

HEART

HIGH-QUALITY TECHNICAL ASSISTANCE FOR RESULTS



Telehealth and Digital Inclusion in Indonesia

Final Report

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List of abbreviations

AHI	Indonesian Healthtech Association
APJII	<i>Asosiasi Penyelenggara Jasa Internet Indonesia</i> ; Indonesian Internet Service Providers Association
ATENSI	Indonesian Telemedicine Alliance
BAKTI	<i>Badan Aksesibilitas Telekomunikasi dan Informas</i> ; (Telecommunication and Information Accessibility Agency)
Bappenas	<i>Badan Perencanaan dan Pembangunan Nasional</i> ; (Ministry of National Development Planning)
BKKBN	<i>Badan Kependudukan dan Keluarga Berencana Nasional</i> ; (National Population and Family Planning Board)
BPJS	<i>Badan Penyelenggara Jaminan Sosial</i> ; (Healthcare and Social Security Agency)
B POM	<i>Badan Pengawas Obat dan Makanan</i> ; (Indonesian National Agency of Drug and Food Control)
BPS	<i>Badan Pusat Statistik</i> ; (Central Agency for Statistics)
BSSN	<i>Badan Siber dan Sandi Negara</i> ; (National Cyber and Crypto Agency)
BTS	Base Transceiver Station
CIE	Communication, Information, and Education
COVID-19	SARS Corona Virus 2019 Disease
CRVS	Civil Registration and Vital Statistics
DAP	Digital Access Programme
Dinkes	<i>Dinas Kesehatan Provinsi</i> ; (Provincial Health Office)
DPTK	<i>Daerah Tertinggal Perbatasan dan Kepulauan</i> ; (Disadvantaged areas, borders and islands)
FCDO	Foreign Commonwealth and Development Office
GESI	Gender Equality and Social Inclusion
Gol	Government of Indonesia
GSMA	Global System for Mobile Association – the global body representing mobile operators
GTP	UK Global Trade Programme
Health Cadre	Volunteers trained to conduct health and nutrition promotion activities in each village
ICT	Information and Communication Technology
IDI	Indonesian Medical Association
JKN	<i>Jaminan Kesehatan Nasional</i> ; (National Health Insurance)
JKN-KIS	<i>Jaminan Kesehatan Nasional – Kartu Indonesia Sehat</i> ; (National Health Network-Healthy Indonesia Card)
Kemdikbud	<i>Kementerian Pendidikan dan Kebudayaan</i> ; (Ministry of Education, Culture, Research and Technology)
Kemendagri	<i>Kementerian Dalam Negeri</i> ; (Ministry of Home Affairs)
Kemendesa	<i>Kementerian Desa, Pembangunan Daerah Tertinggal, dan Transmigrasi</i> ; (Ministry of Village, Underdeveloped Regions and Transmigration)

Kemenkes	<i>Kementerian Kesehatan; (Ministry of Health)</i>
KemenPPPA	<i>Kementerian Pemberdayaan Perempuan Dan Perlindungan Anak; (Ministry of Women's Empowerment and Child Protection)</i>
Kemensos	<i>Kementarian Sosial; (Ministry of Social Affairs)</i>
KKI	<i>Konsil Kedokteran Indonesia; (Indonesian Medical Council)</i>
Kominfo	<i>Kementerian Komunikasi dan Informasi; (Ministry of Communication and Informatics)</i>
KOMPAK	<i>Kolaborasi Masyarakat dan Pelayanan untuk Kesejahteraan; (Community Collaboration and Services for Welfare)</i>
LGBTIQ	Lesbian, Gay, Bi-sexual, Transgender, Intersex and Queer
NCD	Non-Communicable Disease
OECD	The Organisation for Economic Co-operation and Development
OPM/OPML	Oxford Policy Management
PATBM	<i>Perlindungan Anak Terpadu Berbasis Masyarakat; (Community-Based Integrated Child Protection)</i>
PERSI	<i>Perhimpunan Rumah Sakit Seluruh Indonesia; (Indonesia Hospital Association)</i>
PISA	<i>Pusat Informasi Sahabat Anak; (Child-Friendly Information Centre)</i>
PLWHA	People Living with HIV and AIDS
Posbindu	Integrated Health Post for Non-Communicable Diseases
Posyandu	A health post in the community that is staffed by <i>kaders</i>
Puskesmas	<i>Pusat Kesehatan Masyarakat; (Government-mandated community health clinics)</i>
PwD	Person/People with Disability
SDG	Sustainable Development Goal
SMS	Short Message Service, for text messaging
TB	Tuberculosis
ToR	Terms of Reference
UHC	Universal Health Coverage
UK	United Kingdom
UNESCO	The United Nations Educational, Scientific and Cultural Organization
UNFPA	United Nations Population Fund
UNHCR	United Nations High Commissioner for Refugees – the UN Refugee Agency
UNICEF	United Nations Children's Fund
USO	Universal Service Obligation
USSD	Unstructured Supplementary Service Data (“quick codes”)
VSAT	Very Small Aperture Terminal (a satellite ground station with a small dish antenna)

