Unlocking the potential of India-Africa collaboration for healthcare innovation

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Executive summary

Traditionally viewed as a fragmented industry with hyperlocal challenges and solutions, healthcare faces near universal forces of rapid digitisation, increasing demands and expectations from informed and connected consumers, and shrinking resources.

While the COVID-19 pandemic has exposed the fragility of health systems across the world, there is a silver lining in the form of a renewed impetus to healthcare innovation. The crisis has presented us with an opportunity to rethink and redesign healthcare delivery processes and systems, and maximise the adoption of digital technology to tide over disruptions in routine service delivery and programme management.

Disruptive innovations are aimed at displacing traditional healthcare systems and processes for improving health outcomes through value-based care. The potential role of such innovations in leapfrogging from low- to high-quality healthcare while ensuring accessibility and affordability is increasingly being recognised across the globe. Disruptive technologies such as artificial intelligence, 3D printing, surgical robotic tools, remote monitoring solutions and patient-facing mobile applications offer potential opportunities to developing regions like India and Africa, which are in urgent need of low-cost, efficient and sustainable healthcare solutions that are easily accessible to the masses.

Health systems in India and Africa face common challenges such as a rising burden of non-communicable diseases, rapid urbanisation, and a high burden of diseases such as tuberculosis and HIV/AIDS. In addition, there are systemic challenges such as a shortage of healthcare workers; limited availability of equipment, drugs and supplies; weak monitoring and evaluation systems; limited financing mechanisms and lack of continuity of care. Aligned with the Sustainable Development Goals (SDGs), India and Africa share a common vision of providing universal health coverage (UHC) to their populations. In their efforts towards achieving this vision, these regions are rapidly emerging as breeding grounds for healthcare innovation, fuelled by factors such as expanding healthcare markets, rising smartphone usage and internet penetration, a vibrant start-up ecosystem and strong policy initiatives.

India and Africa are natural allies with strong historical and ongoing cultural and business relations that have stood the test of time. Some of the key joint initiatives include the Pan African e-Network Project, e-VidyaBharati and e-AarogyaBharati (e-VBAB) Network Project, India-Africa Forum Summits and the India Africa Health Sciences Platform.

With both India and Africa recognising the importance and potential of healthcare innovation and collaboration, it is imperative that these be used as drivers for fast-tracking progress in the health sector. Governments, development partners, private sector organisations, start-ups and non-governmental organisations – each of these has a unique and synergistic role to play in harnessing the untapped potential of healthcare innovation. Some of the potential areas for India-Africa collaboration in the health sector include sustainable medical value travel, training and capacity building, medical infrastructure development, manufacturing, research and development, and deployment of new-age digital technologies.

The challenges are huge and so is the potential to collaborate and innovate. The time is ripe for India and Africa to leverage the collaborative power of healthcare innovations for the development of mutually cohesive and sustainable strategies and partnerships aimed at addressing health system gaps. This will enable the two regions to effectively work towards the achievement of common health system goals.

Universal megatrends and the role of innovation in healthcare

More connected and consumer-oriented than ever before, the world's health systems are challenged to build resiliency in times of change. Traditionally viewed as a fragmented industry with hyperlocal challenges and solutions, healthcare faces near universal forces of rapid digitisation, increasing demands and expectations from informed and connected consumers, and shrinking resources. Health systems have a lot to learn from each other, other industries and communities around the world. Systems will survive and thrive if they are able to connect, collaborate and create new solutions.

Universal megatrends in the health sector

The distrustful consumer
Declining trust in institutions and technology is a global trend, leading to demands for more information about treatment choices from a growing number of consumers.

Workforce transformation
Health systems and other industries are investing significant resources to train existing employees and define the talent needs of the future.
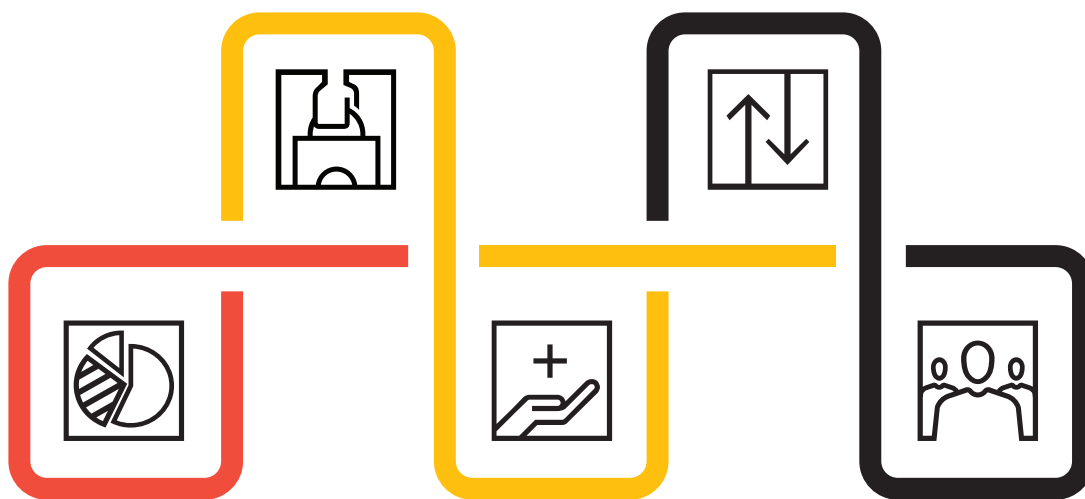
Distribution of resources
Rapidly escalating healthcare costs are depleting resources while demand for health services is increasing, putting pressure on governments to improve quality and access to care.

Pandemics
Pandemics such as COVID-19, Ebola and influenza continue to expose gaps in the capacity of health systems for epidemic preparedness and response.

Demographic shifts
The increasing proportion of elderly population is placing more demands on local healthcare infrastructure and social institutions to deliver care and services.

Source: PwC Health Research Institute analysis

Rapidly escalating healthcare costs are depleting resources, while demand for health services is increasing and putting pressure on governments to improve quality and access to care. Declining trust in institutions and technology is a global trend, leading to demands for more information about treatment choices from a growing number of consumers. Health systems and other industries are investing significant resources to train existing employees and define the talent needs of the future, placing more demands on local healthcare infrastructure and social institutions to deliver care and services.

