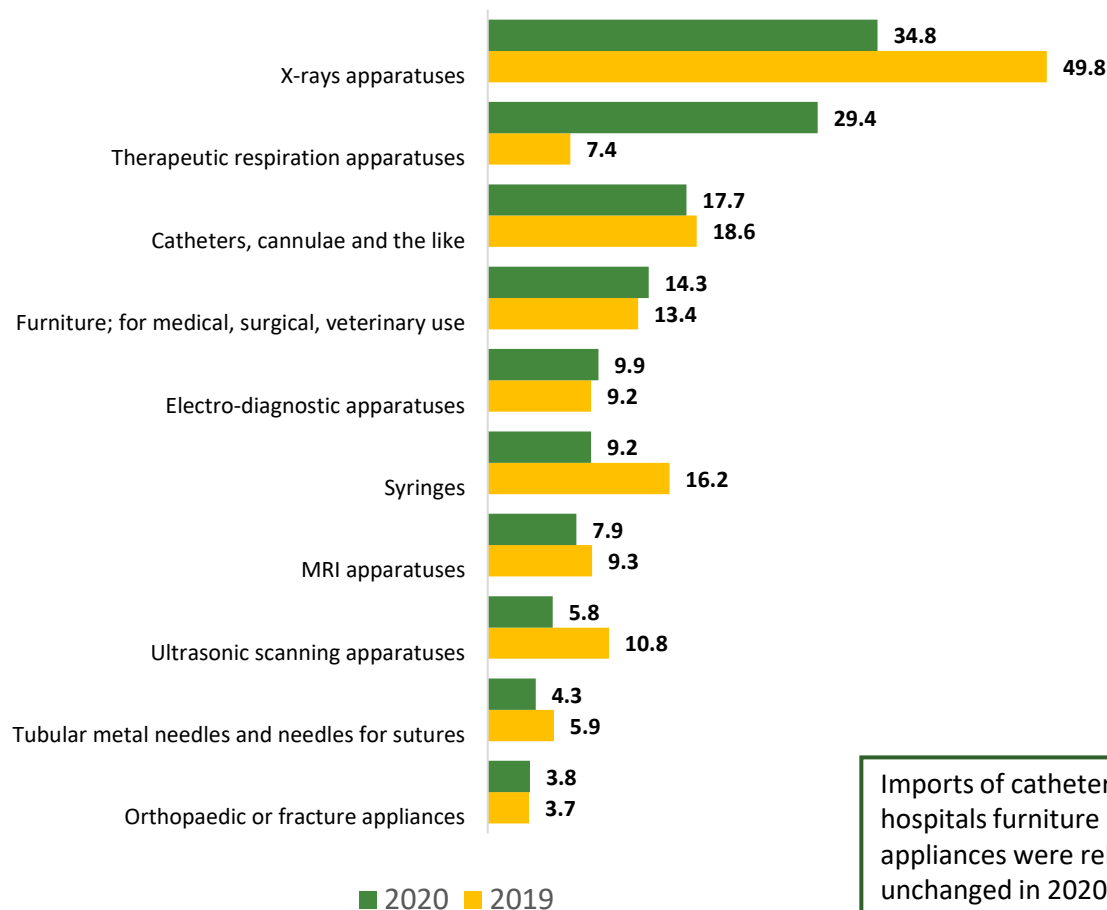


Source: UNcomtrade (2021)

• Based on HS Code provided by Spectaris. See appendix

COVID-19 was the key driver of demand for medical equipment in 2020 with imports of respiratory apparatus quadrupling compared to 2019.

Top 10 medical equipment imports in East Africa
(2019-2020, in million USD\$)



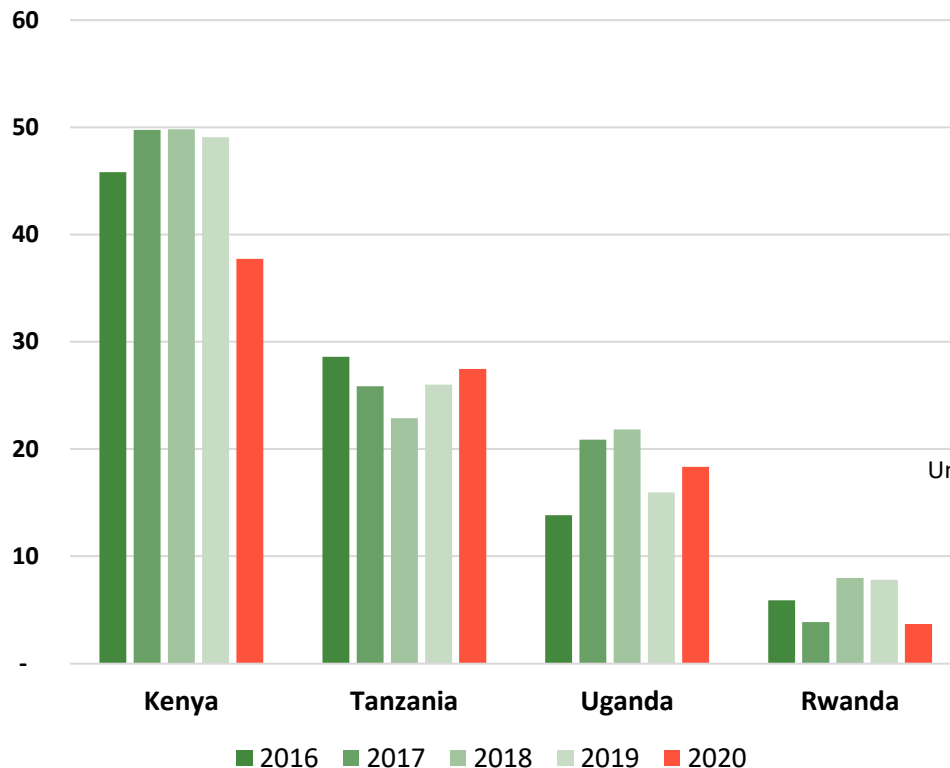
Imports of catheters/cannulae, hospitals furniture and orthopedic appliances were relatively unchanged in 2020 indicating stable demand.