1 Introduction

The UK's Digital Access Programme (DAP) is a partnership program of UK Government (Foreign, Commonwealth, and Development and the Department for Digital, Culture, Media & Sports) that aims to support inclusive, affordable, and safe digital access for underserved communities. These priorities have become particularly relevant during Covid-19 pandemic, during which the use of digital technologies to support the health system have been increasing, but the challenges of ensuring digital inclusion remain largely unaddressed. The main objectives of this study are to provide some guidance for areas of policy development and to identify some practical solutions to overcome the key challenges. The engagement with stakeholders has highlighted some cross-sectoral issues, as well as encouraging the focus on how communities use digital services, in particular for health.

1.1 About this study

This study is part of the work undertaken by the Digital Access Programme (DAP) which is a UK Government partnership between Foreign, Commonwealth and Development Office (FCDO) and the Department for Digital, Culture, Media & Sport (DCMS). The programme is aimed to support inclusive, affordable, but also safe digital access for underserved communities to increase the basis of digital tech economy for opening skilled jobs and opportunities for local government. The Programme aims to promote the development, validation, and roll-out of innovative and inclusive models of basic connectivity, digital skills, locally relevant digital content and services for underserved communities. These priorities have become particularly relevant with the spread of the Covid-19 pandemic, which has highlighted the widening digital divide in Indonesia. Addressing this challenge is an urgent policy priority for the Government of Indonesia, and this study contributes findings in the area of telehealth and digital inclusion.

1.2 Objectives of study

The objective of this report is to provide the Indonesian Ministry of Health (Kemenkes) in-depth analysis and research which addresses how to overcome the challenges for telemedicine that relate to digital inclusion. Of particular concern are issues concerning, gender and social inclusion, and the needs of People with Disabilities (PwD). Strategic and practical solutions to overcome the key challenges are identified drawing on local and international experience. This report also makes suggestions for ways to address the gaps identified.

The overarching research question is “How can digital inclusion for telehealth be improved in Indonesia?” There are several research questions that follow on from this which guided the baseline research and the interactions with the stakeholders consulted. These include:

- What is the digital context in Indonesia at present?
- What are digital health solutions providing?
- What digital inclusion issues are being addressed?
- What are current and potential benefits of telehealth?
- What are some of the practical issues being addressed, e.g., to do with capabilities?
- What policy and regulatory issues may need addressing?
- Are there opportunities for collaboration between stakeholders?

Of concern but addressed in more detail in an **UNPUBLISHED DAP** report for the Ministry of Education, are issues concerning digital literacy.

1.3 Scope of the work

The initial Terms of Reference required that the technical support team should:

- Provide in-depth research and analytical support and advice to Kemenkes and other key partners on the strategic design and delivery of the telemedicine regulation, digital literacy and local digital capacity nationally, and how it relates to delivering telemedicine services in different regions in Indonesia, especially marginalised communities and disadvantaged areas (DPTK). Assist Kemenkes in mapping this accurately and coordinating with the DAP's other implementing partners who are delivering projects and support in this field.
- Provide an overview of international best practices and models of telemedicine services and supporting regulations from an inclusivity perspective with a focus on those that can be adapted to the Indonesian context to develop the digital healthcare ecosystem.
- Develop public health campaigns and educational materials supporting the use of digital health services, from an inclusivity perspective.
- Ensure Gender Equality and Social Inclusion (GESI) elements are integrated in telemedicine platforms through user-centred design development and inclusive interface for People with Disability (PwDs).
- Provide technical advice, guidance and support for initiating and drafting telemedicine and digital literacy strategy in close collaboration with Kemenkes and other key government, private sector, civil society stakeholders and DAP implementing partners. This will incorporate possible regional/local level pilots initially, so liaison with local governments will be important.