Healthcare innovation

01 responds to unmet public health needs by redesigning conventional methods of service delivery

02 strengthens efficiency in healthcare administration through evidence-based planning and decision-making

03 important determinant of progress towards achieving the SDGs through the route of universal health coverage

04 can address socioeconomic challenges and drive economic growth

05 results in more convenient, more effective, and less expensive treatments for today's time-stressed and increasingly empowered healthcare consumers

Source: PwC analysis

> **"** Health innovation identifies new or improved health policies, systems, products and technologies, and services and delivery methods that improve people's health and well-being. **"**
>
> **- WHO**

Healthcare innovation: The silver lining to COVID-19

The COVID-19 pandemic has exposed the fragility of health systems across the world and tested their resilience. However, the outbreak has come with a silver lining - boosting healthcare innovation and multi-sectoral collaboration across the globe, with the common goal of saving lives. The process of healthcare innovation, which is usually expensive and tedious, has experienced rapid acceleration in wake of the pandemic. Innovations aimed at strengthening health systems to be able to effectively respond to the pandemic are being developed at a phenomenal pace across the globe. The pandemic has provided a renewed impetus to healthcare innovation by presenting an opportunity to rethink and redesign healthcare delivery processes and systems and maximise the adoption of digital technology to tide over disruptions in routine service delivery and programme management.[1]

> **" Crises are accelerators of innovation, and the COVID-19 crisis has accelerated a multitude of innovations as individuals, families, organizations and societies adapt to the new realities of physical distancing and lockdown. "**
>
> **- UNAIDS Global AIDS Update 2020**

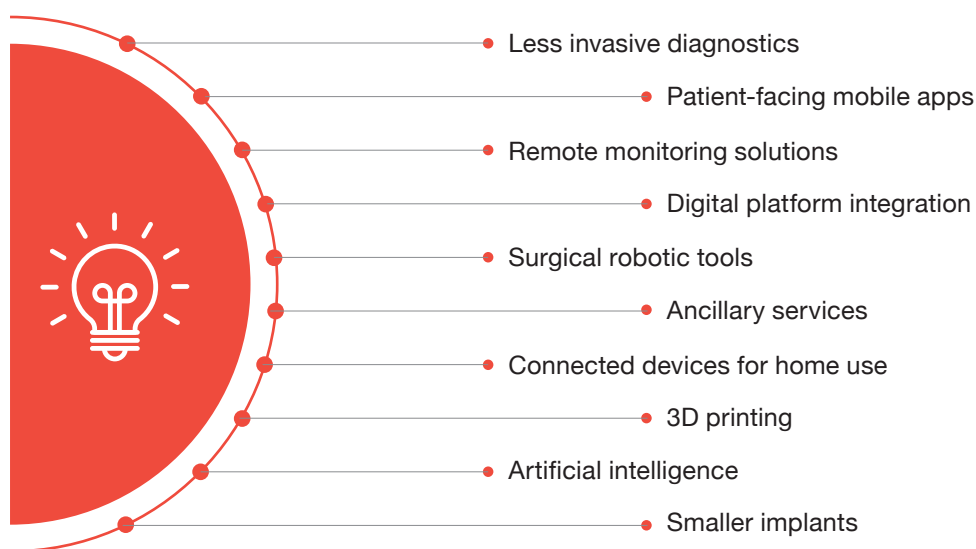1   https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7453854/

Disruptive value-based innovation – shaping the future of healthcare

Given the limited availability of resources and the rising demand for affordable, high-quality healthcare services, there is an urgent need for innovative solutions to address people's healthcare needs in a cost-effective manner. The Expert Panel on Effective Ways of Investing in Health (EXPH), which was set up by the European Commission in 2012, has described disruptive innovation as 'a type of innovation that creates new networks and new organisational cultures involving new players, and that has the potential to improve health outcomes and the value of health care. This type of innovation displaces older systems and ways of doing things.' In the healthcare sector, such innovation offers potential opportunities to developing regions like India and Africa which are in urgent need of low-cost, efficient and sustainable healthcare solutions that are easily accessible to the masses.

Leapfrogging stages of the care paradigm with disruptive technology

The potential role of technology in addressing individual and population healthcare needs is increasingly being recognised across the globe. Technology can enable nations to leapfrog from low- to high-quality healthcare while ensuring accessibility and affordability. The development and uptake of new technologies in healthcare are rapidly revolutionising conventional methods of healthcare delivery and management. Medical devices in hospitals/clinics, mobile care applications, wearables and sensors are all different forms of technology that are transforming the healthcare ecosystem.

Distruptive technologies in healthcare

- Less invasive diagnostics
- Patient-facing mobile apps
- Remote monitoring solutions
- Digital platform integration
- Surgical robotic tools
- Ancillary services
- Connected devices for home use
- 3D printing
- Artificial intelligence
- Smaller implants

Source: PwC Health Research Institute analysis

> ❝India believes that technology is vital for developing countries to leap frog into the 4th industrial revolution, as well as directly impact positively the lives of people, especially in delivery of public services, education, health, agriculture etc.❞
>
> **- Ministry of External Affairs, Government of India**

Technology-based innovations are increasingly being adopted in healthcare for a range of applications – for example, mobile-based applications are being used to provide targeted healthcare information to individuals; teleconsultation platforms, to provide real-time decision-making support to health workers; e-learning tools, to provide health workers with on-the-go access to training content and clinical protocols; point-of-care diagnostics, for community-based screening and tracking of diseases such as diabetes, tuberculosis, HIV and malaria.

