



ROADMAP TO 2030

HEALTH **FOR ALL** IN THE DIGITAL AGE

Framing

the Future:

**The Current State of Digital
Transformation of Health and the
Road to Universal Health Coverage**



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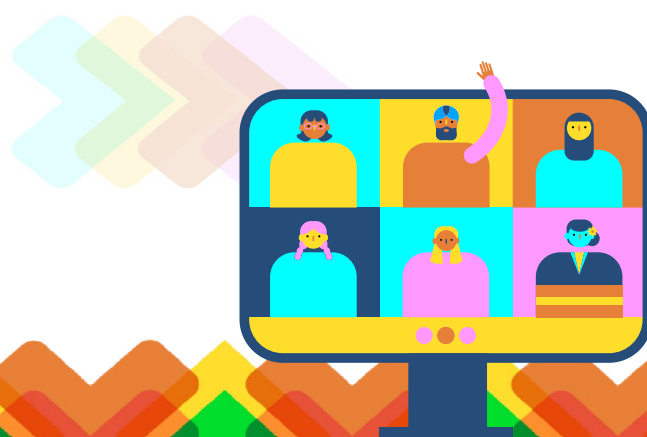
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About Transform Health

Transform Health is a global coalition of organisations that work to harness the potential of digital technology and the use of data to achieve universal health coverage (UHC) by 2030. To learn more about Transform Health, visit: www.transformhealthcoalition.org.

Diversity, Equity and Inclusion

The report considers diversity, equity, and inclusion in its analysis. When referring to diversity, equity, and inclusion, the authors are referring to a broad spectrum of stakeholders, including youth, women, older adults, people with disabilities, marginalised populations (targeted for their race and ethnic, sexual, or gender identities), and other hard-to-reach groups.

Limitations

This report is based on the best available data and evidence at the time of preparation. While efforts were made to ensure accuracy and completeness, several limitations should be noted. The depth of this review was constrained by the time frame and limited availability of potential key informants during the research process. Contextual factors such as unforeseen events and policy changes may influence some of the findings over time. Given the breadth of the topic, the report is not intended to be comprehensive; rather, it provides a stocktaking of key learnings, issues, and trends to inform discussion and decision-making. As such, the report should be interpreted as a snapshot based on current knowledge rather than a definitive or exhaustive assessment.

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I. EXECUTIVE SUMMARY

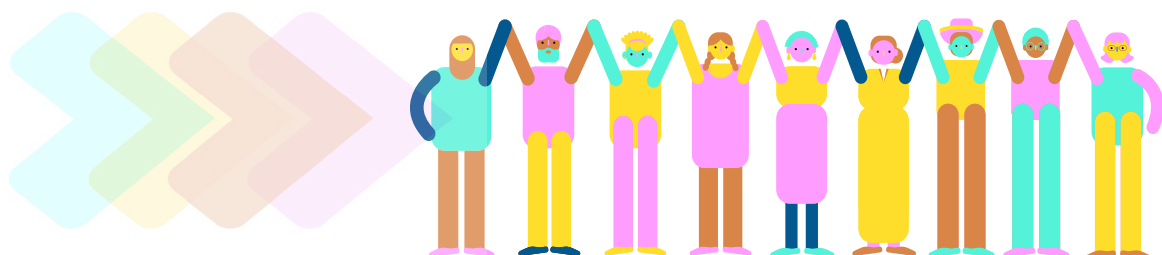


The world is off-track with reaching the goal of universal health coverage (UHC) by 2030. Getting back on track requires substantial investments and leveraging digital technologies to accelerate progress over the next five years. When digital transformation of country health systems is applied in an ethical and equitable manner, it can drive evidence-based decision-making, empower individuals to manage their own health, and expand the availability, accessibility, affordability, and quality of health services, while reducing costs.

There have been significant steps in recent years towards the digitalisation of health systems in low- and middle-income countries (LMICs), accelerated by the response to the COVID-19 pandemic. Across the globe, there are notable increases in country government leadership and prioritisation of investments in the digital-health-enabling environment. Today, at least 129 countries have national digital health strategies that outline their priorities and plans; with 27 percent having fully costed strategic plans.¹ Governments are increasingly investing in governance bodies, policy framework, and plans for digital health architectures to advance interoperability. There is also greater attention being paid to person-centred approaches to digital health and how it can support primary care and evidence-based preventative interventions. The balance of power is moving away from donor-driven priorities and investment decisions towards regional and country-led approaches, which creates more space for diverse actors, including the private sector, academia, and civil society. However, many LMICs need to address the gaps in basic infrastructure, workforce capacity building, digital literacy of citizens, enabling policies and regulations, as well as effective health data governance.

This study has identified a number of emerging trends that will shape countries' digital health journeys for years to come. Shifting geopolitics are affecting global health funding flows and could impact digital health for UHC efforts. Many countries and global health stakeholders are grappling with donor funding cuts and are still gauging their impact at the national and local levels. Governments recognise the need to diversify and even reduce reliance on external funding sources and increase domestic resource mobilisation. However, in the short-term, governments will be forced to make difficult decisions about where to spend a smaller pot of money and essential medicines and services may be prioritised.

Technology continues to evolve and is bringing new opportunities to support country digital health transformation. Interest is also growing in digital public infrastructure (DPI) and this approach is an opportunity to leverage sector-agnostic digital services to deliver more integrated, person-centred care. The rapid evolution of artificial intelligence (AI) is making it possible to enhance productivity, streamline workflows, and improve efficiency, which can be harnessed in health financing and social protection programmes. However, to use AI responsibly and ethically, models need to be aligned with local contexts and humans must be in the loop. Stakeholders are also looking at adopting greener, more sustainable technologies where possible.



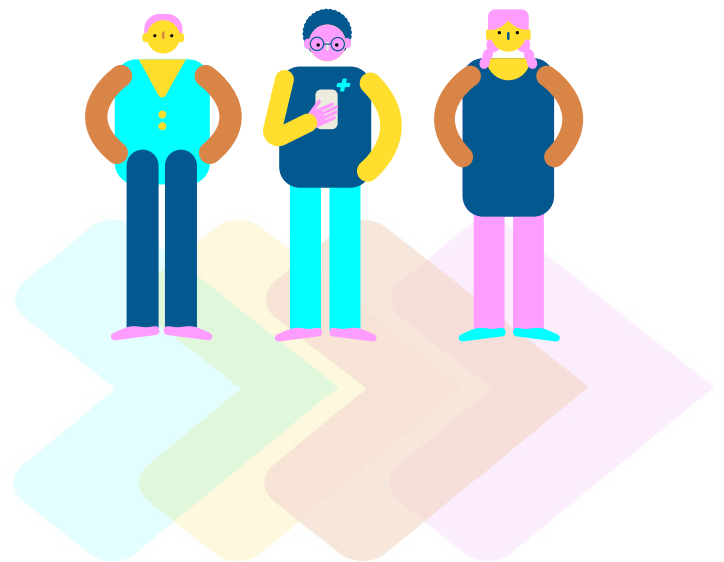
Many LMICs have mixed health systems in which the private sector plays an important role. As a result, calls for stronger public–private partnerships are gaining traction, with many stakeholders actively seeking proven models of collaboration with both private-sector health providers and technology companies. Separately, climate change is having a profound impact on human health and well-being. Recognition of this is opening the door to new partnerships and funding opportunities to invest in data and digital solutions that can help countries maintain resilient health systems in the face of pandemics, natural disasters, and other emergencies.

To advance countries' digital health transformation for UHC efforts, Transform Health has outlined recommended actions for key stakeholders leading up to 2030. These recommendations draw on key learnings and emerging trends to strengthen country leadership, foster collaboration, reduce fragmentation, and align resources towards more sustainable solutions. A summary of the recommendations include:

- **National governments** must increase ownership and investments across the digital-health-enabling environment to develop a thriving and sustainable ecosystem that transforms the health system by improving access and quality of care, improving outcomes, and bringing down out-of-pocket costs.
- **Private sector** healthcare providers, technology companies, and other partners need to contribute to national digital health plans, support the development of market conditions (e.g., regulations, legislation, technical guidelines, standards, and incentives), and co-invest in DPI and basic infrastructure.
- **Civil society and academia** need to advocate for privacy and cybersecurity safeguards in digital spaces, as well as bring a diverse set of voices to hold governments accountable to equitable, rights-based, digital health transformation.

➤ **Funders** must strengthen global coordination mechanisms and co-invest in country-led digital health agendas and the underlying enabling environment to help deliver scalable, interoperable, and sustainable digital health systems for UHC.

A more detailed set of recommended actions will be used to develop the Transform Health's 'Roadmap to 2030 - Health For All in the Digital Age'. The Roadmap to 2030 will set out the milestones we need to achieve as a sector to accelerate the digital transformation of health systems to advance UHC.



II. INTRODUCTION



In 2015, world leaders launched the Sustainable Development Goals (SDGs) that then-United Nations Secretary-General Ban Ki-moon welcomed as “our shared vision of humanity and a social contract between the world’s leaders and the people”.² These goals included a commitment to universal health coverage (UHC) to ensure that ‘all people and communities receive the health services they need, of sufficient quality, when and where they need them and without financial hardship’.¹³

Ten years later, it feels like a very different world. The 2020 COVID-19 pandemic reminded us all of our innate fragility and global interdependence. The rise of populist politics has seen a move away from global concerns, and the war in Ukraine has diverted greater attention to security and defence.⁴ The relevance of multilateral institutions is increasingly questioned and the vision of a ‘shared humanity’ is being replaced by a prioritisation of national interests. In the midst of all these changes, the digital transformation of society is accelerating, though unevenly within and across countries and regions.⁵ Technological developments are offering the promise of scientific discoveries and efficiencies that will solve many of humanity’s problems. They are also raising concerns over the potential for abuse and, according to some, pose existential risks to humanity.⁶

In some parts of the world, progress towards digital health transformation and overall strengthening of country health systems is threatened by donor funding cuts and changing political priorities. The impact of these cuts underscores the need for greater national ownership, more domestic investment, and the adoption of different financing models. We are living through what seems to be an unprecedented moment that calls for reflection on what has been working and what has not, so that we can adapt together and pursue more sustainable approaches that will ensure digital health is contributing to health for all.

This report considers the contribution of digital health to UHC. It explores current trends and identifies key recommendations for different stakeholders leading up to 2030. The findings of this report will inform Transform Health’s ‘Roadmap to 2030 - Health For All in the Digital Age’ that will set out the milestones we need to achieve as a sector in order to accelerate the digital transformation of health systems to advance UHC.



III. METHODOLOGY



This analysis used a mixed methods approach, drawing on qualitative and quantitative data on the current situation and trends in digital health and its contribution to UHC in LMICs.⁷ The analysis drew on data gathered from 116 key informant interviewees and four focus groups, an online survey to measure sentiment among the digital health and UHC sectors, and an extensive literature

review (see Appendix B). A public consultation was held to seek further input and reflections on the draft analysis. The analysis used the PESTLE framework to assess the digital health enabling environment, with a SWOT assessment overlaid to examine the strengths, weaknesses, opportunities, and challenges across the dimensions of UHC.