1.4 Deviation from Terms of Reference

The Terms of Reference were developed before a separate Telemedicine Regulation project (delivered through the British Embassy, Jakarta) had completed its work. But as the Regulation-focused project was nearing completion it was agreed this project would focus on the issues around digital inclusion, and also that it was out of scope to develop public health campaigns – though the issues addressed would provide insights into how such campaigns could be focused. It was agreed that the focus would be on the broader concepts of telehealth (see 2.3.2). Given some delays in the development of the telemedicine training programmes, a further adjustment was to focus less on the digital skills and literacy requirements of staff involved in the delivery of telemedicine, and more on the ways in which telehealth services can support staff working in Communities and their Community Health Centres (Puskesmas).

1.5 Report Structure

The remaining sections of the report are structured as follows:

- Chapter 2 – introduces some key aspects of the policy context, technology and telehealth, and inclusion.
- Chapter 3 – addresses the health and digital inclusion issues in more detail, including GESI, capacity building and community engagement.
- Chapter 4 – describes the methodology used.
- Chapter 5 – provides the organisation-oriented perspectives of stakeholders.
- Chapter 6 – provides some cross-sector perspectives from the stakeholders.
- Chapter 7 – gives insights from the Puskesmas and Community workshops.
- Chapter 8 – presents the conclusions and recommendations.

Additional materials are included in Annexes, as follows:

- Annex 1 provides the list of the stakeholders who were consulted.
- Annex 2 provides the topics used to guide discussions.
- Annex 3 provides the key stages and activities of the project.

2 Overview of Indonesia's Context, and Concepts of Telehealth and Digital Inclusion

This Chapter briefly considers, firstly, some of the key policy issues. The cross-sector paradigm of the Sustainable Development Goals is very relevant to improving health, as is implementation of Universal Health Coverage. But that cannot happen without connectivity, not just between health services, but also to villages. The improvement of the governance (and associated funding) arrangements within villages is providing opportunities for digital technologies to support inclusive health and development; and one illustration of this cross-sectoral approach is in the field of nutrition. Providing coverage is a challenge, particularly in countries with the socio-demographic characteristics of Indonesia, but the real objective is to improve usage. In the context of Universal Health Coverage and National Health Insurance, whilst there have been improvements in service usage, the role of telehealth has not been fully developed. Yet telehealth has a key role to play as existing initiatives show. As the range of available technologies develop that can assist the use of health services increase, so more people become included in the use of digital care.

2.1 Policy context

This section provides a brief review of some key areas of policy, including:

- Sustainable Development Goals (SDGs)
- Connectivity and access
- Governance
- Nutrition

and in doing so provides the context for the sections that follow.

2.1.1 Sustainable Development Goals

The Ministry of National Development Planning of the Republic of Indonesia has provided a Roadmap of the national SDGs which defines issues and projections of the main SDG indicators in each goal, including its forward-looking policies to achieve such targets. In a complementary perspective, the Ministry of Village, Underdeveloped Regions and Transmigration (Kemendesa) has committed to supporting Village SDGs as “an integrated effort to achieve the national SDGs” (Cabinet Secretary for State Documents & Translation 2020).

Within the Health SDG there are nine main targets, but across (almost) all of the other 16 SDGs there are a total of 46 health-related indicators that the World Health Organisation (WHO) reports on (World Health Organisation 2021). For example, there are 38 SDG indicators relevant to urban health, corresponding to 15 SDGs (Ramirez-Rubio O 2019). So, whilst as individual citizens there are many determinants of our health, so too it is important to consider the cross-sectoral nature of meeting these challenges, whether in villages or cities.

For health perhaps the key SDG is 3.8: Achieve universal health coverage (UHC), including financial risk protection, access to quality essential health-care services and access to safe, effective, quality and affordable essential medicines and vaccines for all (World Health Organisation 2021). The policy for UHC in Indonesia requires affordable services to be available for everybody, and a corollary of this is that health systems need to be strengthened, something which, in part, requires the use of digital technology. And, as the COVID-19 pandemic has made clear, being able to support health and care services “at a distance” is increasingly important.

2.1.2 Connectivity and Access

As the world's fourth most populous nation, Indonesia is an emerging lower middle-income country that has made enormous gains in poverty reduction. However, in a population of around 264 million people, some 26 million still lived below the poverty line in 2019 (UNHCR 2019). Over time, as access to the Internet has become increasingly central to everyday life, those without access to broadband infrastructures, digital devices, and Internet skills have been socially, politically, and economically disadvantaged - as experience in the UK shows (Blank 2020). Affordability of connectivity remains a challenge in Indonesia, and in 2020 whilst the cost of 1GB in Malaysia had fallen to nearly a third of what it cost as a fraction of someone's income in 2015, in Indonesia the cost was still 79% of what it was in 2015 (Alliance for Affordable Internet 2020). Accessibility is also a challenge. Here the policy response has been to focus on improving connectivity. For example, the Ministry of Communication and Information (Kominfo) and its Telecommunication and Information Accessibility Agency (BAKTI) run projects designed to "Connect the unconnected", (currently there are still 12,548 villages that have not been reached by the 4G network out of a total of 83,218 villages throughout Indonesia) (Ministry of Communications 2021). Plans announced to launch a satellite to provide high-speed internet access at the "nooks and edges" of the country will provide 150,000 public access points and enable Indonesia to fully cover more than 500,000 identifiable public access points across the country (GovInsider 2021). And the Palapa Ring¹ has been implemented. It is reported that in February 2021 President Joko Widodo gave directions that the 2021 digital connectivity program needs to focus on increasing the utilization of the Palapa Ring Backbone Broadband and the use of a more balanced economic digital space (Indozone 2021).