In his foreword to the WHO Guideline: Recommendations on Digital Interventions for Health System Strengthening, Dr Tedros Adhanom Ghebreyesus, Director-General, World Health Organization, emphasised how advances in digital technology are unlocking numerous possibilities in healthcare: '3D printing is revolutionizing the manufacture of medical devices, orthotics and prosthetics. Telemedicine, remote care and mobile health are helping us transform health by delivering care in people's homes and strengthening care in health facilities. Artificial intelligence is being used to give paraplegic patients improved mobility, to manage road traffic and to develop new medicines. Machine learning is helping us to predict outbreaks and optimize health services.'[3]

The role of disruptive technologies in determining progress towards the goal of universal health coverage (UHC) and therefore Sustainable Development Goal (SDG) 3 – 'Ensure healthy lives and promote well-being for all at all ages'[4] is increasingly attracting interest from the medical and public health community, most notably in low- and middle-income countries such as India and those in Africa. However, while recognising the role of such technologies in strengthening health systems, it is also important to take into account the potential of sustainable non-digital approaches in tandem and thus ensure a 'healthy integrated mix' that is well-adapted to the local context. The speed, extent and scale at which health workers and patients accept and integrate the use of technology for addressing healthcare needs will play an important role in shaping the future of healthcare systems, particularly in developing countries.

3   https://www.ncbi.nlm.nih.gov/books/NBK541886/
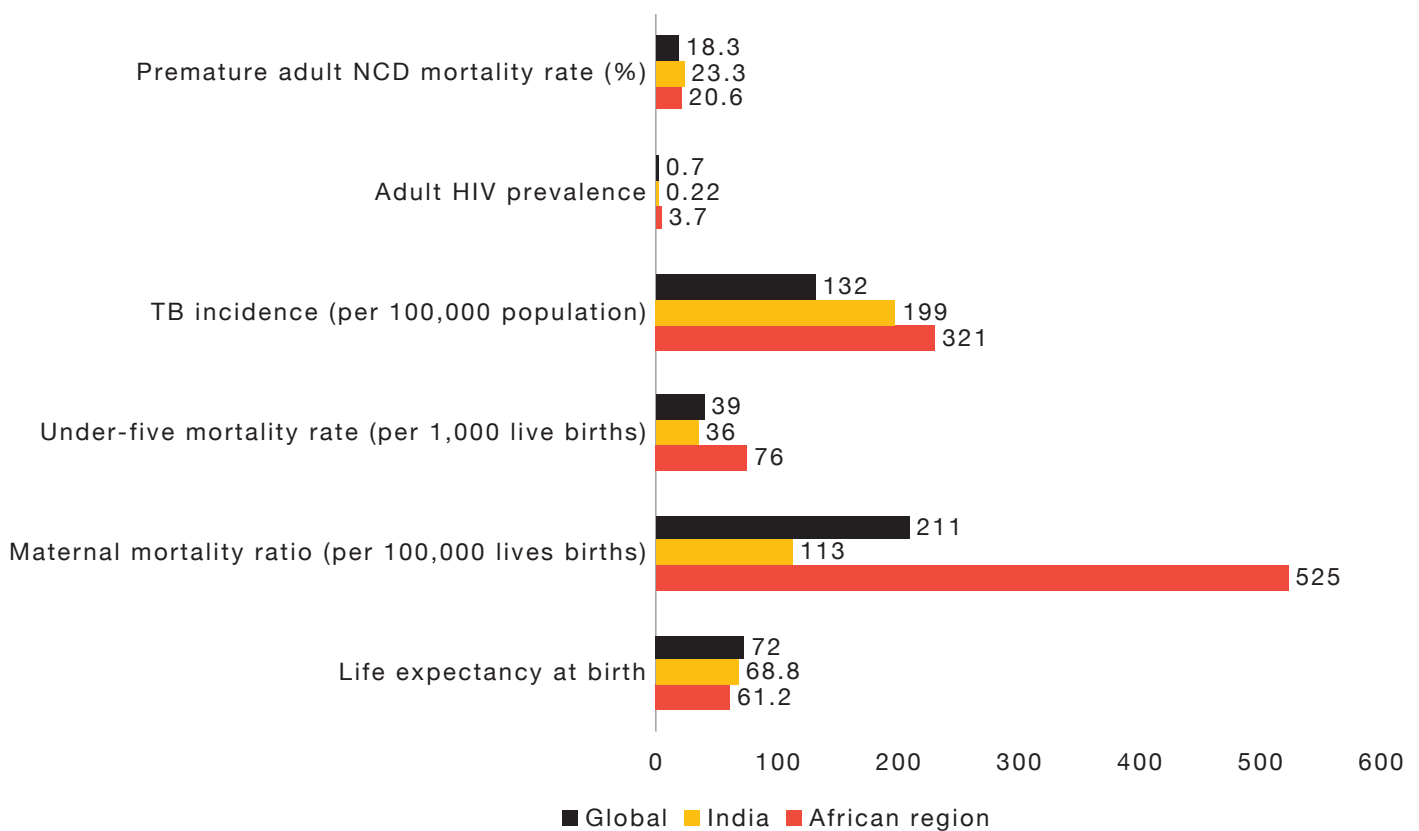4   https://sdgs.un.org/goals/goal3

Collaborate to innovate: Why this makes sense for India and Africa

India and Africa are natural allies with strong historical and ongoing cultural and business relations that have stood the test of time. The two regions not only have commonalities in terms of healthcare challenges and changing demographic profiles but also share a common vision of providing UHC to their populations in line with their commitment to the SDGs. As a means towards achieving this vision, both India and Africa are rapidly emerging as breeding grounds for healthcare innovation.

Shared healthcare challenges and priorities

India and Africa have made significant efforts towards successfully reducing disease mortality and morbidity over the years. However, key healthcare indicators continue to lag behind global averages, highlighting the scope for further improvement.