• Based on HS Code provided by Spectaris. See appendix

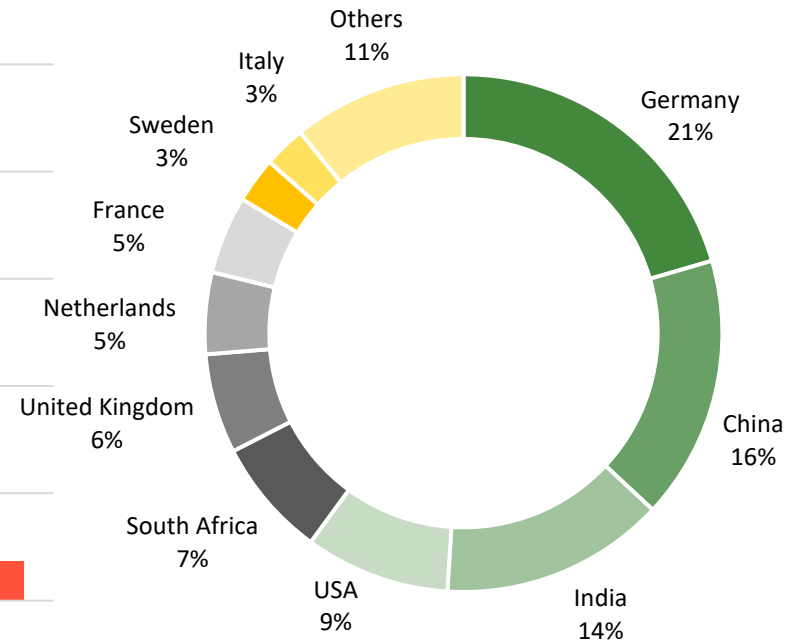
Laboratory equipment imports – East Africa

Germany was the leading source of laboratory equipment in 2020 with cheaper sources like China and India still playing catch up.

The import value of laboratory equipment
(In million USD, 2016-2020)



Origin of laboratory equipment imports
(In % of total import value, 2020)



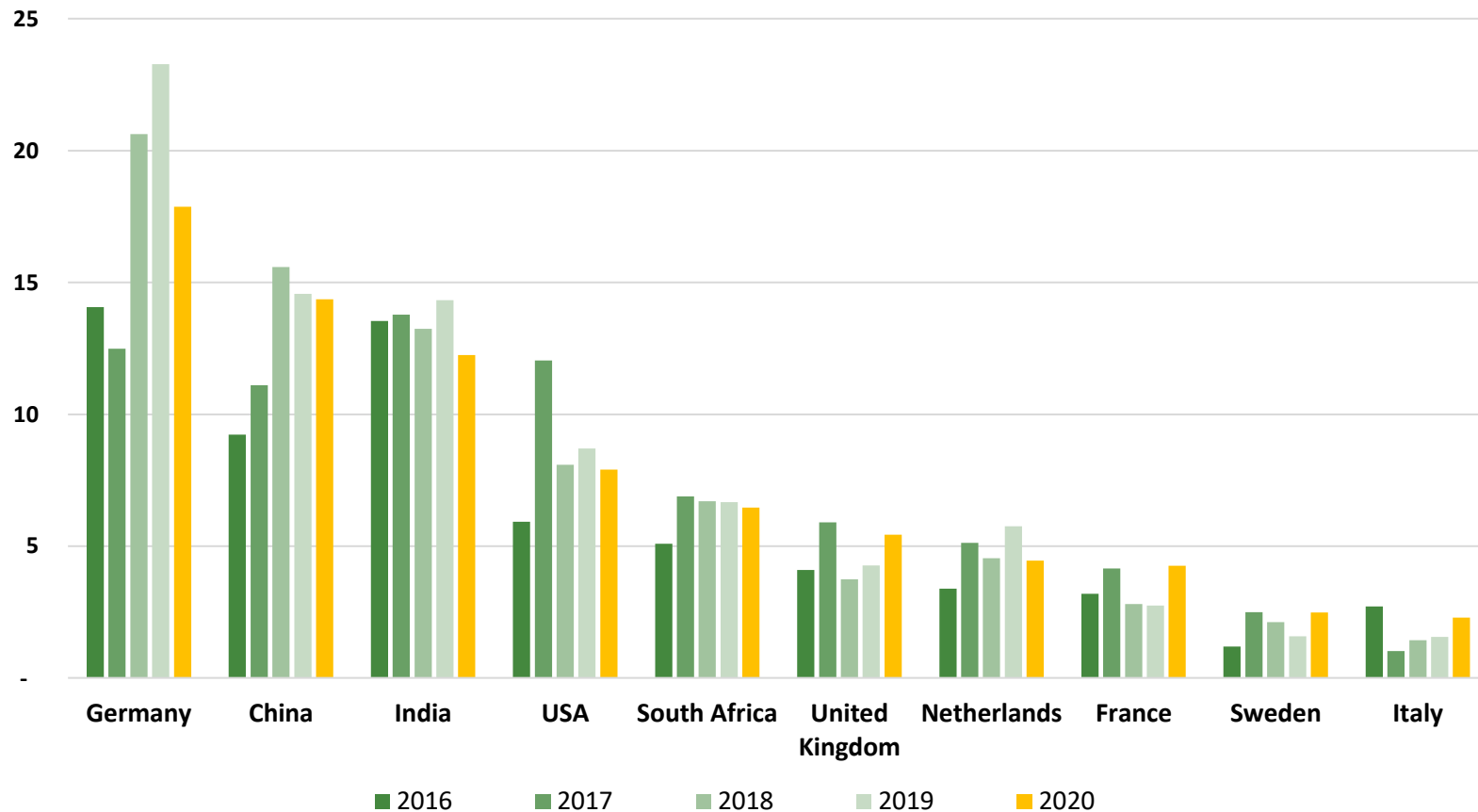
Source: UNcomtrade (2021)

• Based on HS Code provided by Spectaris. See appendix

Laboratory equipment imports – East Africa

China rose from 4th to 2nd largest importer of laboratory equipment over the past 5 years, while most western countries were relatively flat.