2.1.3 Governance

Another complementary approach, and one that has been relevant to this research, is to focus on enabling the programme to develop the villages of Indonesia to improve their governance and development processes by embracing the "interactive services" that become possible when digital technology is available. The longstanding focus on village development was reinforced with the passing of the Law on Village (Government of Indonesia 2014), which included specific arrangements for budgets and funding. Several Ministries, together with the World Bank, have been working on a programme for digitising Village Government services and digital capacity building. "Smart Villages" are being developed, in conjunction with partners such as telecommunication companies, with a view to taking them to scale across Indonesia (Ministry of Village PDTT 2021).

2.1.4 Nutrition

While Indonesia has successfully decreased early childhood mortality, its stunting rates are among the highest in the world (World Bank 2020). An important part of the work to improve the governance of villages has been to address some of the cross-sector issues that affect stunting. Nutrition is a cross-cutting issue. At least 12 of the 17 SDGs contain indicators that are highly relevant to nutrition (Scaling Up Nutrition 2015). In 2017 the Government published a strategy to reduce stunting which recognised that the root causes of stunting are complex and multi-sectoral (22 Ministries are involved) and requires efforts across all levels of Government. (Claudia Rokx 2018), and needs to support (pregnant) women, and children up to 2 years in every village. Over

¹ The Palapa Ring is a telecommunications infrastructure project in the form of fibre optic construction throughout Indonesia along 36,000 kilometres. The project consists of seven small fibre optic rings (for Sumatra, Java, Kalimantan, Nusa Tenggara, Papua, Sulawesi and Maluku) and one backhaul to connect them all.

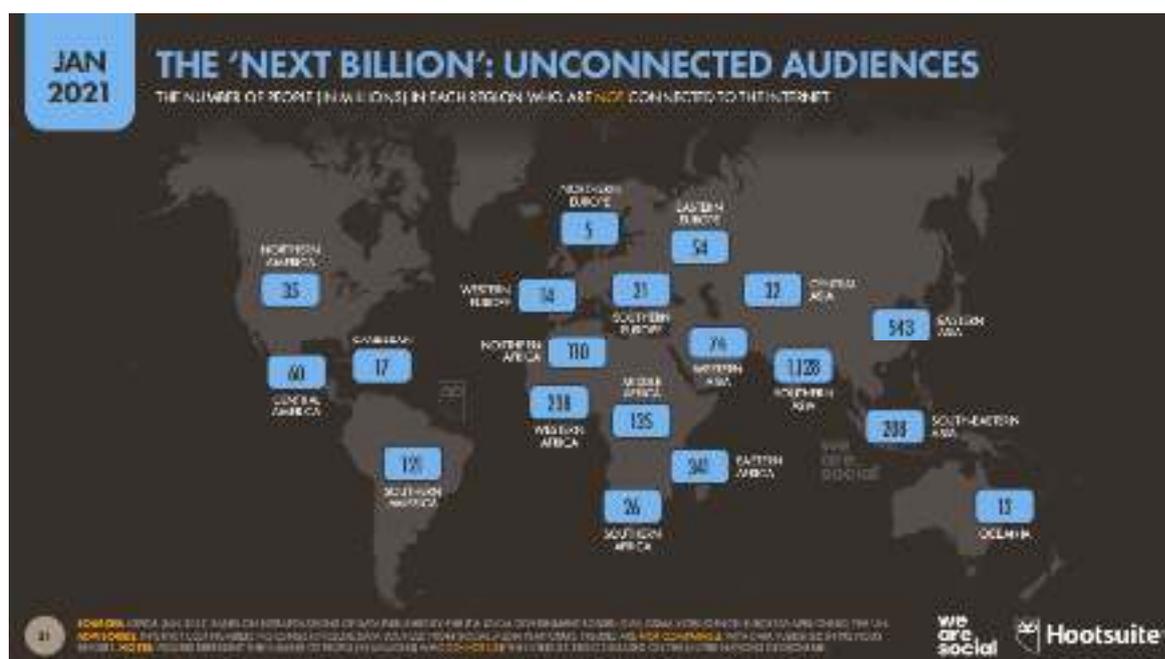
72,000 Human Development Workers have been appointed to help in this effort (Tanoto 2020). One of the major areas of focus for the Smart Villages programme is health. The use of digital technologies to support efforts to improve nutrition and prevent stunting are being explored. For example, Sehati TeleCTG has developed an app which now aims to detect 53 risk factors (such as blood pressure, anaemia, diabetes etc) using embedded algorithms and in Bener Meriah and Nias Regency, for example, the app has been used for detecting intrauterine stunting (Sehati TeleCTG 2021). In the Desa Bulaka smart village ICT is being used to improve the management of stunting prevention. Given the widespread lack of knowledge about stunting in rural Indonesia, the use of multiple media channels to raise awareness and behaviour change has been commended for National Communication Campaigns (Curtis Hanson 2020), including those that use digital technologies. The challenge remains of ensuring no one is excluded from using them.