IV. THE CHALLENGE

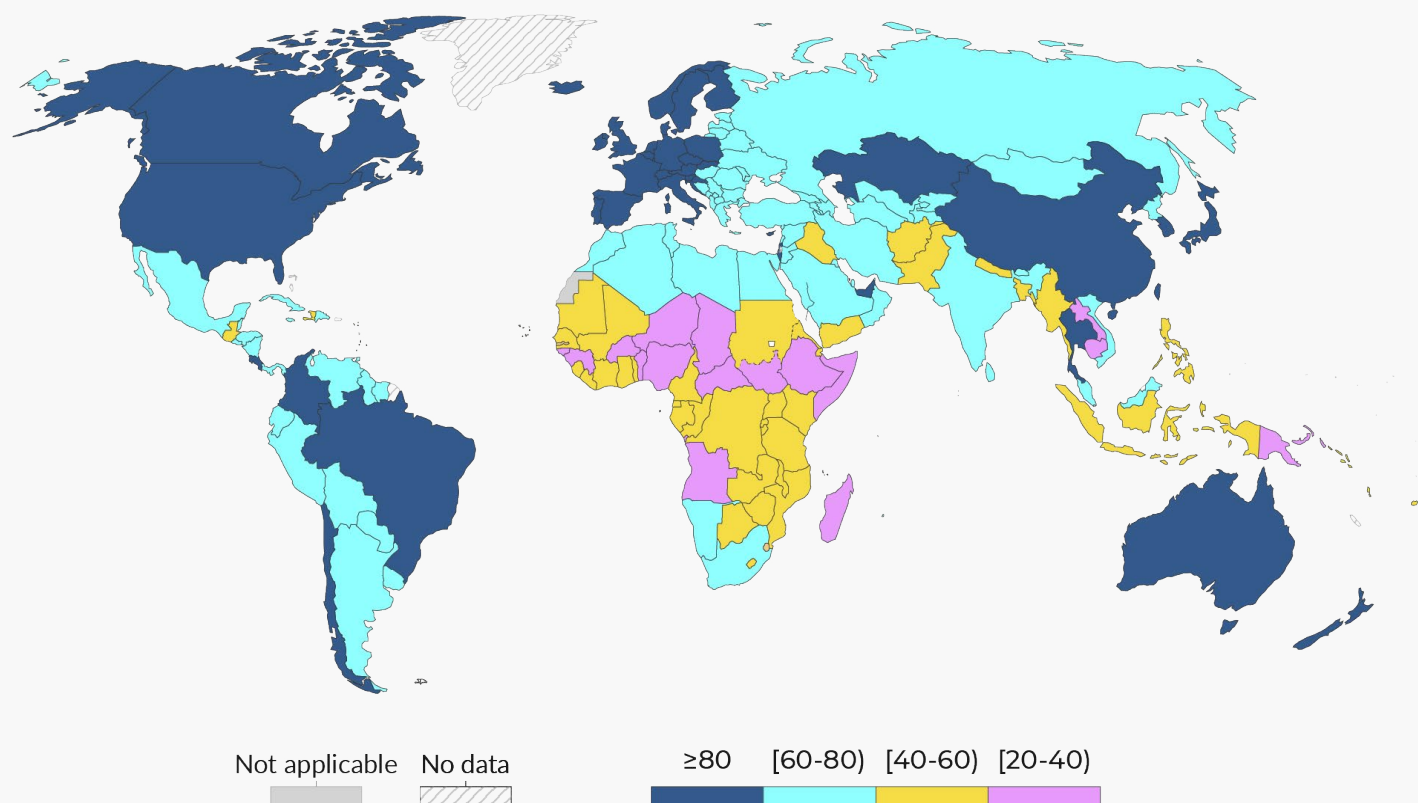
UHC PROGRESS HAS SLOWED



The world is off-track with the goal of UHC by 2030. Currently about 4.5 million people still lack full access to essential health services.⁸ According to the World Bank and World Health Organization (WHO), health service coverage has stagnated since 2015 and there has been little to no expansion of health service coverage. The number

of people incurring catastrophic out-of-pocket health spending increased from 9.6 percent in 2000 to 13.5 percent in 2019, surpassing 1 billion.⁹ In addition, 344 million people were pushed into extreme poverty and 1.3 billion into relative poverty due to out-of-pocket health spending.¹⁰

Figure 1: UHC service coverage index (SDG 3.8.1)¹¹



V. THE OPPORTUNITY

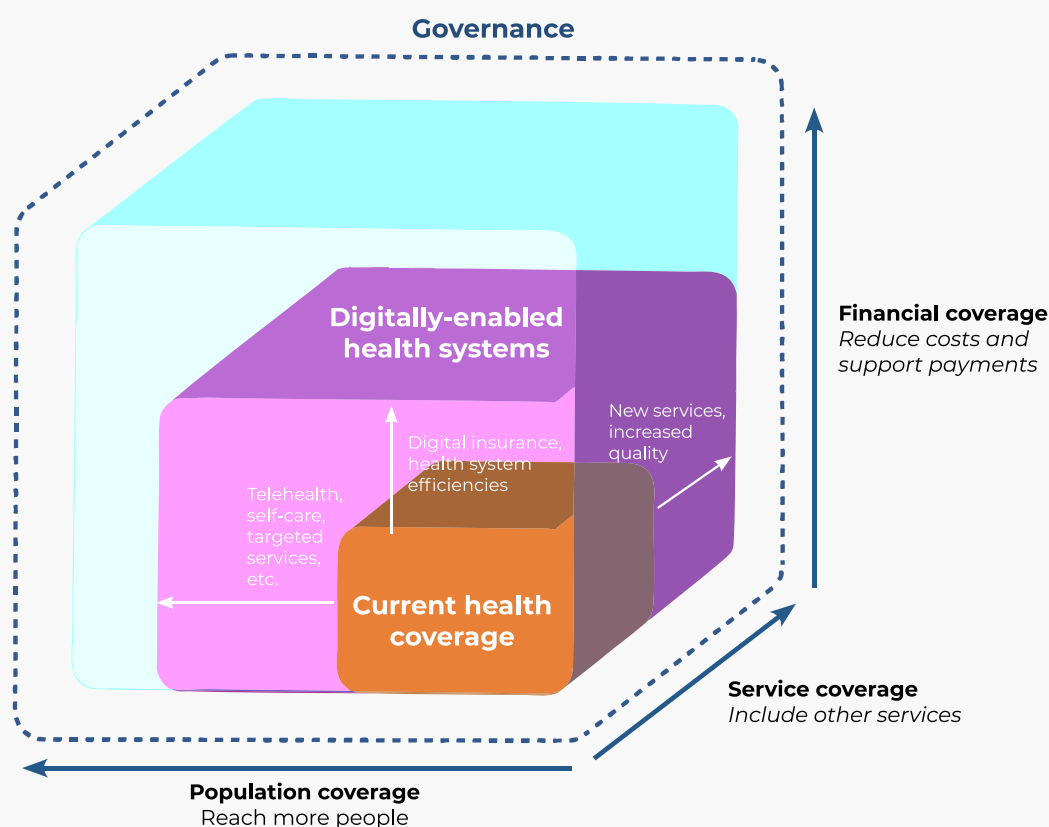
DIGITAL HEALTH IS A CATALYST FOR UHC



Digitally transforming health systems offers a critical opportunity to accelerate progress towards UHC by expanding population coverage, especially to underserved and marginalised communities, improving service coverage and reducing the cost of care (both indirect and out of pocket). When developed and implemented in an ethical and equitable manner, digital health can improve the delivery, quality, and efficiency of care. It can enable more effective system integration, including continuity of care across service levels, drive evidence-based decision-making, reduce

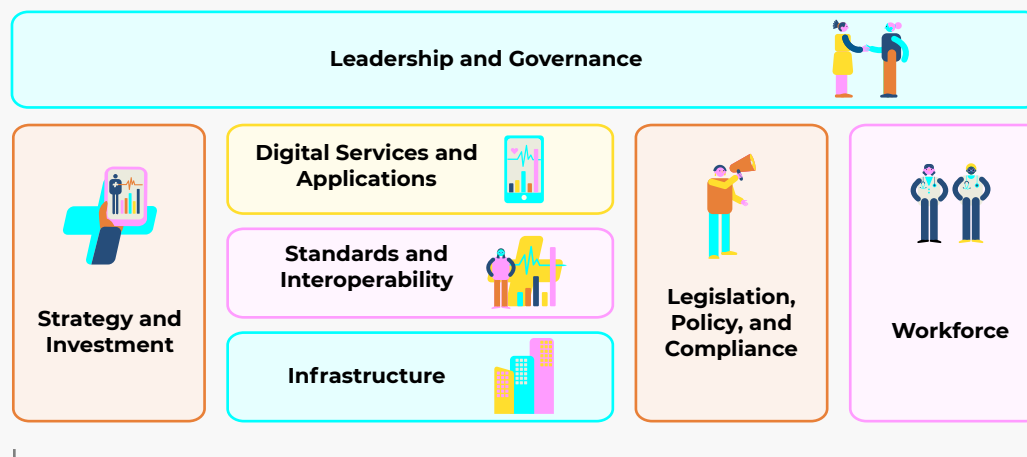
redundancies, facilitate better coordination, and improve budget management. Digital health provides more opportunities for individuals to better manage their own health. In addition, digital technologies and data can strengthen health governance and enable civil society and communities to participate in policymaking. By supporting the different dimensions of UHC, digital technologies and data can bolster public health responses and build resilience against future health threats.

Figure 2: How digital technology and the use of data can support the different Digital Dimensions of UHC¹²



Effectively digitising a country's health system requires investments in the human, institutional, financial, and technological aspects of the

enabling environment that underpins sustainable transformation.

Figure 3: The building blocks of a country digital health enabling environment¹³

These are interrelated components that touch on human, institutional, financial and technological dimensions.

With sufficient funding, robust infrastructure, clear legislation, and strong institutions, digital solutions can strengthen health systems and expand access to care. To ensure this, leadership and governance need to be country-led, and include a strong national coordination mechanism that is adequately resourced and technically competent. Regular stakeholder engagement and oversight to direct investments in digital health that align with national health goals are critical. Country leadership and governance also include higher level political leadership and accountability to ensure digital transformation is part of a broader national commitment. Country-led strategic planning and budgeting are critical to organising and prioritising long-term investments and in creating an enabling environment.

The capacity of the national government to hire and retain skilled persons with technical expertise to support and implement national strategies is needed for sustainable and effective digital transformation. This needs to be accompanied by skilled persons and political champions focusing on creating an enabling environment. This includes developing the right legislation and regulation to ensure budgets cover the costs associated with digitalisation – including the maintenance costs – ensuring effective oversight and management.

The adoption and use of data and exchange standards enable interoperability of data across unaffiliated entities and digital health systems. These standards can contribute to a unifying architecture, which is necessary for data to follow

the patient wherever they seek care. In addition, the use of standards supports the reuse of data and reduces the potential for duplication and fragmentation of data and systems. Cohesive and sustained investments in the physical infrastructure (e.g., electricity, connectivity) and hardware assets (e.g., servers, devices) are essential to providing access and operating digital technologies.

Recent projects highlight the evolution of technology and benefit of digitally connecting last-mile facilities and communities through empowered community health workers (CHWs). In India, the national telemedicine platform eSanjeevani, delivered more than 276 million consultations to date, almost 300,000 consultations daily.¹⁴ In Kenya, the government adopted the electronic Community Health Information System (eCHIS) and equipped newly professionalised CHWs with smartphones/apps for household registration, referrals, and reporting. More than 106,000 CHWs are now connected with the centralised digital health systems, and able to access information and advice as well as upload data.¹⁵ This is driving up access and quality care at the community level. In Ethiopia, the government adopted eCHIS in 2018 and has experienced good initial results, including improving data quality, better service delivery, and enhancing maternal continuum of care. However, weak infrastructure, limited skills and support, and governance gaps hindered the further adoption and use of eCHIS.¹⁶

VI. GLOBAL AND REGIONAL

RECOGNITION OF THE NEED TO DIGITALLY TRANSFORM HEALTH FOR UHC



In 2020, governments worldwide affirmed digital health's role in achieving UHC by adopting the WHO Global Strategy on Digital Health 2020-2025 at the 78th World Health Assembly.¹⁷ The strategy sets out governments' commitment to "improve health for everyone, everywhere by accelerating the development and adoption of appropriate, accessible, affordable, scalable and sustainable person-centric digital health solutions".¹⁸ It aims to guide nations in developing or strengthening digital health investments by ensuring these efforts take place within a coordinated strategic planning process.