Origin of laboratory equipment imports in East Africa
(In million USD, 2016-2020)

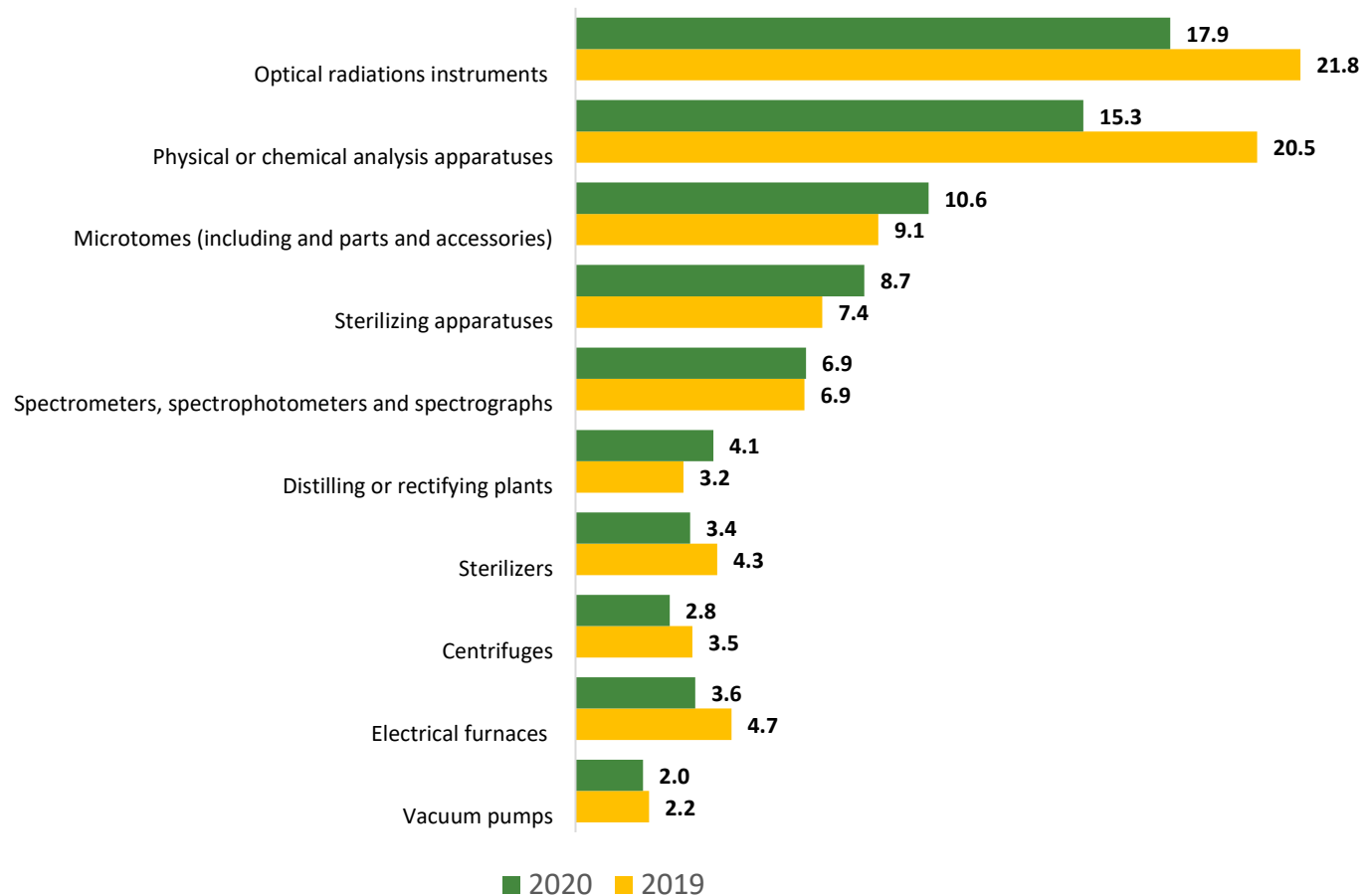


Source: UNcomtrade (2021)

• Based on HS Code provided by Spectaris. See appendix

Majority of laboratory equipment imports decline in 2020, with only a few including microtomes, sterilizers, spectrometers recording positive growth.

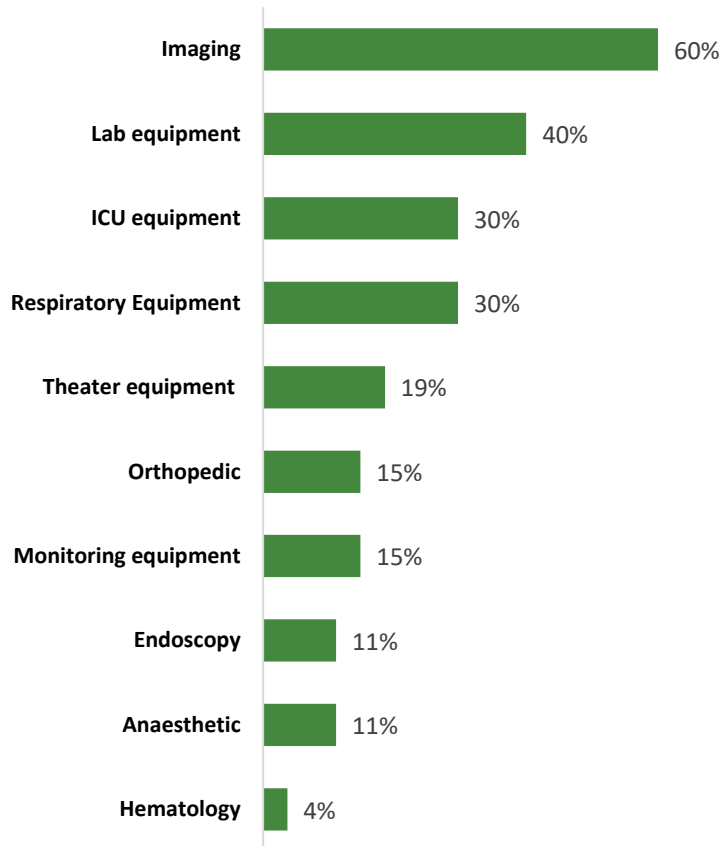
Top 10 laboratory equipment imports in East Africa
(2019-2020, in million USD\$)



• Based on HS Code provided by Spectaris. See appendix

Majority of hospitals and labs confirmed imaging equipment to be the fastest growing segment.