2.2 Coverage and Usage – the Technology Perspective

2.2.1 Global

Globally, as reported by the global body representing mobile operators, (GSMA), between 2015 and 2018, 3G population coverage increased from 81% to 90% (equivalent to 900 million additional people covered), while 4G population coverage grew from 53% to almost 80% (equivalent to 2 billion additional people covered) (GSMA 2019). As the International Telecommunication Union (ITU) notes, many of those still offline are living in rural, remote communities where connectivity is difficult, often because of the terrain, but also because the return on investment in those areas is often poorer than the urban areas. Indonesia has all these characteristics. Even when connectivity is available, high prices and lack of relevant content and digital skills prevent many people from using the internet — and reaping the benefits of today’s digital economy (ITU 2019) . As the graphic in Figure 1 shows there are still billions get connected (Hootsuite 2021a). The GSMA note that the fact that the usage gap (3.3 billion) is more than four times larger than the coverage gap (750 million). Others also highlight the importance of factors other than coverage that are stopping people from adopting mobile internet, particularly around literacy and digital skills, affordability, relevance and safety and security (World Wide Web Foundation and Alliance for Affordable Internet 2020).

Figure 1: The Unconnected



Source: Hootsuite (2021a slide 31)

A key challenge will be to deploy networks to the final 10% of the population still lacking 3G or 4G coverage. These tend to be in remote areas of low-income countries, where it can cost up to twice as much to deploy and three times more expensive to run new base stations. The GSMA estimate that average revenues can be ten times lower than an urban deployment, highlighting the economic challenge facing operators (GSMA 2019).

2.2.2 Indonesia

As reported by the GSMA (GSMA 2020), in Indonesia 3G services are available across most urban centres, smartphone adoption is rising and 4G take-up is beginning to increase – albeit later than some regional peers. There is an expanding middle class and an educated, tech-savvy youth population, both of which are driving a booming e-commerce market. 4G networks and the emerging ultrafast 5G, combined, are fundamental in enabling digital inclusion and for delivering the connectivity requirements of citizens – as well as traditional and emerging industries. The latest estimates (January 2021) from the Internet Providers Association and Indonesia’s Statistics Bureau are that internet penetration is 73.7% (Kominfo Siberkreasi 2021), and (Hootsuite 2021b). Therefore, over a quarter of the population do not yet have internet connectivity.