Comparison of key health indicators

	Global	India	African region
Premature adult NCD mortality rate (%)	18.3	23.3	20.6
Adult HIV prevalence	0.7	0.22	3.7
TB incidence (per 100,000 population)	132	199	321
Under-five mortality rate (per 1,000 live births)	39	36	76
Maternal mortality ratio (per 100,000 lives births)	211	113	525
Life expectancy at birth	72	68.8	61.2

■ Global ■ India ■ African region

Source: World Health Statistics 2020, WHO Global TB Report 2020, WHO Global Health Observatory data repository, NACO India HIV Estimations 2017 India factsheet, SRS Statistical report 2018, SRS Special Bulletin on Maternal Mortality in India 2016-18

Some of the common challenges and priorities of the two regions have been discussed below:

- **Double burden of disease:** India and Africa are undergoing a major epidemiological disease transition, with a decline in mortality due to communicable, maternal, neonatal and nutritional diseases and a rising burden of non-communicable diseases (NCDs). The contribution of NCDs to the overall disease burden in India has risen from 31% in 1990 to 55% in 2016.[5] WHO estimates that about 4 million NCD-related deaths will occur in the African region by 2020 and by 2030, the NCD burden is predicted to overtake the communicable disease burden.[6]

- **Rapid urbanisation:** It is estimated that Africa's cities will add 950 million residents by 2050, with the region seeing the fastest urban growth rate in the world.'[7] In 2018, India had the second largest urban population in the world ,totalling 461 million, which is about one-third of the country's total population. This figure is expected to reach 877 million by 2050.[8]

- **Tuberculosis (TB):** India and 16 countries in the African region are among WHO's 30 high TB burden countries that collectively account for nearly 90% of the annual global TB burden. India has the largest share (26%) of the global TB burden, while the African region accounts for an additional 25%.[9]

- **HIV/AIDS:** Globally, the African region is the worst affected by HIV/AIDS, with 25.7 million people living with HIV in 2019. The region also accounts for 57% of new HIV infections across the world.[10] Similarly, India reported an estimated 2.1 million people living with HIV, 88,000 new HIV infections and 69,000 AIDS-related deaths in 2017.[11]

- **Commitment to the SDGs:** India and Africa have made substantial progress in the healthcare sector in line with their commitment to SDG 3. The African Union (AU) Summit in 2015 outlined Agenda 2063, which is aimed at achieving 'a prosperous Africa based on inclusive growth and sustainable development' while recognising the importance of health and nutrition in achieving this vision.[12] India too has demonstrated its committed to SDG 3 through the National Health Policy, 2017, which outlines its vision for achieving UHC. Ayushman Bharat, India's flagship Government scheme launched in September 2018, is a major step in this direction as it aims to adopt a continuum of care approach for providing comprehensive healthcare to the masses, spanning the preventive, promotive, curative and rehabilitative domains of healthcare.[13]

> ❝ TB research and innovation are essential to achieve the global TB targets set in the SDGs and the WHO End TB Strategy. A major technological breakthrough is required by 2025, so that the rate at which TB incidence falls can be dramatically accelerated to an average of 17% per year between 2025 and 2035. ❞
>
> **- WHO Global TB report 2018**

> ❝ Countries around the world are accelerating HIV response innovations to minimise COVID-19 attributable service disruptions, e.g. HIV service delivery models that minimise physical contact with health facilities. ❞
>
> **- UNAIDS Global AIDS update 2020**

5   https://www.healthdata.org/sites/default/files/files/policy_report/2017/India_Health_of_the_Nation%27s_States_Report_2017.pdf

6   https://www.afro.who.int/sites/default/files/2017-07/15264_who_afr-situation-ncds-15-12-2016-for-web.pdf

7   https://www.oecd-ilibrary.org/development/africa-s-urbanisation-dynamics-2020_b6bccb81-en#:~:text=Africa%20will%20continue%20to%2have,an%20additional%20950%20million%20people

8   https://population.un.org/wup/Publications/Files/WUP2018-Highlights.pdf

9   WHO Global TB Report 2020 (https://apps.who.int/iris/bitstream/handle/10665/336069/9789240013131-eng.pdf?ua=1)

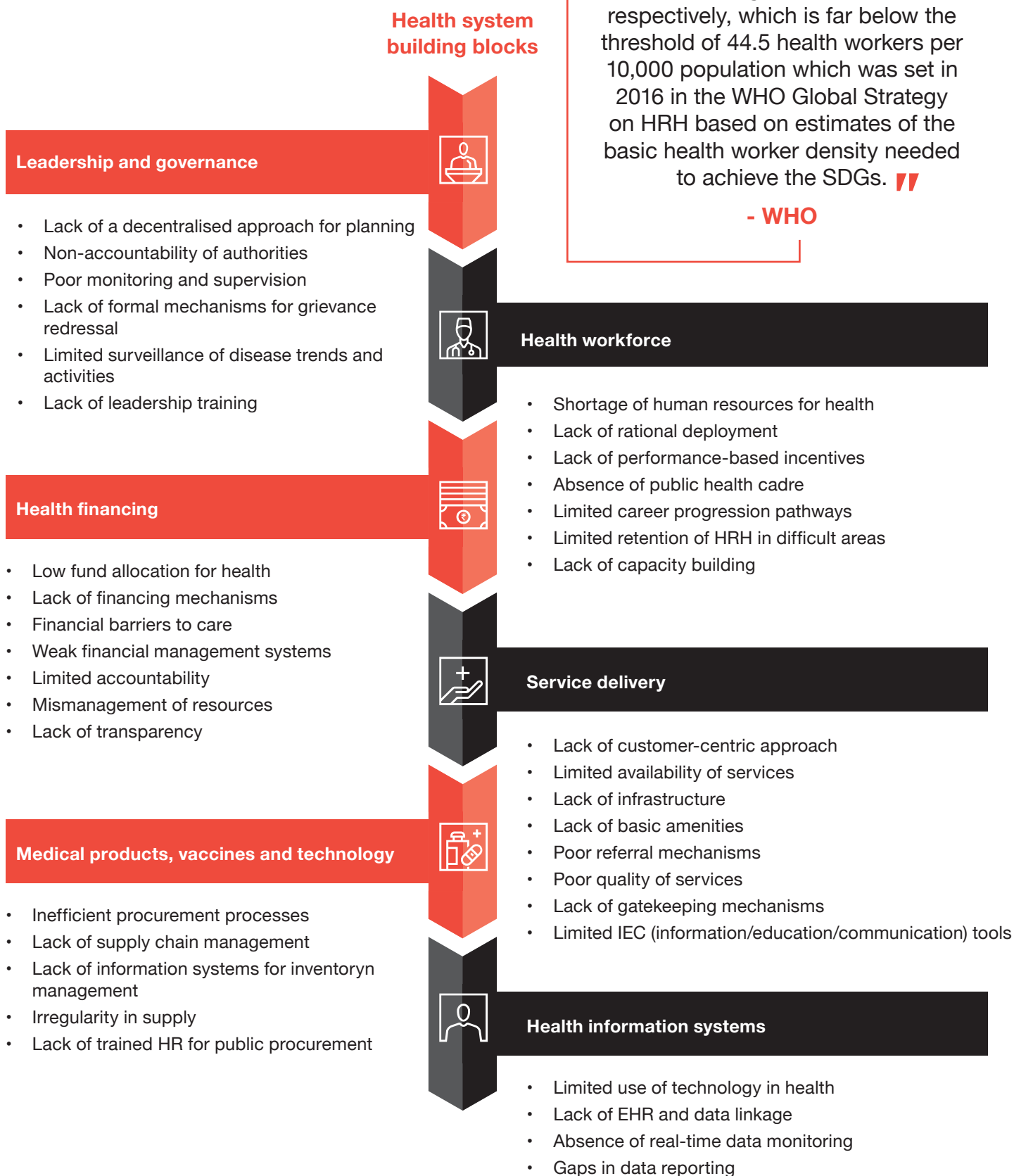10 WHO Global Health Observatory data repository (https://apps.who.int/gho/data/view.main.22100WHO?lang=en)