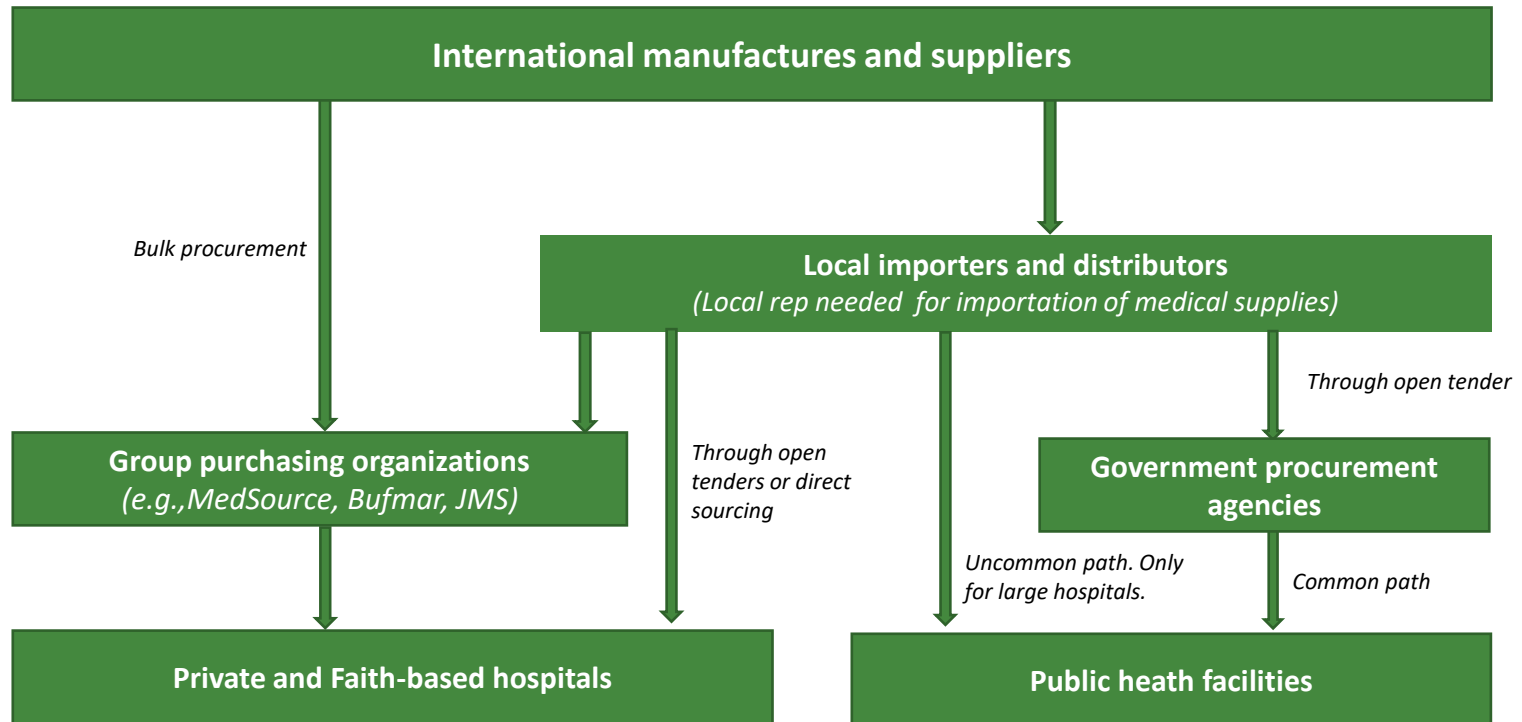
Fast growing medical and laboratory equipment segment
(Based on 27 interviews with Hospitals and labs, in % of positive responses)



Comments

- Majority of health players confirmed imaging to be the fastest growing segment. This is also backed by import statistics, whereby x-ray and ultrasound apparatuses are consistently among the top import and fastest growing imports.
- Lab equipment are much more accessible compared to other Medtech products due to the placement contracts model whereby manufacturers (or their distributor) provide laboratory equipment at no cost to a medical facility in exchange for being the exclusive supplier reagents or other consumables.
- Demand for advanced equipment like endoscopy and hematology is still relatively low due to lack of specialist in these particular segments.

The medical and laboratory equipment value chain across East Africa follows a similar path with public sector procurement centralized.