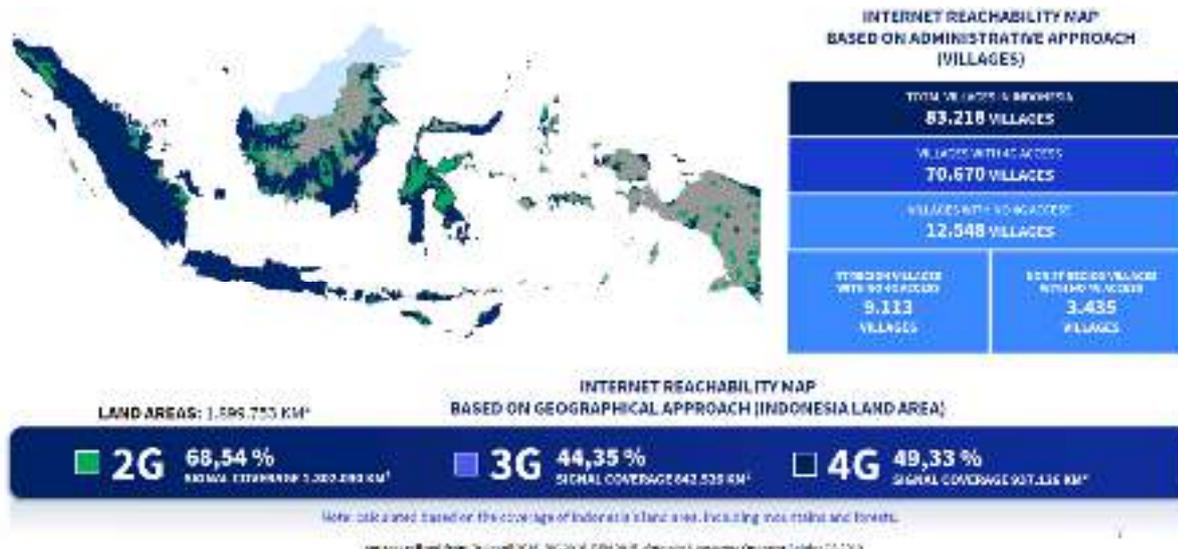
Figure 2: Mobile, Internet and Social Media use in Indonesia



Source: (Hootsuite 2021b slide 17)

But coverage and usage vary by Region within Indonesia. As the map below suggests,

Figure 3: Internet Reachability Map



Source: (Latif 2020 Slide 7)

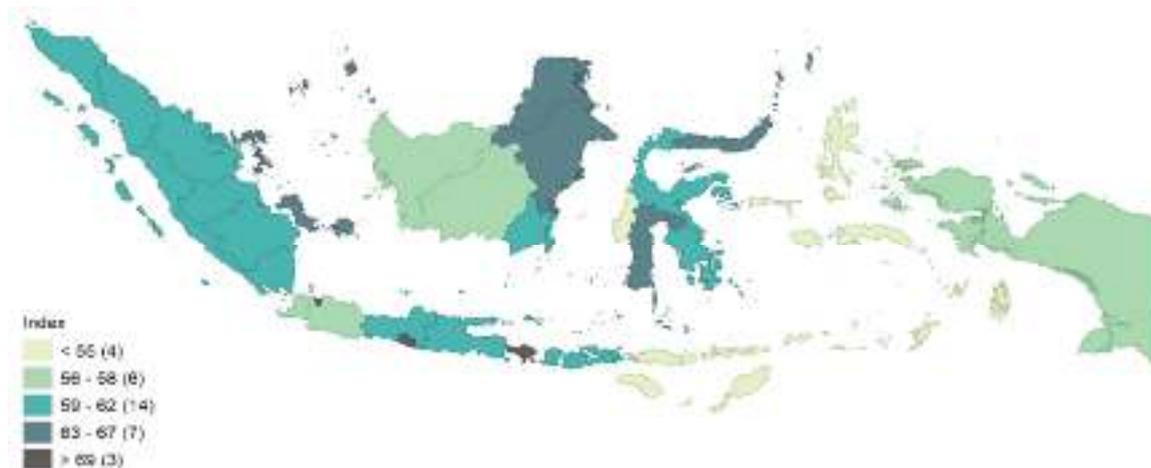
There are large areas of Indonesia that remain unreachable by the internet, particularly in the east of the country.

2.3 Coverage and Usage: the Health Perspective

2.3.1 Universal Health Coverage

National Health Insurance (Jaminan Kesehatan Nasional-JKN) is the national health program dedicated to achieving UHC as mandated under Law No. 40/2004. Based on data from the Healthcare and Social Security Agency (Badan Penyelenggara Jaminan Sosial – BPJS Health), JKN membership has reached 224.1 million or 83% of the total population of Indonesia (Herawati 2020). Getting membership coverage to 100% raises issues of inclusion. Another measure of achievement is the Service Coverage Index² which, between 2015 and 2019 Indonesia has managed to improve from 49 to 60. There are significant challenges to achieving the desired improvements to get to 100.

² The Universal Service coverage index presents a numerical value based on a scale of one to one hundred, with the higher the index the better the result. The value represents achievements made toward meeting people's needs in promotive, preventative, curative, rehabilitative, and palliative health, and whether or not those services are of sufficient quality to achieve potential health gains.