To support countries on this journey, the WHO and other stakeholders have released a series of initiatives and resources, including the Global Initiative on Digital Health that includes a Toolbox,¹⁹ which guides sustainable national digital health transformation.²⁰ The WHO has extended the current Global Strategy on Digital Health to 2027, and is planning to refresh it for the coming years. In 2024, governments adopted the Global Digital Compact during the Summit of the Future,²¹ setting out a comprehensive global framework for digital cooperation and governance of AI. In addition, many have signed the Principles of Donor Alignment for Digital Health. These 10 principles are meant to guide investments in digital health by committing signatories to align with national digital strategies, to work collaboratively towards national plans and strategies, and by developing global goods.²²

Despite these commitments, funding for digital health remains insufficient, uncoordinated, and poorly aligned and prioritised. This is undermining the potential for leveraging digital health to accelerate UHC. One of the challenges is an obscure funding landscape. There is currently a lack of clarity around what is being funded for digital health specifically, how, and by whom, leading to digital health investments not being fully optimised. Digital health funding is not routinely tracked as part of health system and UHC monitoring. There is no agreed-upon classification for digital investment as part of existing funding tracking mechanisms (such as the Organisation for

Economic Co-ordination and Development DAC Creditor Reporting System and National Health Accounts). Moreover, there is no standard measure of what should be included in the definition of 'digital health'. This lack of clarity poses challenges to: a) quantifying funding needs; b) making the case for resources; c) ensuring investments are coordinated and aligned with national priorities; and d) holding donors and decision-makers accountable for funds reaching the priorities and populations in need.

The 2024 G20 Health Ministers Declaration,²³ under the Brazilian presidency, recognised the need to improve tracking of digital health investments and called for action. During the second G20 Health Working Group meeting, a number of organisations - including the Organisation for Economic Co-ordination and Development (OECD), WHO, World Bank, USAID, and UNICEF - supported the need to strengthen coordination, including developing tools to help track digital health expenditure, and leveraging existing tracking and reporting mechanisms.



VII. THE CURRENT SITUATION

DIGITAL HEALTH AS A CATALYST TO UHC – A NATIONAL PERSPECTIVE

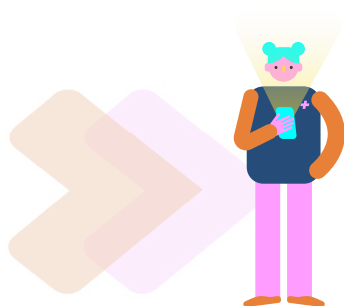


Political leadership – a need to have, not a nice to have



According to a UHC2030 review of 153 countries conducted in 2023, government commitments to UHC have been growing over the past few years, with 89 percent making UHC a central health sector goal and 41 percent having enacted UHC laws.²⁴ According to UHC2030, “between 2019 and 2021, the number of countries expressing commitments to UHC consistently increased (from 25 to 46) and the total number of country commitments to UHC also increased (from ~250 to ~600)”.²⁵

There has also been a notable increase in governments prioritising and investing in digital health. The prioritisation of digital health has been a growing trend in recent years.²⁶ Data from 2023 indicates at least 129 countries now have national digital health strategies; with 27 percent having fully costed strategic plans.²⁷ Several countries have enacted legislation that provides the necessary policy framework to support digital transformation, such as Kenya’s Digital Health Bill of 2023, Brazil’s telemedicine regulation (Federal Law n. 14,510/2022), and India’s Digital Personal Data Protection Act 2023.^{28 29} According to the WHO, 130 countries have performed digital health maturity assessments using the Global Digital Health Monitor.³⁰ Most countries are at maturity level 3 of 5 across the seven components of the digital health enabling environment, with workforce capacity notably lagging behind.^{31 32}



Kenya spotlight

In alignment with political commitments, the Kenya Universal Health Coverage Policy 2020 – 2030 aims to ensure that all Kenyans access and receive essential quality health services without suffering financial hardship. These services include promotive, preventive, curative, rehabilitative, and palliative health services.³³ To achieve these policy goals, the Ministry of Health has taken a leadership role and is investing in digital transformation. Kenya’s efforts to prioritise digital health transformation started with the Health Policy 2012 – 2030, further defined in the Kenya National e-Health Strategy 2011-2017.

To enhance digitisation, the government developed the Digital Health Superhighway. This incorporates the electronic Health Information Exchange for sharing data between common resources, such as shared health records and the client registry, health facilities, list of health professionals, and various dictionaries, among others. Acknowledging that data governance was crucial for the implementation of the superhighway, the country developed relevant policies and regulations to ensure digital technologies are used ethically, securely, and effectively. In 2023, the Government passed the Digital Health Act (2023), which established the Digital Health Agency (DHA), charged with managing digital health systems.³⁴ The DHA has since partnered with a consortium comprised of three private companies (Safaricom, Apeiro Limited, and Konvergenz Network Solutions Limited) to build the Integrated Health Management Information System to provide data for informed decisions across all pillars of the health system, including human resources, service delivery, and healthcare financing.

The Government of Kenya is making substantial progress towards UHC by 2030, establishing a solid foundation for digital health adoption and creating a legislative framework to guide

the rapid transformation of the health sector.³⁵ These investments directly support efforts to strengthen UHC under the Taifa Care programme by improving access to high-quality care and ultimately aim to lower costs.³⁶



“To fully utilise advanced technology to improve the performance of the health sector, it is important to invest in the acquisition of the digital health infrastructure and to address the training and behaviour change of the workforce.”

Dr Ayub Manyà, Director of Health Financing, Digital Health Policy and Research



The combination of a political commitment to both UHC and digital health has led to a strong governance framework and provides a window of opportunity to accelerate the digital transformation of the health system.³⁷ Country leaders recognise the potential of digital health to optimise resources, improve health service delivery, and achieve better health outcomes.³⁸

Rwanda is a good example of a country that has committed to achieving UHC, while prioritising a digital health transformation agenda. The national health insurance system, Mutuelle de Santé, has reached over 90 percent coverage.³⁹ A political commitment to UHC led the Government of Rwanda to combine a successful community-based health insurance scheme with investments in digital health, including the adoption of telehealth, mobile money, and more.^{40 41}



The Democratic Republic of Congo (DRC) spotlight

Starting in 2019, the Government of the DRC brought together a diverse and inclusive set of government partners and experts from different backgrounds to develop the Universal Health Coverage National Strategic Plan 2019 – 2030, which outlined a roadmap for implementing UHC. Following the strategy, the president established the National Council of UHC, which includes a digital health agency, to steer the UHC agenda. While the country has faced challenges around governance, fragility of the health system, and limited domestic resources, they have worked to make progress on UHC. In 2023, adjustments were made to the public health law for UHC, and the country took a significant step forward, launching a free maternity and newborn care health insurance scheme which they aim to gradually scale across the country. The government recently announced plans for the gradual implementation of compulsory health insurance to improve access for all, as well as a 2 percent tax on imported goods to fund UHC. This work is happening in coordination with the digital health team who are working on an electronic medical record system, as well as on a national digital health architecture and identity services, needed to support roll-out of the health insurance scheme.

“Digital health has a key role to play in our UHC goals, and we have been working in collaboration with the digital health agency. We need to use the data in the future for all things related to health.”

Dr Polydor Mbongani Kabila, DRC National Coordinator for UHC



Interviewees noted that country leaders are speaking with greater confidence about the power of digital transformation, creating momentum for stronger collaboration, innovative solutions, and faster progress towards digitally enabled health systems. Recent country assessments reinforce these perceptions indicating that digital health is consistently a top priority and viewed as a means to advance other areas, such as primary healthcare.⁴²

However, these commitments are not yet translating into concrete actions.⁴³ Political commitment in times of plenty (such as when resources are provided by donors) are implemented more rapidly. Political resolve manifests itself in times of hardship, when decision-makers have to dig deep, make painful political choices, and find the resources to drive priorities forward. It is still unclear which countries and which leaders will show this resolve to digitalise their health systems to accelerate UHC, given recent funding cuts.

In some countries, government mismanagement of resources and corruption is fuelling mistrust and undermines statements of commitment.⁴⁴

⁴⁵ For example, in Zambia, there is an ongoing issue with medical supply theft.⁴⁶ Meanwhile, it is estimated that 1 in 10 medicines in LMICs in Sub-Saharan Africa are falsified or substandard, and 53 percent of all antimalarials sampled in a study in South East Asia were substandard.⁴⁷ While the adoption of digital systems for drug procurement can reduce incidences of corruption and drive down costs, these will require high-level political will and support to implement, given the vested interests that are often involved.⁴⁸ Civil society has an important role to play in ensuring governments digitalise their healthcare systems and make data available to ensure transparency and accountability. Parliamentarians also have a critical role to play in strengthening accountability and oversight through mechanisms such as audit committees, procurement scrutiny, and public hearings.



Country leadership and strategies are critical – in practice, not in principle

Country ownership and leadership has long been recognised as necessities in the context of international development.⁴⁹ Many assessments and learnings have identified the importance of country ownership of digital health transformation as key to its success.^{50 51 52} Interviewees agreed that strong political leadership in digital health translates into the establishment of key building blocks, including skilled teams and champions, delegated authority, strategies, good governance, and enabling regulations to create a sector able to withstand political shifts and funding fluctuations. There are a growing number of positive examples of countries taking more ownership of their digital health transformation. According to the University of Oslo, several countries have invested in locally owned and operated District Health Information Software 2 (DHIS2).⁵³ implementations. As a result, DHIS2 has remained online and continues to be used in countries such as Ethiopia, Bangladesh, and Nigeria⁵⁴

Ecuador spotlight

Ecuador's national digital health transformation agenda dates back to 2012, when the Ministry of Public Health (MSP) launched the Ministerial Agreement 1190-2012, endorsing the use of Health Level Seven (HL7) standards. This was followed by Agreement 0009-2017, which supported the adoption of HL7 standards across all institutions of the National Health System.⁵⁵ These agreements advanced Electronic Health Record (EHR) management and established a technical board to oversee digital health projects. Then the government released the Digital Health Agenda 2023-2027, the Data Protection Act 2023 and the National Policy for the Digital Transformation of the Health Sector 2024-2034, which lay the foundation for secure and efficient information management in healthcare, thereby facilitating the development of a more robust and reliable digital health ecosystem. Together, these policies and legislation form the legal framework that underpins the sustainability and interoperability of Ecuador's health information system. To accelerate this work,

the Ministry of Health collaborated with the Pan-American Health Organization (PAHO) on a comprehensive IS4H maturity assessment and identified key achievements as well as challenges, such as advancing interoperability and investing in digital infrastructure.^{56 57} The country has also adopted strategic plans such as the Ten-Year Health Plan 2022-2031 which emphasises the integration of digital technologies into health systems.⁵⁸ The National Policy for the Digital Transformation of the Health Sector 2024-2034 and the Digital Health Agenda 2023-2027 include several key initiatives, such as the implementation of EHRs, designed to provide seamless access to health information and telehealth services, while ensuring data security and privacy.⁵⁹ The Ministry of Health is working in collaboration with partners to advance these initiatives, as well as a defined digital health architecture. These investments in the digital-health-enabling environment are establishing the necessary conditions for a sustainable and thriving digital health ecosystem that can help Ecuador advance UHC goals.



“We know what we have to do, and we are working to prepare the health sector for EHRs, telemedicine and interoperability for UHC so we can improve quality, equity and access to care.”