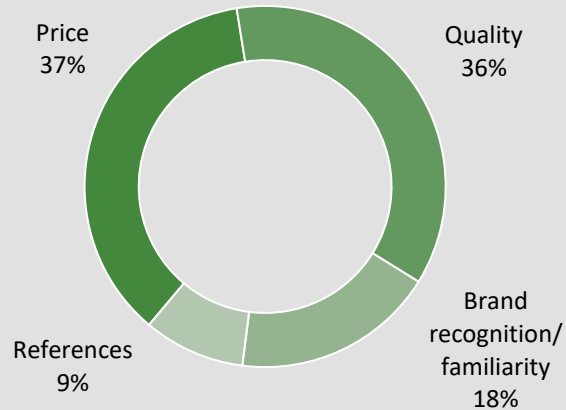


Notes:

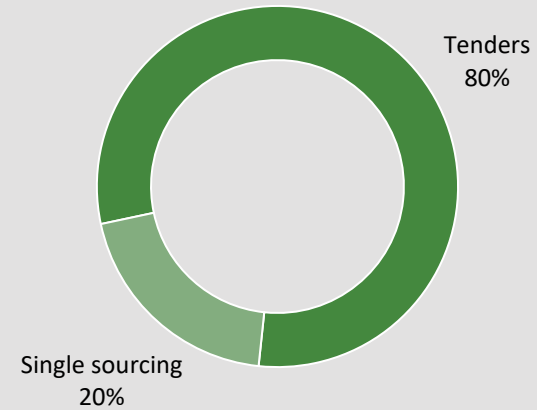
- Procurement for public hospitals is mainly done through a centralized government procurement body. Public hospitals are obligated to source their supplies for this body before exploring other suppliers.
- Procurement is done through an open international tender where any local and international manufacturer and/or distributor is free to participate.
- Tertiary hospitals (primarily large referral, teaching or national hospitals) have their own inhouse procurement department with authority to procure equipment directly from suppliers. However, consumables and other basic medical equipment are still sourced from the government procurement agency.
- Group purchasing organizations procure mainly basic medical equipment on behalf of the private sector and faith-based hospitals, leveraging the combined purchasing power of its members to negotiate favorable contract pricing from suppliers.

Purchasing criteria varies by product, with quality being the key criteria for capital intensive equipment and price for basic supplies.

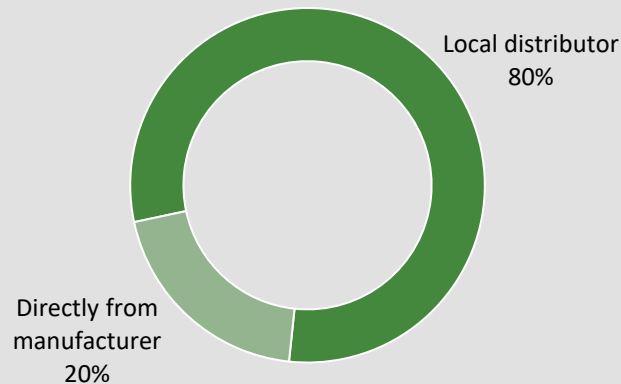
Purchasing criteria
(Based on 26 hospitals and labs responses)



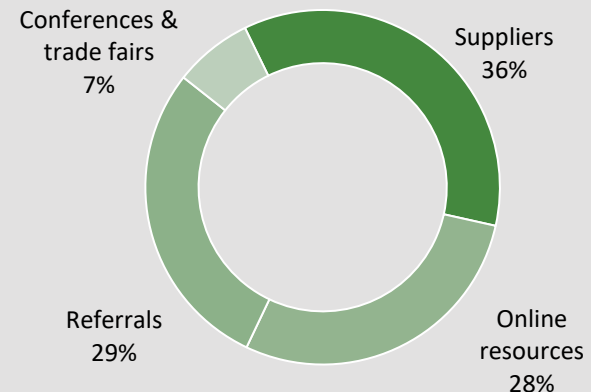
Purchasing Process
(Based on 26 hospitals and labs responses)



Purchasing source
(Based on 26 hospitals and labs responses)



Source of information on latest technology
(Based on 26 hospitals and labs responses)



For some laboratory equipment, payment can be in the form of consumables.

Structure of placement contracts		
	Public Partner: Hospitals and Laboratories	Private Partner: Equipment Manufacturers and Distributors
Roles	<ul style="list-style-type: none"> Staff and infrastructure management Equipment operations in line with training Purchase of reagents from manufacturer 	<ul style="list-style-type: none"> Provision and installment of equipment Training on use of equipment Routine maintenance, calibration and quality assurance Supply of reagents
How it works	<ul style="list-style-type: none"> A manufacturer (or their distributor) provides laboratory equipment at no cost to a laboratory that handles a minimum volume of tests per quarter. A contract obliges the laboratory to purchase a minimum number of reagents, usually per quarter, at a pre-determined price from the manufacturer (or distributor) of the equipment. The manufacturer trains facility staff on the use of the equipment and provides refresher trainings when necessary. The manufacturer also assumes full responsibility and costs for equipment maintenance. The price of the reagents is designed such that it allows for the manufacturer to amortize the upfront cost of the equipment and costs associated with installation, training, maintenance and repair, as well as realize a profit within a calculated time period. After the contract duration elapses, the equipment is either replaced with new technology, or ownership is transferred to the facility. 	
Contract length	Typically 3-5 years.	
Challenges	<ul style="list-style-type: none"> A minimum volume of monthly tests is required. It does not work for smaller facilities on their own. They can benefit from the approach if they pool testing and/or refer samples to a hub facility in their area. CHUK Rwanda had a placement arrangement where the placed machine did not have the capacity to handle the required test volumes, which was somewhat dissatisfactory. There is only minimal sharing of information about placement arrangements; key stakeholders in Kenya, Uganda and Rwanda were unaware of the extent to which placement was used as an approach. Placements are seen by many as preferable to equipment donations by donors, as donated equipment is not well-maintained and recurrent costs associated with the purchase of reagents are not accounted for in the facility budget. There is the perception that placement arrangements could lead to quasi-monopoly on reagents; this perception is a barrier to a faster uptake of the approach in government institutions. 	

Note: Donors play a key role in such contracts by supporting with the purchase of reagents.