Figure 4: Universal Health Coverage

Source: (Herawati 2020 p21)

Among the recommendations made (Herawati 2020) for improving the situation are, firstly, lowering inequality between provinces by providing adequate health infrastructure and facilities, including better distribution of health workers, especially in poor provinces that have low service coverage index. Secondly, strengthening health promotion and preventive efforts through cross-sectoral coordination is recommended. National and local governments can work together with communities and religious leaders in developing communication strategies to deliver health information to the public. However, none of these recommendations are made with any reference to the role that telemedicine, telehealth, or digital health can play in improving coverage or usage. This may reflect a lack of understanding of what the terms mean, and the potential that is on offer – once the issues of digital inclusion are fully addressed.

2.3.2 What is Telemedicine, Telehealth, and Digital Health?

The WHO defines telemedicine as “The delivery of health care services, where distance is a critical factor, by all health care professionals using information and communication technologies (ICT) for the exchange of valid information for diagnosis, treatment and prevention of disease and injuries, research and evaluation, and for the continuing education of health care providers, all in the interests of advancing the health of individuals and their communities” (World Health Organisation 2010).

The US Department of Health & Human Services Department views telehealth as different from telemedicine because it refers to a broader scope of remote healthcare services. In their view, while telemedicine refers specifically to remote clinical services, telehealth can refer to remote non-clinical services, such as provider training, administrative meetings, and continuing medical education, in addition to clinical services (HealthIT.gov 2019). In California, telehealth is defined as “a collection of means or methods for enhancing health care, public health, and health education delivery and support using telecommunications technologies” (California Telehealth Resource Centre 2020). This “collection” means that its use crosses most health service disciplines, including dentistry, counselling, physical therapy, and home health, and many other domains. Further, telehealth practice has expanded beyond traditional diagnostic and monitoring activities to include consumer and professional education. This can include patient care management programs that employ home monitoring devices, in-home patient medical appointments, and physician reviews in any location for store-and-forward cases. In short, while telemedicine is the older of the two phrases, telehealth is rapidly gaining acceptance, in large part because of the evolution of the healthcare landscape (Wicklund 2016). Indeed, some of the work of Kemekes perhaps reflects this wider interpretation.

This wider usage of “telehealth” reflects the increasing number of ways in which digital technologies can support the delivery of “remote healthcare”. In its prescient report on the impact of ICT on health and healthcare, the UK Royal Society report noted that “ICTs are a range of technologies for gathering, storing, retrieving, processing, analysing, transmitting and receiving information. These include radio, television, mobile phones, computer and network hardware and software, as well as the various services and applications associated with them, such as videoconferencing and distance learning” (The Royal Society 2006).

In the context of telehealth, examples of the ICT used include:

- Live Videoconferencing (Synchronous): Live, two-way interaction between a person and a provider using audio-visual telecommunications technology.
- Store-and-Forward (Asynchronous): Transmission of recorded health history through an electronic communications system to a practitioner outside of a real-time or live interaction.
- Remote Patient Monitoring (RPM): Personal health and medical data collection from an individual in one location via electronic communication technologies, which is transmitted to a provider in a different location for use in care and related support.
- Mobile Health (mHealth): Health care and public health practice and education supported by mobile communication devices such as cell phones, tablet computers, etc. (Huin 2020)

In addition, the definition of ICT as applied to telehealth means that technologies such as radio, television are in scope. So too are the technologies that enable, for example, wearable devices. The US Food and Drug Administration offers the following definition that “The broad scope of digital health includes categories such as mobile health (mHealth), health information technology (IT), wearable devices, telehealth and telemedicine, and personalized medicine” (US Food and Drug Administration 2020). This more inclusive approach is also found in the Global Digital Health Strategy recently published by WHO (World Health Organisation 2020).

2.4 Telehealth in Indonesia

Telemedicine has been an element of health service provision in Indonesia (since 1985), but always a relatively minor one (Andriyan B. Suksmono 2004). However, COVID-19 has led to an upsurge of interest in its potential and scope.

Though initially framed in terms of telemedicine, the approach here is to conceptualise the challenges of digital inclusion so that they can be applied to enhancing health care, public health, and health education delivery and support using telecommunications technologies – telehealth. Indeed, in considering the digital inclusion issues from the community point of view many of the broader issues of concern in digital health are also relevant.

Kemenkes Regulation No. 20 of 2019 concerns the “Organization of Telemedicine Services between health service facilities”. Telemedicine is defined as the provision of long-distance health services by health professionals utilizing information and communication technology, consisting of information exchange on diagnosis, medication, disease and injury prevention, research and evaluation, and sustainable education of health service providers to improve individual and public health. Meanwhile, Telemedicine Services through Health Service Facilities is defined as Telemedicine which is implemented between one health services facility and other health services facilities in the form of consultancy to confirm diagnoses, therapy, and/or prevention of diseases. Both Consultancy-Providing Health Service Facilities and/or Consultancy-Requesting Health Service Facilities must register themselves with Kemenkes (Pascoal 2020) .