Adriana Abad, Directorate of Information and Communications Technologies, Ministry of Health



Governments have not always taken full ownership of digital health strategies or had sufficient visibility of the solutions deployed by partners on their behalf, which can undermine long-term sustainability. Well-documented examples of the failures and siloed approaches include Uganda's mHealth moratorium and fragmented Ebola response efforts, many of which have identified the importance of country ownership of digital health transformation.^{60 61 62}

Tanzania spotlight

Tanzania's early digital health efforts were marked by numerous pilot programmes that struggled to scale, prompting recognition of a need for a national approach. In 2009, the Ministry of Health and Social Welfare initiated a process to develop its first formal digital health strategy, resulting in the National e-Health Strategy 2013-2018.⁶³ The strategy outlined plans to leverage technology to deliver a safer, better connected, and more sustainable healthcare system.⁶⁴ Subsequent initiatives, including the Data Use Partnership, supported development of a costed roadmap, and workforce capacity building.⁶⁵ However, stakeholders were challenged by competing interests between government entities over EMR systems. The government responded by shifting its focus towards developing national technical standards and a digital health enterprise architecture to enable interoperability. This direction was reinforced through the National Digital Health Strategy 2019-2024 and Tanzania Health Enterprise Architecture 2020, which outlined Tanzania's approach to integrating digital solutions within the health system.^{66 67} These documents highlighted priorities such as telemedicine, EHRs, and health management information systems (HMIS). However, governance structures for digital health remain fragmented and further coordination is needed across the various stakeholders, including government ministries, NGOs, and private-sector players.

The architecture blueprint has since guided digital health system planning, designing, developing, rolling out, and supporting and maintaining in the Tanzanian health sector. Today, more than 70 digital health systems comply with national technical standards and are exchanging data through the interoperability layer, namely the Health Information Mediator (HIM). The government now discourages vertical, siloed digital health investments and prioritises aligning digital health systems with technical standards to enable a unified, interoperable digital health ecosystem.



The digital transformation of health systems is a complex, time-intensive journey that requires a holistic approach to ensure sustainability and scale. It involves much more than implementing new solutions. It requires investments in the enabling environment, ensuring the right levels of political commitment and leadership, the development of integrated strategies and costed plans, investment in infrastructure, and workforce capacity. Critically, these investments and commitments need to be sustained over time. Progress is highly dependent on long-term government commitments and funding. Unless the enabling environment drivers address the foundations, individual investments are likely to remain fragmented and unsustainable.

Investment in digital health transformation



Digital health transformation cannot happen without adequate funding. Unfortunately, funding for digital health solutions does not always consider all the costs involved in developing, managing, adopting, and scaling solutions within existing health systems. Most governments and donors structure their budgets around specific health system interventions or projects, and often neglect the necessary investments in institutional capacity and the enabling environment that will create the conditions necessary for successful adoption. This creates a piecemeal approach that makes it very difficult to identify and track the amount of funding invested or needed to digitalise health systems across different contexts. Several useful tools for calculating the total cost of ownership have emerged to help stakeholders estimate digital health project costs.^{68 69 70}

Transform Health conducted research into the cost of nine investment priorities that are necessary for LMICs to digitalise their health systems. Based on modelling conducted in 2022, it was estimated that an investment of USD 12.5 billion is needed for the nine priority investment areas in 78 LMICs over the next five years. This translates to an average of USD 2.5 billion a year, or USD 0.60 per person per year, and represented approximately 1 percent of the annual health spending for these countries at that time. Health infrastructure accounted for approximately 75 percent of the total projected investment. However, the model only included health sector costs (health record digitisation, wide and local area networks within

facilities, and information and communication technology equipment needed at facilities), not the general investment required to increase digital connectivity or usage among the population, which must also be prioritised. Other priority areas such as operational costs, which include ongoing expenses for maintenance, equipment replacement, refresher training, software licensing, project management, and help-desk support – and which make up half of the total projected costs – are often not fully accounted for in current costing analyses and are absent from most data sources.⁷¹

Many countries still lack detailed costed plans to estimate financial needs associated with executing their national digital health strategy. This information is necessary to identify funding needs and funding sources, and can be used as a tool to mobilise additional resources. Costs can vary based on context-specific considerations, such as human resources, software, infrastructure, training, and change management, monitoring and evaluation activities, the life cycle of systems (design/configuration, development, pilot, implementation and scaling, operations and maintenance), and more.⁷² It is important to have review cycles in which cost estimates are assessed against realities to help with improving accuracy over time. In addition, this can bring greater transparency to budget planning, tracking, and can help donors more effectively align and prioritise investments.



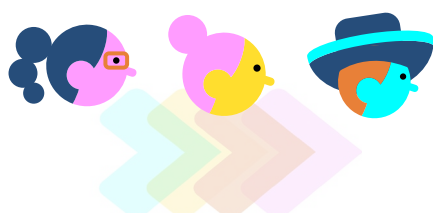
Good governance and accountability



National coordination of stakeholders and effective governance are necessary to achieve progress. Unfortunately, the costs of management and coordination for digital transformation of the health sector, particularly for multisectoral approaches (touted as best practice), are often overlooked, not available, and not covered. The burden of management and coordination often falls on already overworked health ministry staff, who are unable to effectively fulfil this role within a complex and growing sector. Many LIMCs tend to struggle with multisectoral coordination due to weak institutional structures, poor management, lack of delegated authorities and mechanisms, and even fragmentation within the health sector.⁷³ This situation continues to impact health system performance and its ability to adopt and integrate new technology at scale and in a sustainable manner.

However, there are examples of countries working to strengthen governance structures and provide space for strong cross-ministry and multisectoral engagement. In Suriname, the Ministry of Health prioritised engagement with private-sector health providers and the medical association in their governance and stakeholder engagement plans.⁷⁴ Through this engagement, the Ministry of Health learned about prior challenges with adoption of EMRs and the need for financial incentives and technical support. As a result, they designed an approach to work collaboratively with the private sector to address gaps.⁷⁵ Suriname's approach served to build trust across both public and private sectors, and increase the likelihood of sustainable uptake and impact.

The Republic of Mauritius designed a multisectoral governance structure that includes the Ministry of Information Technology, Communications and Innovation and the Ministry of Finance, Economic Development and Planning.⁷⁶ This structure brings together diverse expertise and resources to support the digitalisation of the health system, and aligns with broader government efforts and whole-of-government ownership.



Ethiopia is another good example of a country that has recognised the need for stronger coordination of the digital health sector. The government established a donor alignment group to provide a space for donors to discuss priorities, plans, and to align funding to country needs and strategies.⁷⁷ This was done in an effort to reduce fragmentation of data, systems, and investments, and to provide greater transparency, reduce the burden of coordinating donors, and give the government more control over investment decisions.

Enabling policies, laws, and regulations



In many countries, policies, laws, and regulations have not kept pace with the rapid evolution of digital health systems, including data protection and cybersecurity. Digital health policy gaps and poor translation of policies into practice limit progress towards digitalisation, with health sector stakeholders often struggling to understand the practical implications of policies for their daily workflows. These gaps represent a major risk; without adequate protections, individuals may be discouraged from using digital health systems, undermining the promise of UHC. Without a clear policy and regulatory environment innovators, the private sector and others may consider the business risks of an unpredictable environment too high for investment. Parliamentary committees and the legislative process are critical to ensure laws are adapted to emerging technologies, including AI and cross-border data governance.

"If we do not invest in data infrastructure and foundations, we are at risk of higher cost health systems with poorer outcomes. There is significant evidence that people with access to their health information will achieve better outcomes and cost the health system less. We are missing a massive opportunity if we do not invest in these foundations."

Eric Sutherland, OECD



Equity considerations must be hardwired into such legal frameworks. Recommendations from experts point to the need for these efforts to be fair and inclusive across a broad spectrum of stakeholders, including civil society, youth, women, older adults, people with disabilities, and marginalised or hard-to-reach groups.⁷⁸ Kenya's Digital Health Act of 2023, serves as an example for other countries.⁷⁹ Establishing clear legal frameworks for health data use, privacy, digital literacy, and the design of a country's digital health system, is essential to achieving UHC as these provide a foundation of trust and accountability. Without a clear legal framework, countries risk fragmentation, inequities, misuse of health data, and the undermining of confidence and trust. A transparent legislative and regulatory environment provide greater trust and predictability for planning and investment, helping attract support from international donors and the private sector, while clarifying expectations and incentives.

Many countries are discussing their policy and legal gaps, but few have fully addressed these. Even where data protection policies and laws exist, their implementation is often weak. A common issue arises when consent is given for one system, but data is then shared with other systems, creating data protection risks. Many actors require support to navigate data protection and ensure proper implementation. Legislative and regulatory changes also tend to happen more slowly than technology change and adoption, though the emergence of AI has renewed a sense of urgency to develop responsive regulatory frameworks.

The rapid rise of AI introduces new regulatory dilemmas: liability for errors, transparency of algorithms, and the risk of bias. Countries such as Nigeria, Kenya, Rwanda, and Pakistan have already developed AI policies, but implementation remains uneven, and few frameworks address cross-border data sharing.^{83 84 85 86} Without coordinated action, the benefits of AI for health may become unevenly distributed and may reinforce and deepen existing health inequities and social exclusion.

Brazil spotlight

Brazil's government enacted Federal Law No. 14,510 in 2022, based on strong evidence supporting the use of telehealth for the provision of remote clinical and non-clinical health services. The law defines and authorises the use of telehealth services nationwide as part of the country health system in both the public and private health systems.^{80 81} It emphasises data privacy and digital responsibility, mandates informed patient consent, and requires compliance with the general data protection law. This law mandates that data controllers, including telehealth providers, ensure secure data handling and that breaches be reported to the National Data Protection Authority.⁸² This legal foundation allows healthcare providers to expand access to health services, improve the quality of care and patient engagement, and reduce costs for patients.



"We are at the cusp of great changes in the way health is being administered and delivered. At the heart of this change is the capacity of technology to process data on and about us at ever increasing speeds and volumes. Unless clear frameworks are developed that set out the way these systems can use our data, we risk a future that moves us away from health equity and inclusion. We need clear and strong governance of health data to ensure the digital transformation of health includes everyone."

Mathilde Forslund - CEO - Transform Health



Legal frameworks or protocols are needed to govern the management and use of data across national borders. As health data increasingly crosses jurisdictions, countries must collaborate on common standards and protections. Opportunities exist to accelerate progress and create a virtuous circle in which countries can complement workable digital health systems and create an enabling environment that can act as an example to others. Initiatives such as the Pan-American Highway for Digital Health developed by the Inter-American Development Bank and PAHO in Latin America are positive examples of regional agreements to enable secure and beneficial cross-border data exchange.⁸⁷ These institutions have been working with national governments to develop common standards, legal frameworks, and interoperability protocols that ensure data exchange is secure, ethical, and aligned with national and regional priorities. Emerging best practices around data governance can help countries address these gaps.⁸⁸

Transform Health has been working with partners, including governments, on a draft Model Law, which provides a tool for governments to develop or update their legislation on health data governance, and the foundation for a global framework.⁸⁹ The coalition also developed and tested a set of tools and technical support packages to assist governments with implementation.



Model Law on Health Data Governance

A blueprint for strengthening national legislation

Basic infrastructure is still a major gap



Basic infrastructure gaps continue to hinder the adoption of digital solutions across the health system in many countries. This can vary from limited access to devices, connectivity barriers, a shortage of servers, and unreliable electricity – particularly in remote areas. This impacts equity as marginalised and hard-to-reach communities are also the least digitally connected, widening disparities in care and outcomes. Some donors consider financing basic infrastructure and equipment less attractive as it can significantly increase costs and does not directly demonstrate impact. Further, investments in these types of interventions are not always maintained and can quickly become a sunken cost. A number of governments have stated their aim to take more ownership and management of digital infrastructure, including national data centres.⁹⁰ This can strengthen sovereignty over critical assets, and is to be welcome if this commitment is backed by sufficient technical and financial resources. However there are concerns that without the latter, data protections, safeguards, and ongoing maintenance will take place.

As donor funding for digital health infrastructure decreases, governments may need to look to the private sector to help address infrastructure gaps. They also need to bolster their internal asset management plans to maintain infrastructure that is a dependency for digital health systems, as well as ensure privacy and security/cybersecurity protocols and protections are in place.



From silos to more integrated and interoperable approaches



The digital health field has for a long time been characterised by a proliferation of small-scale pilots that rarely expanded nationally, burdening the health workforce who are required to use multiple systems instead of benefiting from integrated solutions.