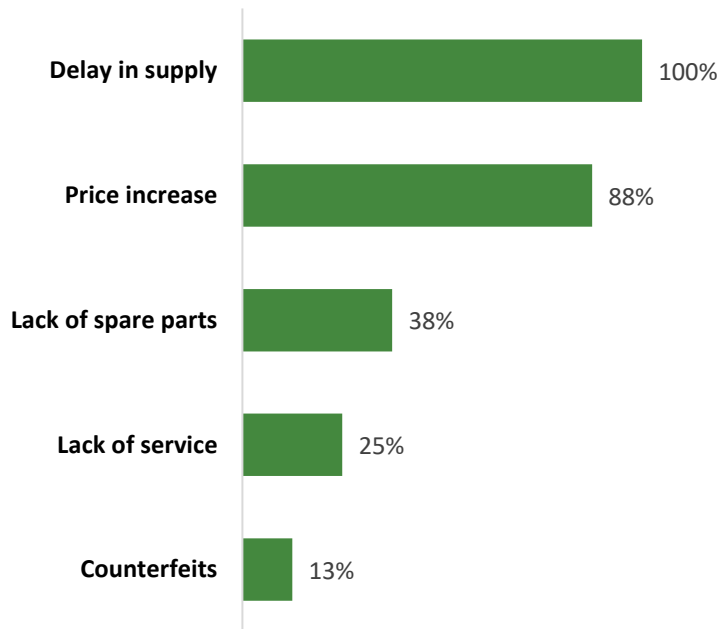
Medical and laboratory equipment have to go through an approval process before they can be imported to any of the East African countries.

	Kenya	Uganda	Tanzania	Rwanda	Zanzibar
Registration authority	Pharmacy and Poisons Board (PPB)	National Drug Authority (NDA)	Tanzania Medicines and Medical Devices Authority (TMDA)	Rwanda Food and Drugs Authority	Zanzibar Food and Drugs Agency (ZFDA)
Registration fast track	Foreign manufacturers can leverage their existing approvals in recognized reference markets (Australia, Canada, European Union countries, Japan, and the United States) with expedited reviews and shortened registration timelines.				
Certificate of conformity (CoC) <i>(Pre-export verification of conformity (PVoC) procedure applies except for Rwanda)</i>	Kenya Bureau of Standards	Uganda National Bureau of Standards (UNBS)	Tanzania Bureau of Standards (TBS)	Rwanda Bureau of Standards (RBS)	Zanzibar Bureau of Standards (ZBS)
Import permit	Pharmacy and Poisons Board (PPB)	National Drug Authority (NDA)	Tanzania Medicines and Medical Devices Authority (TMDA)	Rwanda Food and Drugs Authority	Zanzibar Food and Drug Agency (ZFDA)
Local representative	Any foreign manufacturer must designate a local authorized representative (LAR). The LAR must have written evidence from the manufacturer ascertaining authorization to represent them locally. The responsibility of the LAR is to assure regulatory compliance and serve as the central communication pathway with the regulator.				
Import duty	0%	0%	0%	0%	0%
VAT	0%	0%	0%	0%	0%

Source: Local interviews (2021), africon analysis (2021)

Covid-19 resulted in significant delays in delivery of supplies with manufacturers prioritizing pandemic related products.

Impact of Covid-19 of medical and laboratory equipment procurement
(in % of positive responses, n=41)



Comments

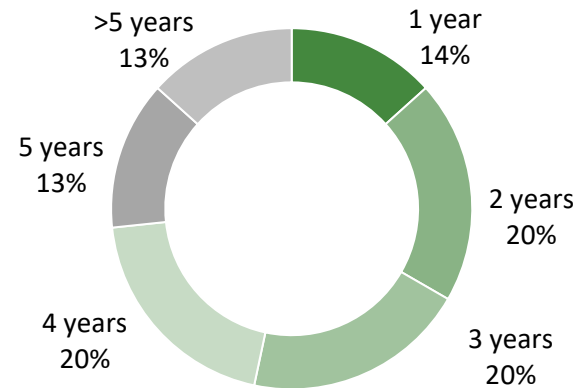
- Prices shot up, sometimes triple the original prices as demand buyers scrambled for the few supplies available, particularly personal protective equipment (PPE) and diagnostic related products.
- Companies meant to produce medical supplies were also affected with restrictions such as social distancing which meant low production output as well as prioritization of covid-related products
- International supply chains were also disrupted due to travel restrictions at the height of the pandemic, resulting in cargo ships and airlines to delay or cancel trips expected to deliver some critical supplies.
- Shortage of supplies has also led to the emergence of unscrupulous businesses supplying fake parts to desperate buyers.

E-health is yet to gather wide adoption in the public sector but it is used widely in the private sector especially for capturing medical records.

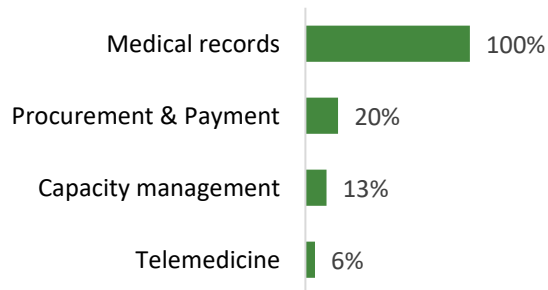
Use of E-health
(Based on 26 hospitals and labs responses)



Years of use
(Based on 15 hospitals and labs with E-health systems)



Uses of E-health systems
(Based on 15 hospitals and labs with E-health systems)