11 NACO (http://naco.gov.in/sites/default/files/HIV%20Estimations%202017%20Report_1.pdf)

12 https://au.int/en/promoting-health-nutrition#:~:text=Aspiration%201%20of%20Agenda%202063,access%20to%20quality%20health%20care

13 https://pmjay.gov.in/about/pmjay#:~:text=This%20scheme%20was%20launched%20on,a%20health%20cover%20of%20Rs

Health system challenges

> **The density of health workers (doctors, nurses and midwives) per 10,000 population in India and the African region is 27.5 and 14.1 respectively, which is far below the threshold of 44.5 health workers per 10,000 population which was set in 2016 in the WHO Global Strategy on HRH based on estimates of the basic health worker density needed to achieve the SDGs.**
>
> **- WHO**

Health system building blocks

Leadership and governance

- Lack of a decentralised approach for planning
- Non-accountability of authorities
- Poor monitoring and supervision
- Lack of formal mechanisms for grievance redressal
- Limited surveillance of disease trends and activities
- Lack of leadership training

Health workforce

- Shortage of human resources for health
- Lack of rational deployment
- Lack of performance-based incentives
- Absence of public health cadre
- Limited career progression pathways
- Limited retention of HRH in difficult areas
- Lack of capacity building

Health financing

- Low fund allocation for health
- Lack of financing mechanisms
- Financial barriers to care
- Weak financial management systems
- Limited accountability
- Mismanagement of resources
- Lack of transparency

Service delivery

- Lack of customer-centric approach
- Limited availability of services
- Lack of infrastructure
- Lack of basic amenities
- Poor referral mechanisms
- Poor quality of services
- Lack of gatekeeping mechanisms
- Limited IEC (information/education/communication) tools

Medical products, vaccines and technology

- Inefficient procurement processes
- Lack of supply chain management
- Lack of information systems for inventoryn management
- Irregularity in supply
- Lack of trained HR for public procurement

Health information systems

- Limited use of technology in health
- Lack of EHR and data linkage
- Absence of real-time data monitoring
- Gaps in data reporting

Source: WHO Health System Building Blocks and PwC analysis

Breeding grounds for healthcare innovation

Expanding healthcare markets, rising smartphone usage and internet penetration, a vibrant start-up ecosystem and strong policy initiatives are fuelling healthcare innovations in India and Africa.

A. Expanding healthcare market size

India

- The healthcare sector is among the top sectors in India from the standpoint of revenue and employment opportunities. Rapid incremental growth in the healthcare market is likely to result in India ranking among the top countries in the world.

- It is expected that by 2022, the healthcare sector in India will touch USD 372 billion, driven by factors such as rising income levels, improving awareness and demand for health services, rising burden of NCDs and greater access to insurance.[14]

Africa

- The per capita health expenditure in Sub-Saharan Africa has risen from USD 28.42 in 2002 to USD 83.76 in 2017.[15]

- As per a World Bank report, 'The African Continental Free Trade Area (AfCFTA) presents a major opportunity for African countries to bring 30 million people out of extreme poverty and to raise the incomes of 68 million others who live on less than USD 5.50 per day. With the implementation of AfCFTA, trade facilitation measures that cut red tape and simplify customs procedures would drive USD 292 billion of the USD 450 billion in potential income gains.'[16]

- The factors driving growth in the African healthcare sector include a rising number of hospitals/clinics, increased focus on use of point-of-care diagnostics for improving community-based service delivery, increasing community health awareness, rise in in-country manufacturing of drugs and diagnostics, and a rising number of insurance providers.[17]

> " Between 2000 and 2017, India and several African countries sustained rapid economic growth, which is generally associated with higher government revenues and health spending. "
>
> **- WHO**

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14 https://www.ibef.org/download/Healthcare-September-2019.pdf
15 https://data.worldbank.org/indicator/SH.XPD.CHEX.PC.CD?locations=ZG
16 https://www.worldbank.org/en/topic/trade/publication/the-african-continental-free-trade-area
17 https://africapresslist.com/pt/pressreleases/africa-healthcare-sector-outlook-valued-usd-35-billion-in-2016-06-27-2018-14-00-19

B. Rise in smartphone users and internet penetration

India

- As on 31 August 2020, India has over 1,147 million wireless telephone subscribers and 716 million broadband subscribers.[18] It is anticipated that India's smartphone base will grow to 820 million by 2022, presenting a wide range of opportunities for every sector, including health. Smartphone penetration in rural India has expanded from 9% in 2015 to 25% in 2018, indicating the huge untapped potential of digital technology in rural areas.[19]

- Growing high-speed internet connectivity and shrinking data costs are opening up a host of digital opportunities for the healthcare sector, paving the way for several digital health start-ups.