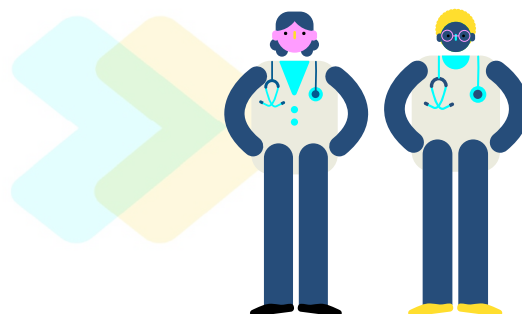
Many countries continue to struggle with siloed approaches. T and the technological legacy they have left behind.⁹¹ Uganda's health moratorium, fragmentation of Ebola response efforts, and early telemedicine efforts in Nepal are examples that have resulted in many learnings.⁹²⁻⁹³ These examples have reshaped the way digital health interventions are conceived and implemented in many contexts. Interviewees agree that among governments, donors, and other partners, there is a noticeable shift to more coordinated approaches that better align digital tools to country strategies and support more integrated, person-centred systems.

There is also a significant push to develop digital health architecture that is aligned to country needs and readiness with technical specifications and standards to connect digital health applications and optimise investments.⁹⁴ Interoperability is highly valuable but is also complex and technical, requiring ongoing updates to standards, monitoring of application programming interfaces or APIs, capacity building, governance, coordination, testing, and guidance development. These efforts are designed to support more sustainable and interoperable investments that can provide more value and return on investment. Countries such as Brazil, Ethiopia, India, Indonesia, Kenya, and Rwanda are demonstrating progress in implementing their respective digital health architectures.

Given donor funding cuts, it is increasingly important for LMIC governments to reduce fragmentation and duplication, scale evidence-based and interoperable solutions, and responsibly sunset or merge others while preserving and migrating historical data as appropriate. There also needs to be transparency around the rules of the road, such as policy guidance and technical specifications for standards and interoperability, so private-sector innovators understand how to integrate or align their solutions to national health strategies.

Indonesia Spotlight

In Indonesia, the Ministry of Health has made significant progress in addressing fragmentation of digital health applications. Previously, more than 400 digital health applications were in use. These created fragmented data, duplicative reporting for health workers, heavy oversight burdens for the Ministry of Health, and limited data access due to poor interoperability. To address these challenges, the Ministry of Health led the development of a digital health strategy, established a governance group, and developed a blueprint for the SATUSEHAT interoperability platform. By clearly defining requirements and standards, and consolidating digital health applications into a few integrated microservices, the SATUSEHAT platform streamlined primary and secondary care management, reducing complexity while improving convenience for patients and health workers.⁹⁵⁻⁹⁶ This has created a more coherent ecosystem of integrated digital health applications that are connected through the unified interoperable platform. Health facilities are being onboarded in a three-phase process that includes registration, connection, and integration. As of August 2025, out of 124,340 identified health facilities, 52,254 (42 percent) are registered, 50,599 (40.69 percent) are connected, and 38,073 (30.62 percent) are integrated.⁹⁷



Workforce capacity – a pressing need

Many countries do not always have dedicated digital health programmes and teams with the technical knowledge, skills, and level of authority to coordinate and manage the digitalisation of the health system. Governments often experience challenges attracting and retaining skilled professionals due to low salaries (among other factors). Interviewees noted common skill gaps in ministries of health, including technology product managers, standards, interoperability experts, and data scientists. There are also gaps in knowledge and understanding among legislators, that if not addressed may lead to weak or inadequate legislation to govern the digital health ecosystem and protect people's rights.

The lack of qualified and experienced digital health professionals impacts procurement and purchasing decisions, which often occur without input from relevant technical experts, leading to digital health systems that may not meet the needs or requirements of a country. At the facility level, upskilling of data stewards, coders, records management, and other back-office staff, is often neglected and incentives for technical staff to remain in the public sector are weak. As a result, technical expertise is often concentrated in the private and not-for-profit sectors. In some contexts in which digital health programmes are largely donor funded, the “client” becomes the donor, as accountability ultimately lies with them, even if the beneficiary is the national health system. Given the sharp reduction in donor funding, a gap opens up and the question arises regarding who is now “the client”, who will be paying for digital health programmes, and where will accountability ultimately lie?

In many countries, a large proportion of healthcare costs (40 percent) are borne by the patients as out-of-pocket expenditures.⁹⁸ Could we therefore anticipate a situation in which the private sector steps in to cover the gaps left by donors? Might this mean a transition of skilled technical and health workers from the not -for-profit and public sectors into the private sector, as they are able to respond in an agile manner to the gap in the market? Or will public-sector spending increase

to cover the gaps left by donors, leading to a migration of talent from the private and not-for-profit sectors towards the public sector?

At the time of writing, it is too early to tell; however, currently weak incentives and burdensome bureaucracy in many countries are deterring digital health innovators from entering the public health system, contributing to a brain drain as talent seeks opportunities in the private sector or abroad. The decisions governments make in the coming months and years will be critical in determining the shape and composition of their health sector, particularly in relation to digital health.

“The capacity needs of the health workforce are multifaceted given the rapidly evolving developments in both digital and health technologies. Countries especially LMICs often do not have defined competencies and career pathways for digital-in-health roles. The investments on capacity-building of the workforce needs to be sustained as well as sustainable and appropriate to the country context with focus on Governance, Architecture, Program Management, Standards and Interoperability.”

Jai Ganesh Udayasankaran, AeHIN



CHWs are critical to the health workforce and a key resource for many countries on the path to UHC.⁹⁹ Recognising their vital role in advancing UHC, some countries have been implementing programmes to digitally enable CHWs. Research shows that CHWs are embracing digital tools and are increasingly connected to the primary healthcare system through technology.¹⁰⁰ However, costs of obtaining and using a device can be a barrier, and CHWs are often underpaid or unpaid.¹⁰¹ Many of the programmes aimed at digitally enabling CHWs are donor funded. It remains to be seen whether these programmes will survive without this external support.

In recognition of workforce gaps, global, regional, and country stakeholders have been working with ministries of health across many countries to invest in strengthening health workforce capacity. For example, in 2009, Sri Lanka launched a health



informatics master's programme to train local health workers in the skills needed to operate DHIS2 systems.¹⁰² To date, more than 200 doctors have graduated from the programme, and many have gone on to serve in the Ministry of Health at both national and district levels.¹⁰³ Transform Health has also been working with universities and accreditation authorities in Indonesia and Ecuador to develop digital health curricula and teaching modules to ensure the incoming workforce is both skilled and competent in the use of digital tools and technology.¹⁰⁴ However, more investments in workforce development are needed to keep pace with the rapid changes across the system. Capacity-building for legislators is also needed to ensure informed lawmaking, oversight, and budget decisions in digital health and AI.

Digital literacy can help patients access care



Although digital technology is increasingly reaching entire populations, there is comparatively less investment in digital literacy programmes to enable citizens to access health information and services. It is incumbent upon ministries of health and partners to inform citizens about why digital health matters and to guide them through the transition to a digital health system. Low levels of investment in digital literacy programmes leads to weak public demand and use of these services. Experts point to the need for more inclusive, user-centred design with various groups, including individuals with disabilities, older generations who often have more complex medical needs, and young people.^{105 106} These groups need to be engaged so they better understand their needs, their rights, and are able to co-create, test solutions, and build mechanisms for feedback that will ensure more responsive systems.^{107 108} These interventions will ensure the digital transformation of health systems is patient-centric and that people are aware of and confident about using digital health solutions as they come online.

A study in Sub-Saharan Africa found that digital education tools are showing promise, reaching adolescents with information about sexual and reproductive health.¹⁰⁹ to accelerate this trend by enabling more strategic use of diverse datasets to support health information services. For example, in Mumbai, the Myna Mahila Foundation developed the AI chatbot, Myna Bolo, leveraging ChatGPT to provide personalised reproductive health advice directly to women.¹¹⁰

"In Lebanon, we have been working on the Gamification, Artificial Intelligence, and mHealth Network for Maternal Health Improvement (GAIN MHI) project, which integrates mobile messaging, gamified learning, and AI to improve the uptake of antenatal care services among disadvantaged and refugee pregnant women. The solution was intentionally designed to engage not only pregnant women but also their husbands, with messages delivered in both audio and text formats to better accommodate diverse user needs."

Nadine Sabra, American University of Beirut¹¹¹



There are several risks associated with the use of digital health systems that are impacting social perceptions, attitudes, and behaviours among certain groups. The spread of misinformation and disinformation have grown alongside increased access to digital devices and social media platforms, making it difficult to distinguish what are scientific facts. The ongoing public discussion about the effectiveness of vaccination among certain groups illustrates this point.¹¹² Information has become a social determinant of health, with the power to either bridge or exacerbate health equity gaps. Technology poses other types of health risks to people; it can facilitate abuse, from cyberbullying to blackmail, which can translate into offline, in-person harms. Governments need to address technology-facilitated abuse by developing and implementing effective laws and policies that centre on autonomy, confidentiality, and human rights.¹¹³



VIII. THE ROAD AHEAD –

TRENDS AND OPPORTUNITIES



Shifting geopolitics and their impact on funding flows



UHC and – to a great extent, the digital transformation of health systems – are often political initiatives.¹¹⁴ Political factors, such as leadership, stability, priorities, governance, resource management, and civic engagement, shape the pace of digital health transformation and who benefits from it.

Recent changes in geopolitical priorities in high-income countries are impacting international aid, leaving many countries with funding shortages, forcing reprioritisation. These changes have the

potential to reshape the digital health and global health ecosystems and to compel the sector to develop new business models and approaches. In some places, such as the African region, the impact of these changes is more severe given the donor dependence of many countries.¹¹⁵ Concrete examples include disruption of health services in Zimbabwe, delays and limited access to essential medicines in Sierra Leone, data loss and inability to access data in Kenya, servers going down, stopping data collection activities, and even systems going offline.^{116 117 118 119 120 121} With less funding available, LMIC governments are reassessing how to use limited resources in more cost-effective ways to deliver essential health services to their population.