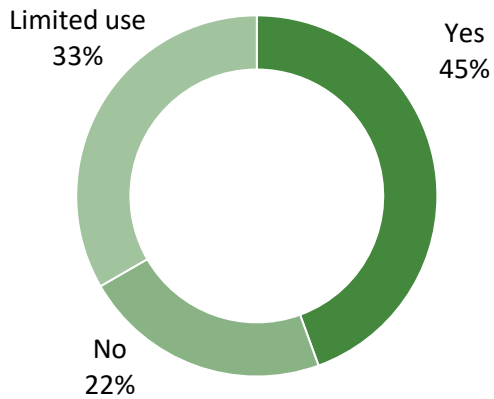


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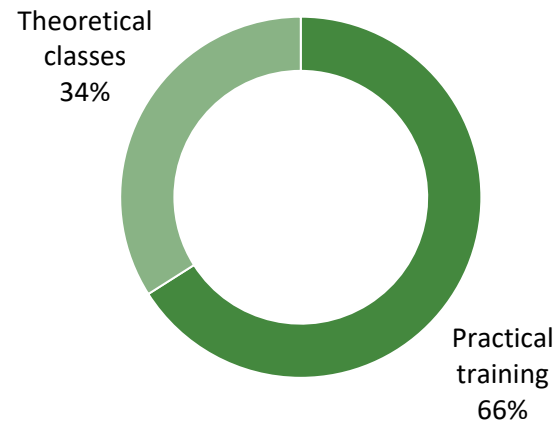
- Public health facilities are yet to adopt E-Health systems with most still using manual processes.
- Most players with an E-health systems acquired them recently, with over 80% of them being less than 5 years old
- The most basic requirement for an E-health system is capturing medical records with only very few of them used for procurement and payment purposes.

Covid-19 disrupted health training institutions significantly, with most struggling to switch to E-learning last minute.

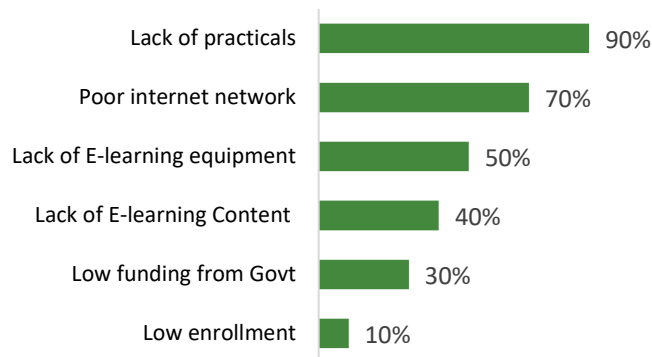
Use of e-learning for teaching
(Based on 10 interviews with teaching institutions)



Mode of health training
(Based on 10 interviews with teaching institutions)



Challenges of e-learning in health training
(Based on 10 interviews with teaching institutions)



Comments

- E-learning is yet to be widely adopted especially in the health sector due to the requirement of practical classes needed.
- Majority of programs offer 70% practical training, with only advanced level studies focusing on theoretical training.
- Covid-19 was a big blow to training institution especially since most of them were caught unawares and a lock downs were imposed making it impossible to hold in-person training
- E-learning poses a challenges especially to students who lack resources to access internet or computers.

E. Summary and recommendations

1.

PUBLIC SECTOR PLAYS THE LARGEST ROLE IN HEALTH SERVICE PROVISION

Public health facilities are larger in number, affordable and geographically spread out therefore making them more accessible to the general population. Private hospitals despite playing a significant role in health care are concentrated in a few large cities and are unaffordable to most people while faith-based hospitals play a critical role in providing health services to the rural and poor population but are fewer in number.

2.

EAST AFRICA HAS A SHORTAGE OF QUALITY HEALTH FACILITIES AND WORKFORCE

There is significant underinvestment in the health sector with majority of public health facilities oversubscribed leading to long wait time and poor services. The number of health workers is also insufficient, leading to an overworked and underpaid workforce which is a huge demotivator, as evidenced by frequent strikes.

3.

DOMESTIC HEALTH EXPENDITURE IS RISING BUT DONOR DEPENDENCY IS STILL HIGH

Despite increasing government budgetary allocation to the health sector, donor dependency is still high in East Africa. The health needs of the region are increasing faster than the East African governments' abilities to finance the health sector through locally generated revenues.

4.

HEALTH BURDEN IS SHIFTING FROM INFECTIOUS TO NON-COMMUNICABLE DISEASES

East Africa is seeing a decline in infectious diseases but a rise in non-communicable diseases which can be associated with demographic and social changes such as globalization, urbanization, and adoption of unhealthy lifestyles such as consumption of unhealthy diets, physical inactivity, and excessive alcohol consumption..

5.

WESTERN COUNTRIES DOMINATE THE MEDICAL AND LAB EQUIPMENT MARKET

Despite China and India making a strong push in the market, Western countries collectively have the largest market share in the medical and laboratory equipment market, accounting for 40% and 52% of imports respectively.

6.

IMAGING IS THE FASTEST GROWING SEGMENT

Majority of health players confirmed imaging to be the fastest growing segment with most already having plans to invest in the short term. This is also backed by import statistics, whereby x-ray and ultrasound apparatuses are consistently among the top imported equipment in East Africa.

7.

THE EAST AFRICAN MARKET IS VERY PRICE SENSITIVE

Price is the most important factor considered when purchasing medical and laboratory equipment in East Africa. It is therefore not surprising that China features prominently among the leading sources of imports. However, due to other factors such as brand familiarity and general perception of quality, western brands still manage to command significant market share. This is especially the case in large capital investment.

8.

PLACEMENT CONTRACTS ARE COMMON FOR LABORATORY EQUIPMENT

For laboratory equipment dependent on consumables, placement contracts are standard. With placement contracts, manufacturers (or their distributor) provide laboratory equipment at no cost to a laboratory, which in turn is obligated to purchase a minimum amount of reagents, usually per quarter, at a pre-determined price from the manufacturer (or distributor) of the equipment.

9.

E-HEALTH IS NOT YET WIDELY ADOPTED BUT GOVERNMENT EFFORT

Several limiting factors have hindered the wide adoption of e-health including cost, low digital literacy, unreliable power supply and poor internet coverage especially in rural areas. However, the East African governments have recognized e-health as an important enabler for healthcare system strengthening and have drafted digital healthcare strategies and policies to guide the use of ICT in supporting healthcare sector transformation. This is expected to accelerate E-health adoption.

10.

LOCAL PRESENCE IS KEY FOR INTRODUCTION OF NEW TECHNOLOGY

The most common way in which healthcare providers learn about new medical technology is through direct contact with vendors. All major medical and laboratory equipment suppliers have local representatives in the target markets who are responsible for increasing product awareness, answering customers' queries, providing technical advice, and introducing new products to potential clients. Conferences and tradeshow are the least popular options to learn about new medical technology due to the cost and time investment needed as well as the lack of high profile medical-related tradeshow locally.