Africa

- The smartphone penetration rate in Sub-Saharan Africa is likely to increase from 44% in 2019 to 65% in 2025. The number of mobile internet users is likely to grow at a CAGR of 9.7% from 272 million users in 2019 to 475 million users in 2025.[20]

- The proportion of the population using the internet in Sub-Saharan Africa has risen from 3.5% in 2007 to 18.7% in 2017.[21]

C. Vibrant start-up ecosystem

India

- In recent years, India has witnessed a tremendous surge in the number of healthcare start-ups. As of 2018, there are a total of 4,892 start-ups in the Indian health-tech space. This number is likely to have risen further in the wake of the COVID-19 pandemic

- Health-tech start-ups have raised a total of USD 504 million between 2014–2018.[22]

Africa

- Despite the COVID-19 pandemic, the African continent has witnessed a rapid increase in the number of e-healthcare start-ups and increased investment in the digital healthcare space, with approximately 180 active companies by mid-2020.

- As of July 2020, e-health start-ups in Africa have raised over USD 90 million.[23]

D. Healthcare innovation – an emerging national and regional priority

India

- Government of India (GoI) initiatives such as Make in India, Startup India, Digital India, National Health Stack and National Digital Health Blueprint highlight the Government's role in prioritising innovations and incentivising the use of digital technology across all sectors, including health.

- The Government also launched the National Healthcare Innovation Portal, which aims to pool together and showcase innovative programme designs, practices, technology solutions and products across India's public and private healthcare sector while also organising annual summits for showcasing 'good and replicable practices and innovations in public healthcare systems' in order to promote cross-learning among states.

Africa

- Africa is increasingly integrating innovation and technology to combat multiple health calamities that have weighed down its economic growth in the past. Sub-Saharan Africa is the region with the largest number of economies performing above expectations for their level of development.

- In early 2020, 47 African member states in the WHO African Region adopted a WHO strategy for scaling up health innovations in Africa. As per this agreement, by 2023, 80% of all member states will perform needs assessments to identify critical gaps in their health systems and establish coordination mechanisms to scale up innovations; 75% will develop policies and incentive frameworks; and 50% will develop analytical tools to assess the economic and social impact of innovations.[24]

> **❝** The COVID-19 pandemic has galvanised the development of more than 120 health technology innovations in Africa, accounting for 13% of technology innovations developed worldwide for COVID-19 response. **❞**
>
> **- WHO**

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18 https://www.trai.gov.in/sites/default/files/PR_No.90of2020.pdf

19 https://telecom.economictimes.indiatimes.com/news/indian-to-have-820-million-smartphone-users-by-2022/76876183

20 https://www.gsma.com/mobileeconomy/wp-content/uploads/2020/09/GSMA_MobileEconomy2020_SSA_Infographic.pdf

21 https://data.worldbank.org/indicator/IT.NET.USER.ZS?locations=ZG

22 https://www.indiahealth-exhibition.com/content/dam/Informa/indiahealth-exhibition/en/downloads/Digital%20health%20report%202020.pdf

23 https://disrupt-africa.com/2020/06/africas-e-health-sector-booming-as-startup-numbers-and-investment-reach-record-high/

24 https://www.afro.who.int/news/covid-19-spurs-health-innovation-africa

A few examples of healthcare innovations from India and Africa

Examples of innovations		
Area of innovation	**India**	**Africa**
Reproductive, maternal and child health	• m-health solution for frontline health workers • Neonatal hypothermia monitoring bracelet • Foot-operated newborn resuscitation system	• App for women to anonymously access contraceptives • App for young people to anonymously access youth-friendly sexual and reproductive health information and chat with doctors and counsellors on such issues • Smartphone app which determines newborn asphyxia by analysing a recording of their cry
Communicable diseases	• AI-based technology for tuberculosis screening • Low-cost approach for tracking and improving TB medication adherence	• Self-measured blood pressure (SMBP) e-reader • Automated text message service for HIV/AIDS patients • Mobile application linking HIV positive patients and their healthcare providers
Non-communicable diseases	• Portable AI-based breast cancer screening device • Mobile-based diagnostic system for chronic disease management • Mobile-based tele-ECG solution	• Eye clinic on wheels that provides quality eyecare and support to patients in low-income settings • Technology-enabled geriatric care solution
Health system strengthening	• Point-of-care diagnostic devices • Mobile health units for Fixed Day Health Services • Human resource management information system • Results-based financing/impact bonds to improve quality of care • Digital supply chain management solution • Telemedicine-enabled digital health facilities Medical e-training and consultation platform • Digital solution for patient feedback • Medical claims management platform • Mobile and web-based digital pharmacies • Remote monitoring, assessment, support and intervention services for critically ill patients	• Web-based integrated supportive supervision tool • Mobile-based technology that enables verification of authenticity of medicines • Mobile, on-demand, hyperlocal ambulance; police, and fire service call and dispatch emergency system • Multi-source data analytics and triangulation dashboard that triangulates multiple data sources on one platform • Digital system based on smart paper technology that allows patient data to be captured on paper and then scanned, digitised, and uploaded onto a hospital management system • Credit funds providing incremental lending to small and medium healthcare enterprises linked to technical assistance programs for improving capacity and quality of care while reducing investment risks

Source: PwC research

Key historical and ongoing health sector collaboration initiatives between India and Africa

The first India–Africa Forum Summit, which was held in 2008, paved the way for strengthening partnerships across various sectors. Over the years, the scale and impact of such partnerships have demonstrated significant impact. In a statement made at the 15th CII-EXIM Bank India-Africa Project Partnership Conclave, the Minister of State for External Affairs, V Muraleedharan, said that: **'As on September 2020, India has executed 194 developmental projects in 37 African countries; currently working to complete 77 additional development projects in 29 countries, with a total outlay of USD 11.6 billion. Grants in aid worth more than USD 700 million have been extended to African partner countries for projects in infrastructure, connectivity, skill development, security and health sectors. […] Around 150 tons of medical aid worth nearly USD 10 million has been, or is in the course of being, delivered to the continent of Africa.'[25]**

Some of the key past and ongoing health sector partnerships include:

A. Pan African e-Network Project (PAENP)[26]

The PAENP was launched in 2009 as a collaborative initiative between GoI and the AU High Commission. The INR 542 crore (approximately USD 73.5 million) project aimed to strengthen linkages between India and African countries by setting up a fibre-optic network to provide satellite connectivity, telemedicine and tele-education services to countries in Africa. The project was commissioned in 47 of the 48 African countries that signed the agreement.