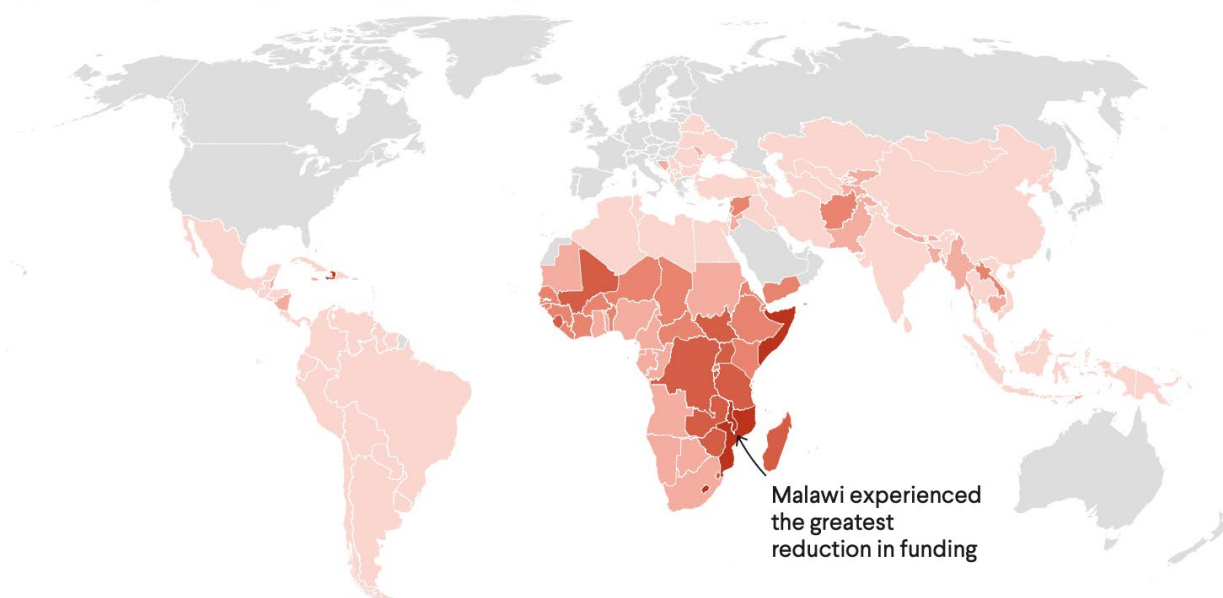
Figure 4: Drops in health funding¹²²

Africa Hit Hardest by Cuts

Eight of the ten countries with the largest drops in health funding were on the African continent

Relative reduction in total health spending

○ <0% ● 0%–1% ● 1%–4% ● 4%–8% ● 8%–12% ● ≥12%



The gap left by traditional donors is partially being covered by other countries. China plans to increase support for African countries to more than USD 50 billion over three years.¹²³ Saudi Arabia and the United Arab Emirates are also increasing their investments.¹²⁴ Some philanthropic groups are increasing their funding commitments, including the Gates Foundation, which has pledged to spend more than USD 200 billion by 2045.^{125 126}

Many countries are likely to turn to development banks for financing by accessing loans and grants to finance health system initiatives.^{127 128} Some banks have also been impacted by cuts in donor funding. The African Development Bank is experiencing a funding crisis with the loss of USD 555 million from the U.S. government, and reductions in contributions from other high-income countries.^{129 130} The World Bank received its replenishment in 2024, which included \$100 billion for the International Development Association (IDA), which provides financing to 78 low-income countries for health, education, infrastructure, and climate resilience investments.¹³¹ The IDA provides low-interest loans with long repayment periods and, in some cases, grants without reimbursement requirements and grants from the Global Financing Facility for health programmes can be tacked on as an incentive.¹³² Loans from the World Bank and regional banks are often accompanied by technical support and advice, and creating partnerships that encourage greater country ownership and accountability (for example, World Bank links disbursements to the delivery of pre-agreed health outcomes in programme-for-results financing).¹³³ However, countries must assess whether they are able to take on a loan that will need to be repaid when they are under fiscal strain.

An additional source of financing that few countries are tapping into is the International Monetary Fund's Resilience and Sustainability Trust. The trust has USD 650 billion in financing available to low-income countries and vulnerable middle-income countries to build resilience against external shocks, such as pandemics, and to ensure sustainable growth.¹³⁴ Terms for accessing these funds for pandemic preparedness activities have recently been developed by the World Bank and the WHO, but are not yet published online.¹³⁵

The current situation points to a funding misalignment and a profound change to the health financing landscape that will require a period of adjustment and adaptation. There is a need to reduce reliance on donor funding and to diversify funding sources. Many interviewees believe these funding shifts will move power from donors to more country- and region-led approaches, opening space for the private sector and national civil society to play a stronger role. This may slow progress towards the digital transformation of health systems, but it may also deepen the change process and make it more sustainable, as these changes become national priorities and embedded into national systems and structures.

Blended, alternative, and innovative health system financing options

There is no single solution to health financing challenges, beyond increasing domestic investment. Achieving UHC cannot be dependent on external funding: it is a long-term, continuous investment and national governments need to own their commitments and resource them adequately to be successful. Many LMICs are allocating insufficient domestic resources to health, including digitalisation of the health system. The current context will require them to commit more funding to strengthen and transform their health systems. Diversifying funding sources and exploring blended and innovative financing models could reduce reliance on external aid.

Innovative financing mechanisms such as debt-for-health swaps, loan buy-downs, health taxes, and health insurance schemes, are all options that can be leveraged to offset infrastructure and enabling environment costs (particularly one-off costs), essential for digital health transformation. With debt-for-health swaps, a creditor nation provides debt relief if the debtor agrees to invest the owed debt in their health systems.¹³⁶ Germany has been the leading supporter of the Global Fund's debt-for-health swaps, piloting the concept in 2007 and in supporting the scheme as a creditor.¹³⁷ In 2017, Spain signed debt-swap programmes with Cameroon (amounting to EUR 9.2 million and USD 16.7 million), Ethiopia (amounting to USD 8.7 million) and the DRC (amounting to USD 8.3 million) to convert debt repayments into investments in health.¹³⁸

Mobilising domestic funds through taxes is an avenue a number of countries are already using. This can happen through general taxation, or by targeting specific sectors such as natural resources, or products such as tobacco and sugary drinks (Mauritius), or alcohol (South Africa).¹³⁹ Countries such as Senegal, Benin, and Togo have applied taxes on mobile phone usage or mobile operators.¹⁴⁰ Social or public health insurance schemes can contribute to a country's digital health ecosystems with investments in technology. For example, in Costa Rica, the Caja Costarricense de Seguro Social rolled out a single digital health record for primary care.¹⁴¹

Social or public health insurance schemes can pool and engage in purchasing healthcare funds. In pooling, there is an accumulation of prepaid funds to cover health services for a group of people.¹⁴² Meanwhile, with purchasing, insurance schemes are defining benefit packages, identifying individuals and providers who will participate, and defining arrangements and contracts with providers using mobilised or pooled funds.¹⁴³ Positive examples of national health insurance authorities leveraging digital tools are gaining attention. Ghana's National Health Insurance Authority (NHIA) has been working with PharmAccess to digitise data and business processes. The Ghana NHIA aims to be a data-driven insurer and to create value out of its own data. The Nigeria National Health Insurance Authority has also introduced electronic claims (e-claims) submission and processing that has streamlined claims processing and improved efficiency for credentialed healthcare facilities.¹⁴⁴ The private and not-for-profit sectors are also collaborating to connect patients and health insurance to health providers. In Kenya, PharmAccess, Care Pay, and Safaricom collaborated to develop the M-TIBA, a health savings wallet that also has access to Kenya's National Health Insurance Fund. Through M-TIBA, people are able to send, receive, save, and pay for medical services using their mobile phones. Currently M-TIBA has 4.7 million registered users.¹⁴⁵

Mexico's Seguro Popular highlights the need for strong political will to ensure the success of social insurance programmes. Seguro Popular was launched with great promise, but its initial successes quickly unravelled due to lack of political support and the programme's progress has reversed.^{146 147}

To support these programmes, digital solutions must be able to integrate large volumes of data from multiple sources, including health facilities, insurance organisations, employers, and government systems, to perform these functions. In addition, robust security and privacy/cybersecurity protections are required to safeguard sensitive financial and health data, but many countries lack comprehensive regulatory frameworks or adequate cybersecurity capacity. In addition, implementing and operating systems require financial and human resources that are not always available. Countries are struggling with their systems and connecting them to their digital health architectures (where they exist).

Botswana, Kenya, Nigeria, and Cameroon are recent examples of countries pledging to reallocate domestic funding for health to offset donor cuts.^{148 149 150 151} In Nigeria, lawmakers approved an additional \$200 million for health spending for vaccines and treatment for epidemic diseases.¹⁵²

Digital health may help governments achieve greater healthcare efficiencies and accelerate UHC at a reduced cost. A study of several African countries estimates that the use of coordinated digital health systems can lead to a 15 percent reduction in health system costs in financially constrained settings, with potential savings available for reinvestment.¹⁵³ In Indonesia, an economic evaluation of the SMILE supply chain system found that it reduced vaccine stock-outs by 70 percent within the first six months, and when later scaled for routine and COVID-19 vaccinations, a return on investment was calculated at 2.77 (every Rupiah invested in SMILE yielded a return of 2.77 Rupiah).¹⁵⁴



Shifting geopolitics and their impact on funding flows



As the cost of technology comes down and service coverage increases, more people are connected and online, making digital health systems far more viable as a means to expand service delivery, increase population coverage, and drive down costs. According to the International Telecommunication Union (ITU), approximately 5.5 billion people (68 percent of the world's population) were using the internet in 2024 and 94 percent of the world's population is currently covered by mobile broadband.^{155 156}

The digital public infrastructure technology stack

There is increasing attention and interest in DPI, a set of foundational systems that serve as the backbone for digital government service and enable secure and seamless interactions between people, businesses, and government.¹⁵⁷ Key pillars of the DPI approach include open, interoperable technology, governance, regulatory and policy frameworks, and promoting market innovation in local ecosystems.¹⁵⁸

The cross-sector DPI technology stack includes a set of core components, identity, payment, exchange, consent, and safeguards, which could accelerate economic growth by up to 33 percent and deepen inclusion.^{159 160} Estonia, India, and Ukraine are countries already championing the DPI model and seeing positive outcomes in terms of innovation and inclusion.^{161 162} The DPI Mapping Project scanned 210 countries and showed that 57 claim to have a digital identity system, 93 countries have digital payment systems, and 103 have data exchange systems.¹⁶³

DPI presents a great opportunity for the health sector, which relies on digital services to deliver integrated, person-centred care. Leveraging DPI can enable secure health data exchange, strengthen financial protection through digital payments and insurance systems, and ensure that individuals maintain control over their personal health information through robust consent and safeguard mechanisms. By embedding health within broader national DPI investments, countries can expand access, improve efficiency, and foster innovation, while aligning with wider economic- and social-development goals.

However, the success of DPI will increasingly depend on government leadership and resources, particularly from the eGOV or information and communications technology (ICT) ministries, and the ability to coordinate across ministries and departments. While initial up-front investments may be easier to access, the success of DPI will rest on the long-term sustained funding needed to operate, maintain, and enhance these systems. Without sustained government investment in DPI, systems risk becoming outdated and insecure, undermining trust and pushing people towards alternative platforms for data, information, and services.

Global goods – strong options under the right conditions, but not a silver bullet



Global goods for health are services, information, and digital tools, such as open-source software, that are free and open to use, and adaptable to local needs to improve health systems and outcomes. These open-source solutions are designed to be community driven, non-rivalrous (one person's use doesn't diminish another's), and non-excludable (no one can be prevented from benefiting from them).¹⁶⁴ They have open licensing that can be more cost effective, flexible, adaptable, and scalable to country contexts.^{165 166} ¹⁶⁷ The development of global goods has become an approach that has helped stakeholders address shared challenges and common use cases. For example, DHIS2 is used in more than 75 countries for national health information systems and OpenMRS is an electronic medical record solution that has been implemented in 80 countries.¹⁶⁸ OpenIMIS is currently implemented in 15 countries and provides an open-source solution to manage public or private health insurance schemes and other health financing processes.¹⁶⁹ Implementation models vary based on country context; sometimes a government entity implements and operates these services, but more often technology partners are paid to provide these services.

Some experts are calling for more rigorous vetting and testing of open-source global goods to ensure they are fit-for-purpose and to allow for kinks to be addressed before implementation. LMIC governments have not always chosen the system provided by partners and donors and, in many instances, they do not have the technical capacity to maintain these systems. The well-meaning implementation of programmes using global goods often takes place at a pace and in a manner that is determined by donors and project partners, rather than national governments. This is raising concerns over the transition to government ownership and management, and long-term sustainability of the solutions. As donor funding dries up, there is a risk that governments will not have the resources or the technical know-how to maintain and continue using these solutions. Accordingly, countries and partners increasingly see the need to engage diverse stakeholders, define requirements, and assess digital solutions, including open-source global goods. This nationally led multi-stakeholder approach is expected to improve acceptance among end users, increase national ownership, and integrate these global goods into national plans.