The key to winning in the East African medical and laboratory equipment market is adapting to the local need.

ESTABLISH A LOCAL PRESENCE

1

In order to compete with the large multinationals that already dominate the medical and laboratory equipment market, proximity to customers is critical. Being locally present has several advantages including being able to control the product messaging, getting better information on customers and use-cases, as well as having more control of service quality and customer training. The majority of medical professionals also confirmed learning about new technologies from suppliers directly and therefore a local presence would be best way to increase product awareness and introduce new products to the market.

IDENTIFY AND APPOINT A LOCAL DISTRIBUTION PARTNER

2

Using local distributors provides a number of advantages including being able to leverage on the distributors already established sales channels, business relationships and logistical capabilities. A local distributor also has a better understanding of the regulatory environment and can help navigate all product regulation hurdles. The ideal partner should usually be handling complementary products, selling to the buyers of greatest importance to you, cover the geographic areas that you need to reach and have the right personnel to meet the sales needs.

TAKE ADVANTAGE OF GROUP PURCHASING ORGANIZATIONS

3

Group purchasing organizations are made up of health care providers and medical supplies distributors who come together to procurer of medical products in bulk by leveraging on their combined purchasing power to negotiate for favorable pricing. For new players in the market, these organizations would provide access to a large network health players thus reducing cost of market penetration.

TARGET PRIVATE SECTOR FIRST

4

Procurement in the public sector is slower compared to private sector due to the number of stakeholders involved. However, in the private sector, decisions are made at a much quicker pace due to fewer steps involved and a lot more objectivity when evaluating investment in medical and laboratory equipment. In the private sector, single sourcing is also permitted which gives new players in the market the opportunity to present a case for their product.

F. Appendix

HS Codes for medical equipment

HS Codes	Description
871310	Wheelchairs and other vehicles for the disabled without a mechanical movement device
871390	Wheelchairs and other vehicles for the disabled, whether or not with a motor or other mechanical movement device
901811	Electrocardiograph
901812	Ultrasound diagnostic devices
901813	Magnetic resonance devices OR magnetic resonance imaging apparatus
901814	Scintigraphy equipment
901819	Medical, surgical instruments and appliances; electro-diagnostic apparatus
901820	Ultraviolet or infrared radiation devices
901831	Medical, surgical instruments and appliances; syringes, with or without needles
901832	Medical, surgical instruments and appliances; tubular metal needles and needles for sutures
901839	Needles, catheters, cannulas and the like for medical purposes (excl. Syringes and hollow needles made of metal and surgical sutures)
901841	Dental drilling machines, also with other dental equipment on a common base
901849	Dental instruments and appliances; other than dental drill engines
901890	Medical, surgical or dental instruments and appliances including scintigraphic & electro-medical apparatus and sight testing instrument
901910	Mechano-therapy appliances; massage apparatus and psychological aptitude-testing apparatus
901920	Apparatus for ozone therapy, oxygen therapy or aerosol therapy, respirators for resuscitation and others
902000	Respiratory apparatus and devices and gas masks, excl. Protective masks without mechanical parts and without replaceable filter elements
902110	Orthopaedic or fracture appliances
902121	Dental fittings; artificial teeth
902129	Dental prosthetics (excl. Artificial teeth)
902131	Artificial joints
902139	Prosthetic eyes and Artificial body parts and organs, not elsewhere specified or included
902140	Hearing impaired devices (excl. Parts and accessories)
902150	Pacemakers (excl. Parts and accessories)
902190	Parts and accessories for hearing impaired devices and Devices for carrying in hand or for implanting in or for carrying on the body, for repairing functional damage
902212	X-ray machines for computed tomography
902213	X-ray apparatus and equipment, for dental purposes
902214	X-ray apparatus and devices, for medical, surgical or veterinary purposes
902219	X-ray apparatus and equipment, including apparatus and equipment for screen photography or radiation therapy (excl. For medical)
902221	Apparatus and devices using alpha, beta or gamma rays for medical, surgical, dental
902229	Apparatus and equipment using alpha, beta or gamma rays, including apparatus and equipment for screen photographers
902230	X-ray tubes
902290	Parts and accessories for x-ray apparatus and equipment and High-voltage generators, control panels, fluoroscopes, examination and treatment tables
940210	Dental chairs, barber chairs or similar chairs, with swiveling, tilting and lifting device; Parts of it, not elsewhere
940290	Furniture for human, dental, veterinary or surgical purposes, and parts therefor, not elsewhere specified or included

HS Codes for laboratory equipment

HS Codes	Description
382200	Composite diagnostic or laboratory reagents
701710	Fused quartz laboratory, hygienic or pharmaceutical war
701720	Low expansion laboratory, hygienic, pharmacy glasswar
701790	Laboratory, hygienic or pharmaceutical glassware nes
841410	Vacuum Pumps
841920	Medical, surgical sterilizers
841940	Distilling and rectifying plant
841990	Parts laboratory for heating and cooling
842119	Centrifuges
851410	Industrial electric heated furnaces
851420	Industrial electric induction dielectric furnace
851430	Industrial electrical furnaces and oven
851440	Industrial induction/dielectric heating equipment
851490	Parts of industrial / electrical furnaces
853949	Ultraviolet and infra red
901110	Stereoscopic microscopes
901180	Microscopes
901190	Parts and accessories for microscopes
901210	Microscopes except optical
901290	Parts and accessories for non optical microscopes
901600	Balance and sensivity of 50 or better
902710	Bas and smoke analysis apparatus
902720	Chomatographs , electrophoresis
902730	Spectrometer
902750	Instruments using optical radiations
902780	Equipment for physical or chemical analysis
902790	Microtomes, parts of scientific analysis equipment

Questions?

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