In India, patient end locations were set up in 12 Indian super specialty hospitals which were connected to the 48 patient end locations/hospitals in African countries. Tele-medicine centres were set up in five regional super specialty hospitals which also conducted regular continuing medical education (CME) to help train doctors and nurses in remote centres in Africa. As on March 2017, 770 telemedicine consultations and tele-expertise sessions had been carried out and 6,700 CME sessions had been held. In 2017, the GoI handed over the project to the AU High Commission.[27]

B. e-VidyaBharati and e-AarogyaBharati (e-VBAB) Network Project[28,29]

Launched in October 2019, the e-VBAB Network Project is primarily a technological upgrade and extension of PAENP. It is one of the largest projects being executed by the Ministry of External Affairs, GoI. The project is envisioned to be operationalised through a data centre and disaster recovery centre established in India along with learning centres in various African countries. There will be two separate platforms for e-VidyaBharati (tele-education) and e-AarogyaBharati (telemedicine) which will use web-based technology to link various educational institutions and hospitals in India and the participating African countries. The telemedicine component of the project aims to offer Indian medical expertise to African doctors, paramedics and patients. e-VBAB will be completely funded by the GoI for its entire duration of five years and will be open to participation by all partner countries in Africa. The implementation of the e-VBAB project has been expedited after its inclusion in the Government's 100 days programme. e-VBAB has been well received by African countries and a memorandum of understanding (MoU) has been signed by M/s Telecommunications Consultants India Ltd, the implementing agency with the governments of various African countries. The project has been hailed as a digital bridge between India and Africa for cooperation in the domain of healthcare.

25 https://www.business-standard.com/article/current-affairs/india-executed-194-developmental-projects-in-37-african-countries-mea-120092500015_1.html

26 https://mea.gov.in/Portal/ForeignRelation/Pan_African_e_docx_for_xp.pdf

27 http://ris.org.in/sites/default/files/Together%20Towards%20a%20Healthy%20Future-India%E2%80%99s%20Partnerships%20in%20Healthcare.pdf

28 https://mea.gov.in/press-releases.htm?dtl/30373/Signing+of+Agreement+between+MEA+and+TCIL+for+the+eVBAB+Network+Project

29 https://www.mea.gov.in/press-releases.htm?dtl/31928 Official+Launch+of+eVidyaBharti+and+eArogyaBharti+Project+by+External+Affairs+Minister+October+09+2019

C. India-Africa Forum Summits (IAFS)[30]

The IAFS is the official platform for India-Africa relations and is organised once in every three years. To date, three summits have taken place in 2008, 2011 and 2015. The landmark IAFS III, held in October 2015, was attended by representatives from all 54 African countries, including 40 heads of states, to develop strategies for strengthening India-Africa partnership. Health was among the key areas identified for furthering collaboration, with India committing significant resources towards enhancement of health capacities in Africa.[31] The fourth summit, which was scheduled to be held in 2020, had to be cancelled due to the COVID-19 pandemic.

D. India Africa Health Sciences Platform[32]

The first India Africa Health Sciences Meet (IAHSM) was organised in September 2016 in New Delhi by the Indian Council of Medical Research (ICMR), in partnership with the Ministry of External Affairs and other key Indian ministries as well as several African regional scientific and research agencies. This platform highlighted the need for collaborative efforts between India and Africa in the area of biomedical and health research for indigenous development of affordable medicines, diagnostics and vaccines, and to strengthen knowledge sharing in order to build health sector capabilities. The ICMR has taken a step ahead towards strengthening this strategic partnership by establishing the India-Africa Health Sciences Collaborative Platform (IAHSP). A MoU was signed between the ICMR and AU in March 2019 across a range of cooperation areas such as research and development (R&D), capacity building, healthcare services, pharmaceutical trade and manufacturing of drugs and diagnostics. As on December 2019, seven courses have been organised by the ICMR for African researchers and health professionals.[33]

Fostering collaboration: The USAID RMNCH+A Global Linkages Project

USAID/India has been promoting South to South cooperation in health programmes for several years and strongly believes that sharing best practices and collaborative health programmes can reduce costs, accelerate health outcomes, and promote health security. A USAID/India-supported HIV/AIDS South to South partnership with the Government of Sri Lanka's National STD and AIDS Control Program helped in transferring Indian best practices to identify and reach key populations with targeted HIV/AIDS programmes and in introducing patient feedback systems to improve quality of services. This effort resulted in increased identification of several hundred new key populations to be reached with HIV/AIDS services and increased resources for HIV/AIDS programmes.

USAID/India launched the Global Linkages initiative focused on collaborations to improve reproductive, maternal, neonatal, child and adolescent healthcare outcomes in African and Asian countries. This initiative supported private sector and civil organisations in collaborations for introducing promising maternal, child and associated health systems, strengthening solutions in partnering countries. Approaches included landscaping of 100+ promising healthcare solutions, prioritising solutions to country contexts, and developing robust systems to ensure ownership and successful roll-out of the solutions in partnering countries

PwC India is working with USAID to implement this Global Linkages project by engaging multiple stakeholders, including governments, the private sector, NGOs and development partners, to come together for cross-country collaboration through identification of innovative health solutions; creation of platforms for piloting these innovative and proven solutions which can be scaled up and made sustainable; and facilitation of dialogue between all stakeholders to promote learning and knowledge transfer around adoption of innovative solutions which have the potential to solve important problems for society.

Source: USAID/India

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30 https://idsa.in/africatrends/third-india-africa-forum-summit_rberi_1215

31 https://main.icmr.nic.in/sites/default/files/upload_documents/IAHSM_Report.pdf

32 https://main.icmr.nic.in/sites/default/files/upload_documents/IAHSM_Report.pdf

33 https://main.icmr.nic.in/sites/default/files/upload_documents/V3_About_IAHSP.pdf

Way forward

The rapid pace of progress and development in India and the African region has provided an impetus to efforts aimed at achieving the SDGs. With both India and Africa recognising the need and importance of the dual power of healthcare innovation and collaboration, it is imperative that these be used as drivers for fast-tracking progress in the health sector. The COVID-19 pandemic has highlighted the potential of healthcare innovation to address long-standing challenges in the health sector. Thus, the time is ripe for India and Africa to leverage the collaborative power of healthcare innovations for the development of mutually cohesive strategies and partnerships aimed at addressing health system gaps and contributing towards the achievement of common health system goals.