Interviewees noted that open-source global goods are also at risk due to recent global health funding cuts. Those that have not successfully demonstrated value or mainstreamed into country ecosystems will struggle to survive (e.g., Magpi, previously used in some countries for research and surveys¹⁷⁰). A number of organisations overseeing open-source global goods are highly reliant on donor funding and have not successfully transitioned to a sustainable, self-financing business model.^{171 172} Some commentators have been critical of open-source global goods, claiming they stifle local innovation, and local developers do not have an awareness of what is available for use.¹⁷³

AI in healthcare – a new era of innovation

AI is rapidly transforming the health sector, offering unprecedented opportunities to enhance disease surveillance, personalise interventions, and optimise resource allocation.^{174 175} According to the WHO, “AI offers immense opportunities to improve health outcomes (via early disease detection, prediction, etc.), as well as enhance health services (via optimised resource allocation, behaviour change interventions, etc.), in pursuit of global health equity. At the individual level, AI can improve diagnostic accuracy, personalise treatment plans,

facilitate early disease detection, and expand access to health information and care through mobile health applications and chatbots.”¹⁷⁶

There are several branches of AI, from machine learning to robotics, and they can support a wide variety of use cases. AI tools and algorithms can automate workflows, reduce errors, eliminate repetitive tasks, and accelerate research, while offering the added advantage of being always available to process and respond rapidly. AI algorithms can play a crucial role in interpreting medical imaging, predicting chronic disease risks, and supporting patient triage systems. At the community level, AI can support disease surveillance, optimise supply chains, and enable precision public health by tailoring interventions to specific populations using real-time data from social media, wearables, and environmental sensors.¹⁷⁷ At the health system level, AI offers significant opportunities to strengthen health system infrastructure, improve resource allocation, and enhance emergency preparedness.^{178 179} For instance, the digitisation of health records and the use of decision-intelligent systems can lead to cost savings and improved health outcomes.

As it relates to UHC, harnessing AI in health financing and social protection programmes offers a powerful opportunity to streamline workflows and enhance efficiency. For example, OpenIMIS recently developed an AI module to support reviewing healthcare claims and is being tested in Nepal.¹⁸⁰

The adoption of AI without strong regulatory guardrails creates a number of risks. When trained on non-representative data sets, AI systems can perpetuate existing social disparities in care.¹⁸¹ Regulatory oversight must mandate transparency in algorithmic design and require inclusive data collection to ensure AI tools are safe, effective, and equitable across diverse populations. Without appropriate safeguards, AI may infringe on privacy or reinforce existing social inequities. Regulatory frameworks should mandate participatory design processes and enforce strict data governance standards, including anonymisation protocols and meaningful community engagement in data-use decisions.¹⁸² This will help to ensure that AI solutions are culturally appropriate and aligned with local health priorities.

To maximise benefits and minimise harms at the individual, community, and health system levels, a comprehensive and context-sensitive governance framework grounded in ethical, legal, and technical principles¹⁸³ is essential.



“Regulating AI in public health is not merely a technical endeavour; it is a moral imperative. By embedding equity, transparency, and accountability into AI governance, we can harness its transformative potential while safeguarding individual rights, promoting community well-being, and strengthening health systems to achieve universal health coverage.”

Dr Satish Melwani, Research Fellow, SPHERE Centre of Research Excellence, Department of General Practice, Monash University



Governance must also address legal and ethical challenges, including liability for AI-driven decisions, algorithmic accountability, and the broader implications of automated public health interventions.

To develop and use AI responsibly, humans must be in the loop.¹⁸⁴ Humans are necessary to steward (develop and train) AI models, as well as correct errors, review incomplete information, and validate and often refine the outputs to meet our needs.¹⁸⁵

¹⁸⁶ his human collaboration enhances adaptability and allows models to evolve with changing user preferences and real-world scenarios. The human element helps AI tools navigate the complexities and nuances that often challenge purely algorithmic approaches. As AI continues to advance, it is important to think about the role of humans in guiding these tools and the social impact AI could have.

The rapid evolution of AI is providing new ways of integrating and analysing large and diverse datasets across sectors, including health records and climate data. AI can perform these functions in real time, which can support faster evidence-based decision-making, and inform the design of appropriate interventions and programmes. There are also opportunities to leverage the power of AI to analyse and triangulate data to better respond to climate-related health risks.¹⁸⁷ While this is promising for health innovation, AI and digital technology has significant environmental costs due to its high energy and water consumption and associated carbon emissions.¹⁸⁸

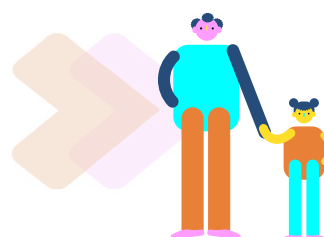
In recognition of this, countries are moving to develop policies, regulations, strategies, and – in some cases – establish new ministries to embrace and safely use this frontier technology. For example, Trinidad and Tobago recently established the Ministry of Public Administration and Artificial Intelligence to work on digitally transforming government services with AI innovations.¹⁸⁹ However, many LMICs lack the digital infrastructure and skilled workforce needed to deploy AI effectively.^{190 191} Regulation and government policy should incentivise investment in digital infrastructure and capacity building, including training for health professionals and support for local AI developers.

Mixed health systems and public-private partnerships



Most countries have mixed health systems in which the private sector plays an important role. In countries such as Nigeria, more than 50 percent of individuals seek care in the private sector. These providers are either not adopting technology due to barriers (such as cost, bureaucracy, and scale), or have adopted technology but it is siloed and not harmonised with that used in the public sector.¹⁹² To overcome these challenges, effective and productive partnerships between the private and public sector are necessary. This requires the right business incentives and necessary conditions for the private sector¹⁹³ to operate and collaborate.

One of the main challenges for the private sector is to ensure alignment around incentives. The private sector may not have the same incentives to deal with externalities that affect the availability, accessibility, acceptability, and quality (or AAAQ) of healthcare services,¹⁹⁴ nor be in a position to develop and support “public goods” as they need to respond to the needs of their shareholders. Private-sector developers and innovators may not have insight into national plans, or how best to design solutions that align with requirements and protocols and therefore cannot effectively contribute to digitalisation efforts.



In some cases, private-sector healthcare providers lack the funding, training, and clarity on standards and data security needed to adopt digital health systems and connect seamlessly with the public health system. This can lead to parallel, uncoordinated efforts or the use of different technology systems. Some private health providers are also opting to retain paper-based systems.¹⁹⁵ In these scenarios, unless there is a strong central drive to align and integrate these systems, this fragmentation is likely to continue. If this situation continues, many LMICs may end up with siloed systems, and face similar challenges to the United States, where community-based organisations, long-term care facilities, and mental and behavioural healthcare providers, were left out of the Promoting Interoperability programme. They have since struggled to digitise, causing fragmentation in data flows, service delivery, and continuity of care.

Countries such as India provide positive examples of multisectoral collaboration. The National Health Authority's Ayushman Bharat Digital Mission (ABDM) is responsible for curating an integrated digital health ecosystem as a foundation for UHC.¹⁹⁶ To accomplish this, they have prioritised engagement with a diverse set of stakeholders, including the private sector through stakeholder consultations, and publishing major policy documents for public input. ABDM also has committed to investing in digital infrastructure, published interoperability standards, organised a sandbox, and supported conformance testing which provides clear guidelines and processes for bringing private-sector innovations into the health system. As a result of the government's political leadership and its investments in the enabling environment, the private sector has flourished, raising a total of USD 504 million between 2014 and 2018 for health tech start-ups.¹⁹⁷



"Alliances with the private sector will only become more prominent and innovation will spark new types of partnerships between public and private sectors. The growth of market players in digital health has increased significantly and there is no stopping it, it will only continue to expand."

Priya Balasubramaniam, Public Health Foundation of India, Centre for Sustainable Health Innovations, Singapore



Private-sector dynamism¹⁹⁸ is fostering innovation and locally driven solutions, and an increased focus on direct-to-consumer care, community health, and primary care. By leveraging their agility, private-sector innovators can more easily adapt to changing needs and offer pathways to more accessible, efficient, and affordable health services. However, engagement with the private sector will vary based on country context including risks, incentives, and digital health maturity.¹⁹⁹

Strong governance and regulation may be one of the most effective ways a country can build trust, incentivise, and ensure alignment between the private sector and public sector, ensuring all are contributing to national health strategies, as well as service contracting and procurement.²⁰⁰ The WHO's Progression Pathway for Governance of Mixed Health Systems²⁰¹ was developed in recognition of the critical role of the private sector in supporting government efforts to achieve UHC within a mixed health system. Its purpose is to ensure the strategic use of the private sector to achieve UHC through the development of effective governance and regulatory frameworks to address potential challenges such as equity, access, and financial sustainability that emerge within mixed health systems. Parliamentarians have an important role to play in ensuring this guidance translates into effective legislation and regulation. They also play a critical role as both conveners and legitimisers of multi-stakeholder and cross-border agreements.

The private sector is likely to play an increasing role in the provision of healthcare and digital services and will be a key partner for governments to achieve UHC in the future. This will be particularly the case in LMICs, as public systems are faced with cuts to or stagnant budgets for health (due to donor cuts) and increased demand on the health system with ageing populations suffering a double burden of disease. However, country governments must ensure due diligence in monitoring conflicts of interest, performance, and meeting requirements.

Building climate-resilient health systems

Climate change is having a profound impact on human health and well-being. It is projected to contribute to an estimated 14.5 million deaths and economic losses of up to USD 12.5 trillion by 2050.²⁰² Climate change is having a disproportionate impact on LMICs, including degradation of physical infrastructure and the rising frequency of extreme weather events, such as hurricanes and floods, and is increasingly recognised as a priority for the global health community. To address the climate–health nexus, it is essential to build resilient health systems that can adapt to climate-related risks and protect vulnerable populations.

Investments in digital solutions, such as early warning systems, can enable countries to conduct more accurate predictive modelling and planning, helping to reduce climate- and environment-related health risks – including pandemics – improve mitigation strategies, and maintain resilient health systems.²⁰³ By leveraging predictive modelling, governments can simulate a wide range of outbreak and disaster scenarios, anticipate the spread of diseases, and allocate resources more effectively before crises occur.



Sri Lanka bright spot

In recognition of the increasing incidences of flooding, extreme heat, and other climate-related events in the country, the Sri Lankan Ministry of Health is taking action to integrate climate-health data for public health decision-making with DHIS2. The initiative is taking a multi-sectoral approach that engages stakeholders across health programmes, as well as the Department of Meteorology and National Building Research Organisation. The climate-health platform is under development and aims to streamline workflows and integrate climate (e.g., temperature, weather patterns), environmental (e.g., air quality) data, with mortality, morbidity, and health data (e.g., child nutrition, maternal health).²⁰⁴ This work aligns with and builds on the country's digital health transformation investments and will help the country build a more resilient health system.



In some places, climate change has become highly politicised, but climate-related emergencies are having a severe impact on vulnerable communities across all countries and have the potential to devastate health systems. Additionally, the absence of cross-border data-sharing agreements in most regions limits countries' ability to work together in planning and mitigating the potential impacts of climate change and disease outbreaks.

"We need to find a greener, more ecological way to use digital technologies that can help achieve country health goals and be responsive to health system shocks."

Matt Hulse, World Bank



Digital health, equity, and inclusion



➤ The gender digital divide

Women in low-income settings face barriers to accessing digital tools, including limited access to technology and restrictive norms that favour men as primary users, limiting their autonomy and ability to benefit equally from digital tools and platforms.²⁰⁵ According to GSMA, across LMICs, 83 percent of women own a mobile phone and 66 percent use mobile internet. GSMA data shows that women are still less likely than men to have access to mobile phones, mobile money, mobile internet, and other mobile services, and have unequal access.²⁰⁶ Programmes that overlook gender dynamics or take a gender-neutral approach, risk replicating and perpetuating social biases and treating women as isolated beneficiaries.²⁰⁷ When designed with a gender lens, and assessing intersecting factors such as age and ethnicity to ensure inclusivity, digital health can transform access and advance gender equality.²⁰⁸

Digital health innovations can empower women by improving access to care, information, and decision-making, while reducing unpaid care burdens. Yet many digital tools and algorithms ignore sex and gender, further exacerbating the existing gender and health inequalities and widening the digital divide. Though women comprise 70 percent of the health workforce, they are underrepresented in leadership, holding only 25 percent of these roles.²⁰⁹ The impact of this shortcoming is more limited perspectives in positions of influence and decision-making, which results in less gender-responsive health systems, whether digital or otherwise. Gender-sensitive programmes can also be one of the first things to go when budgets are cut and, as countries face funding shortfalls, there is a concern about the impact on gender-related initiatives.