It is vital that India and Africa learn from each other – capitalising on each other's strengths while realising each other's limitations, in order to strengthen structures, processes, capabilities and systems in line with each other's priorities. It is important to leverage existing platforms for furthering India-Africa ties in the health sector while also exploring the potential for creating new ones in line with emerging health sector trends.

> **"** In Africa's pursuance of "Africa-owned" and "Africa-led" development, it is India's endeavor to base our partnership on the principles of equality, mutual respect, solidarity and mutual benefit. Our model of cooperation with Africa is demand driven, consultative, and participative, involves local resources, builds capacity and is based on Africa's own prioritization of its needs. **"**
>
> **- Ministry of External Affairs, Government of India**

Areas for collaboration between Africa and India

01

Manufacturing

Potential: India has become one of the global leaders in the production of generic pharmaceuticals. The nation produces over 400 bulk drugs and 10,000 formulations (e.g. India accounts for approximately 80% of the production of generic antiretroviral medicines). While maintaining the utmost quality to meet global standards, these products are also more affordable than US and European alternatives. Africa is the second largest export market for Indian firms, after the USA. In 2016–17, India is estimated to have exported USD 3 billion worth of medicines to Africa.

Need: Incentivisation of Indian companies to systematically invest in and set up manufacturing units in Africa

02

Medical tourism

Potential: India is a preferred medical tourism destination for African patients due to its weather, Ayurvedic practices and availability of high-quality super specialty medical services that have the added advantage of being cost-effective in comparison with those of other developing countries.

Need: Increased marketing and promotion in African countries; bundling the cost of treatment and care by hospitals

03

Establishment of health facilities

Potential: A large number of registered hospitals in India; expanding consumer market in Africa; political support under e-VBAB

Need: Establishment of telemedicine centres in Africa under e-VBAB; incentivisation of Indian hospital chains to set up units in African countries

04

Capacity building of service providers

Potential: Availability of specialised manpower; large number of training institutions; support for CME under e-VBAB

Need: Increased number of scholarships/fellowships to African students for undertaking professional training from Indian healthcare institutions; scale-up of capacity-building efforts under e-VBAB

05

R&D

Potential: Rapidly growing R&D capacity in India

Need: Establishment of incubators in African countries; embed African researchers in Indian industry in order to facilitate greater technology transfer and build sustainable capacities and capabilities; undertake collaborative research on infectious diseases with a focus on developing vaccines (prioritisation of antigens, validation of candidates and field trials) and improved diagnostics (point-of-care antigen-based diagnostics); as well as advance research for manufacturing of novel drugs and diagnostics for neglected tropical diseases and non-communicable diseases

06

Trade opportunities

Potential: African Continental Free Trade Agreement (AfCFTA) is a major opportunity for India to help African countries diversify their exports, accelerate growth and attract foreign direct investment.

Need: Organise annual industrial conventions between pharmaceutical companies and business leaders from both regions in order to improve trade opportunities and collaboration; set up a common e-marketplace for healthcare innovations

Source:

https://www.worldbank.org/en/topic/trade/publication/the-african-continental-free-trade-area

https://main.icmr.nic.in/sites/default/files/upload_documents/IAHSM_Report.pdf

PwC analysis

Governments, development partners, private sector organisations, start-ups and non-governmental organizations need to come together to harness the untapped potential of healthcare innovation for addressing common health sector challenges in the journey towards UHC. Each stakeholder group has a unique and important role to play in identifying, piloting and scaling up innovative products, solutions, technologies and programmes:

- governments – provide the vision, enabling policies and frameworks for innovations and collaboration

- private sector – forge partnerships, tap new markets, develop new healthcare solutions

- start-ups – design, develop, test and pilot innovations

- development partners – support knowledge dissemination, cross-learning, research, piloting, advocacy, replication and collaboration for healthcare innovations.

It is also important to leverage the opportunities generated through joint collaborative platforms organised by healthcare federations such as NATHEALTH in India and the Africa Healthcare Federation (AHF). Such platforms not only aid in bringing together key stakeholders in the health sector in India and Africa, but also provide an opportunity to better understand each other's health sector challenges and priorities and lay the foundation for future collaborative efforts.

The challenges are huge but so is the potential to collaborate and innovate. The need to address healthcare challenges in India and Africa in an integrated and sustainable manner calls for collaborative efforts that are aimed at making the best use of available resources to maximise health sector gains. Both regions are increasingly recognising the power of healthcare innovation in laying the foundation for joint initiatives aimed at furthering progress. The common vision of UHC can only be achieved by securing the commitment of the political, clinical and professional leadership in India and Africa for harnessing the collaborative power of healthcare innovation to drive sustainable change in the health sector.

About NATHEALTH

NATHEALTH - Healthcare Federation of India has been created with the vision to "Be the credible and unified voice of the healthcare ecosystem in improving access and quality of healthcare". Leading healthcare service providers, medical technology providers (devices & equipment), diagnostic service providers, health insurance companies, health education institutions, healthcare publishers and other stakeholders have come together to build NATHEALTH as a common platform to power the next wave of progress in Indian healthcare. It is an inclusive institution that has representation of small & medium hospitals and nursing homes. NATHEALTH is committed to working on its mission to encourage innovation, help develop and optimize healthcare infrastructure, bridge the skill and capacity gap, assist in shaping policy & regulations, support best practices, promote accreditation and enable the environment to fund long term growth. It aims to help build a better and healthier future for both rural and urban India. **www.nathealthindia.org**

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At PwC, our purpose is to build trust in society and solve important problems. We're a network of firms in 155 countries with over 284,000 people who are committed to delivering quality in assurance, advisory and tax services. PwC refers to the PwC network and/or one or more of its member firms, each of which is a separate legal entity. Please see www.pwc.com/structure for further details.

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