“Organisations are missing key business opportunities from not engaging women as policy makers, technology developers, and consumers, but also women as caregivers and as drivers of economic development and prosperity. To address this, we need more women to be included in digital health governance and leadership positions at all levels.”

Patty Mechael, health.enabled & Johns Hopkins Center for Digital Health Innovation



Opportunities exist to address these challenges. Expanding training programmes across the health sector, and specifically working to improve women's digital literacy which can create new career pathways and promote economic empowerment.²¹⁰ Governments could address this through legislation and regulation that compel digital health programmes and providers to adopt a gender lens in all programming. This would ensure that more gender-responsive solutions are developed and implemented, and that digital health is actively addressing existing social biases. Parliaments have an important role to play as elected representatives and defenders of citizens' rights, and their role in mandating inclusive approaches for marginalised populations will be critical.

Lesotho bright spot

Lesotho's Digital Health Strategy 2025-2030 envisions a digitally empowered society that leverages secure technology to create a prosperous, inclusive, and sustainable future for the country. The strategy includes a multi-sector digital governance structure, a secure DPI, and emphasises enhanced digital skill development with a strong focus on youth, women, and micro, small, and medium enterprises (or MSMEs) to empower them to participate and help drive the digital economy.²¹¹ It also includes a set of principles and values that guide their work, including emphasis on collaboration, people-centred approaches, and inclusion, to ensure that everyone can benefit from digital health, regardless of gender, age, social group, or location.²¹²



➤ Youth – the digitally savvy generation



“Sometimes young people are more comfortable with the technologies to access health care services. They can experience stigmatisation when in person, so accessing care privately through an application is more comfortable.”

Prince Kwesi Bonney, Curious Minds

Many developing countries have a “youth bulge”, meaning a high proportion of individuals below the age of 25.²¹³ In low-income countries, people under 25 make up 61 percent of the population, more than double the 27 percent seen in high-income countries.²¹⁴ This large youth population is increasingly digitally savvy and have higher levels of acceptance and comfort with technology compared to older generations. Young people appreciate the benefits of digital health and are eager to use it to access services, get personalised support, and gain more agency in relation to their health.²¹⁵ As technology costs decrease and service coverage expands, adoption rates will increase.

Morocco bright spot

In Morocco, several initiatives have been implemented that focused on digital inclusion and engagement of youth through building literacy, raising awareness, and increasing safeguards. In 2024, eSTEM Morocco, in partnership with Social Innovation Lab at the Mohammed VI Polytechnic University launched the Titrit Girls Collaborative Council.²¹⁶ The collaborative is led by young women and supports digital inclusion of girls, including in relation to health. The collective launched a digital mentorship and learning tool, the Titrit App, and hopes to reach 50,000 disadvantaged girls.²¹⁷ In 2019, the city of Benguerir joined the African Smart Towns Network (ASToN), a public-private initiative.²¹⁸ The city has chosen to focus on citizen engagement and addressing the

digital divide and developed an e-health mobile application to schedule hospital appointments, digitise health records, and train youth as community “relays”. In addition, the National Youth Council for Health has a dedicated Digital and AI Health Department that focuses on e-Health awareness and empowerment.²¹⁹



➤ Older generations – at risk of being left behind

Older people can feel intimidated by digital health systems, often viewing them with apprehension that limits their willingness to access care through digital means.^{220–221} While this group appears to be less researched in LMICs, findings from studies in other parts of the world highlight a reluctance to access digital services that is partly rooted in their comfort with traditional, in-person interactions with healthcare providers, which they may perceive as more trustworthy.²²² Concerns about data privacy, security, and the misuse of sensitive health information further reinforce distrust in digital health systems.

Many older people may face physical and cognitive challenges, such as reduced vision, hearing, dexterity, or memory, that make navigating current technology more difficult. Technological trends suggest this situation is rapidly changing. Beyond technical barriers, there is also a need for tailored support and digital literacy training to help older adults adapt their daily routines, develop confidence in using devices, and recognise the value these tools can bring to their health and well-being. A study in Thailand found that older adults had lower levels of digital literacy, which led to them being less likely to use telemedicine.²²³

Without intentional efforts to address these challenges, older populations who would benefit greatly from improved access and remote care options may be left behind, particularly those living in rural and hard-to-reach areas.



IX. FINAL REFLECTIONS



With UHC off-track, technology rapidly evolving, digital health stakeholders embracing more holistic approaches, and international development funding shifting, there is a unique opportunity to forge new partnerships and explore fresh ways of working. The balance of power is moving away from donor-driven priorities and investment decisions towards regional- and country-led approaches that create more space for diverse actors, including the private sector and civil society, to collaborate with governments on the digital transformation of health to accelerate UHC.

“Over the coming years areas that are going to really help countries accelerate their IS4H (digital health) transformation in support of UHC are organisational efficiencies from AI, digital literacy, telehealth, and a focus on cybersecurity.”

Marcelo D’Agostino, PAHO



Country governments need to take the lead



This situation and trends analysis has identified several dynamics that will continue shaping countries’ digital health journeys and their progress towards UHC. Countries are steadily shifting towards more holistic approaches that foster ecosystems of interoperable digital health systems and need to continue this march.

Decision-makers in LMICs must demonstrate political will and take ownership of their digital-health-enabling environments, developing clear visions, strategies, and costed plans, while building dedicated teams to lead governance structures that engage a broader and more inclusive set of stakeholders than in the past. Countries that have already invested in these components are better

positioned to withstand recent international aid cuts, while those still heavily reliant on donor funding face greater risks of setbacks, both in advancing their digital health agendas and in achieving broader health system and UHC goals.

Investments in DPI will open pathways for sector-agnostic technology and integrating data across sectors in ways that strengthen decision-making and service delivery to improve health outcomes. As more longitudinal, individual-level health data becomes available across digital systems, opportunities to apply AI tools and techniques will expand. However, governments must act decisively to ensure these innovations are used responsibly and ethically, supported by robust legislation and regulation, clear policies, and effective governance. Data governance, data protections, and cybersecurity are in sharp focus as citizens look for more assurances that their health data being collected across the ecosystem is effectively secured and protected, and used appropriately. Country governments need to address these public concerns and work with others on regional and global frameworks.

Countries and partners will explore and experiment with more sustainable health financing options to close the funding gaps felt by loss of traditional donor funding. Countries will grapple with reprioritising smaller pots of money, which in some cases may deprioritise digital projects. This tendency needs to be resisted; national governments need to persist with the digital transformation of health systems to accelerate UHC. This will lead to cost reductions, improved efficiency and, ultimately, better health outcomes. Infrastructure and workforce capacity will be long-term challenges to solve that require more attention, funding, and new partnerships. Parliamentarians will continue to have an important role to play to mandate governments to prioritise the digital transformation of health to accelerate UHC and to compel them to act transparently in relation to digital health investments. They will also play an important role to institutionalise civil society participation in reviews.



Donors and other partners need to align funding with country plans and priorities



Donors and philanthropic organisations provide critical funding and technical expertise that remain essential for LMICs to progress towards health system digitalisation and UHC. However, financial resources alone are not sufficient; donors must also acknowledge and address the systemic challenges that contribute to poor public sector performance. This requires going beyond project-based interventions to invest in long-term strengthening and sustainability, including the development of robust governance frameworks, effective accountability mechanisms, and cross-sector coordination structures.

There is an opportunity to reflect on current global coordination mechanisms to better understand what has and has not worked, and to translate learnings into meaningful progress. Interviewees for this research suggested global health donors and stakeholders need to give deeper consideration to better aligning and even potentially consolidating objectives, indicators, and reporting requirements, to reduce the burden on countries and address fragmentation at a time when there are major funding cuts. Doing this in a way that does not place all the burden on already stretched ministries of health may require a more coordinated global governance mechanism or framework that can streamline donor requirements, while ensuring accountability and transparency.

Equally important is supporting governments in building the digital-health-enabling environment, including the policies, legislation, regulations, infrastructure, and standards that underpin digital transformation. Donors should help cultivate the technical capacities within ministries of health and national implementing partners so they can navigate and oversee a complex ecosystem of public, private, and civil society actors. By aligning support with country-led strategies and enabling governments to steward and regulate diverse partnerships, donors can help ensure that all stakeholders collaborate effectively to deliver scalable, interoperable, and sustainable digital health systems for UHC.

Private-sector partnerships are necessary and can help fill the gaps



Most countries have mixed health systems in which healthcare is provided by a number of different organisations ranging from the private sector, the not-for-profit sector (including NGOs and religious organisations), and the public sector. According to the WHO, the private sector understood as the non-state sector (both for profit and not-for-profit) provides 40 to 62 percent of health service activity across different regions, (up to 40 percent in the WHO regions of the Americas, Africa, and Western Pacific regions; up to 57 percent in South East Asia; and up to 62 percent in the Eastern Mediterranean region).²²⁴ Over recent years, governments have increasingly recognised the need for governments to work in a multi-sectoral manner in mixed health systems, collaborating with non-state actors to achieve UHC. The 2012 Report of the Director-General of the World Health Organization on global health and foreign policy to the UN General Assembly recognised the multi-sectoral nature of UHC and called for “the involvement of all relevant actors for coordinated multisectoral action to urgently address the health needs of the world’s population.”

Market conditions shaped by enabling policies, regulations, and growing citizen demand are creating stronger incentives for private-sector innovators to engage more actively in digital health ecosystems. There is an opportunity for private-sector actors to help bridge the gaps left by international development funding cuts, and help address pre-existing challenges that plague LMIC health systems. Private-sector actors can help fill gaps left by donors by bringing in technological solutions, services, and expertise, as well as financing and investment that can support governments in achieving their digital health strategies and help sustain proven health programmes. They can drive innovation and digital health transformation efforts by delivering digital solutions that align with country goals, regulations, and standards. Through capacity building, private-sector partners can strengthen digital literacy, improve workforce skills, and support local entrepreneurs in fostering innovation. In service delivery and operations, private providers can work with governments to provide the right market incentives to expand access in underserved areas, integrate into national insurance schemes, and ensure availability of medicines and services at the last mile. By engaging in governance and

partnerships, the private sector can align with national priorities and standards, and engage in the digital health ecosystem and architecture to support governments in achieving UHC.

National governments need to create the right conditions, processes, and business incentives for effective partnerships with the private sector and others.²²⁵ This may include clear engagement models, strong regulation, transparency in standards and requirements, open and fair procurement and contracting processes, compliance, and oversight mechanisms, with key considerations for equity and inclusion.

Civil society can demand action and accountability

Civil society has a critical role to play in encouraging governments to accelerate adoption of digital health and the use of data to progress UHC. Digital health can no longer be considered a specialised subject, the preserve of technical experts; it is fast becoming the way health is delivered in a digital world. Therefore, civil society needs to play an increasingly active role in shaping priorities, advocating for equity, and holding governments and partners accountable to the needs of communities, particularly those that are marginalised or underserved.

Civil society can help ensure that digital health investments and policies are person-centred, transparent, and aligned with broader UHC goals. By bringing community voices into decision-making, monitoring implementation, and fostering trust between governments and citizens, civil society serves as a critical bridge to ensuring that digital health transformation delivers tangible benefits to improve access to healthcare, quality of care, and health outcomes.

Appendixes

-  **Appendix A:** Glossary
-  **Appendix B:** Research questions and data sources
-  **Appendix C:** Recommended Actions
-  **Appendix D:** Contributors
-  **Appendix E:** Bibliography