Kemenkes supports the following telemedicine programmes:

- Temenin - a telemedicine programme that connects public health facilities. It is for telemedicine interactions between medical personnel in procedures such as ultrasounds, radiography and electrocardiograms.
- SehatPedia - a mobile application to increase healthcare service accessibility by providing information on prevention of health problems and teleconsultation and consultation services between users and doctors.

There has been rapid growth in telemedicine in Indonesia. Many major hospitals have launched their own teleconsultation services. For example, in April 2020 the Siloam Hospital chain (of 36 hospitals) launched its online outpatient teleconsultation service (300 participating specialists) in collaboration with Aido Health, an online service provider (Prasidya 2020). During the COVID-19 pandemic Indonesia's largest telehealth firms, including Alodokter, Halodoc and GrabHealth (a joint venture between Singapore ride-hailer Grab and Ping An Good Doctor from China's Ping An Healthcare and Technology Co Ltd) have seen usage increase rapidly. Alodokter had 32 million website visitors in March 2020 and over 500,000 free coronavirus consultations since Indonesia's first confirmed COVID-19 case on March 2. Grabhealth reported that daily consultations had nearly doubled to 10,000 (Aljazeera 2020). COVID-19 is helping drive the expansion of telemedicine, particularly since Kemenkes waived the rules of telemedicine (Circular Letter No. 303/2020 and Indonesia Medical Council Regulation No. 74/2020). This explained that telemedicine concerns services carried out by doctors using information and communication technology to diagnose, treat, prevent, and evaluate patients' health conditions (Indonesia Ministry of Health 2020), and gave guidance enabling direct consultation, medication and prescribing via telemedicine (Supriyardi 2020). Given the growth of telemedicine, there has been speculation that telemedicine would be privatized and capitalized and that it may produce the next unicorns³ in Indonesia (Sambon 2020). Focusing just on the high growth areas of telemedicine may risk defeating the purpose of accessible universal healthcare and reinforces the need for government's active role to provide reliable and inclusive telemedicine services (Handayani 2021).

During the COVID-19 pandemic, telehealth has been used directly to reduce the risks of infection for both staff and patients from attendance at a health facility. But it may also offer new options for delivering health services on a long-term basis (and ensuring digital inclusion is required in whichever option is developed). Also, whilst the focus of health service staff may be on delivering the vaccines, there is the opportunity to strengthen and/or adapt the use of telehealth to engage with communities to encourage individuals to get vaccinated and to support community outreach staff in doing this.

2.5 Social and Digital Inclusion

2.5.1 Social inclusion

In every country, social inclusion, by definition, is about making all groups of people and individuals feel included and valued within their society or community. Social exclusion is when individuals or groups are unable to participate in the economic, social, political, and cultural life of their society. Where individuals or groups of individuals are excluded, or feel on the margins of society, there is often a direct impact on their health. Individuals can become excluded, and so too can communities, if beliefs differ or there are perceptions of stigma attached to these (Royal College of Nursing 2021).

³ Unicorns in this context are tech startups valued at more than \$1 billion

Social exclusion that has an impact on health can be experienced by those who are:

- Poor or in financial hardship.
- Homeless; not having a permanent residence.
- Challenged by language barriers, including those with learning disabilities.
- Refugees, asylum seekers, Internally Displace People, nomadic communities and migrants.
- Ethnic and religious minorities.
- In the criminal justice system, or who move around frequently and fall between services.
- Unable to access services or prevented from accessing support as a result of abuse, domestic abuse or modern slavery or trafficking.
- Already suffering from Ill health - physical or mental.
- Persons with Disabilities.
- Indigenous peoples and people living in remote areas.
- People living in urban settlements or slums.
- Adolescents and young people.
- Older persons.
- Marginalised and feel stigmatised due to their sexuality or gender or perceptions within social and cultural groups of diseases such as TB or HIV.

Whilst each of these are important (Tropical Health Education Trust 2020) many people suffer several of these challenges simultaneously, and then there are the challenges of digital exclusion to contend with too.

2.5.2 Digital Inclusion

The ITU has provided a range of resources and guidance to help countries empower all people to equally benefit from the opportunities offered by ICTs and leverage these technologies to create a more inclusive digital society (ITU-D 2021a). In recent years there have been a series of resolutions (ITU-D 2021b) passed that specifically address different aspects of digital inclusion concerning:

- Women and Girls.
- Children.
- Youth.
- Persons with Disabilities.
- Indigenous peoples and people living in remote areas.
- Older persons.

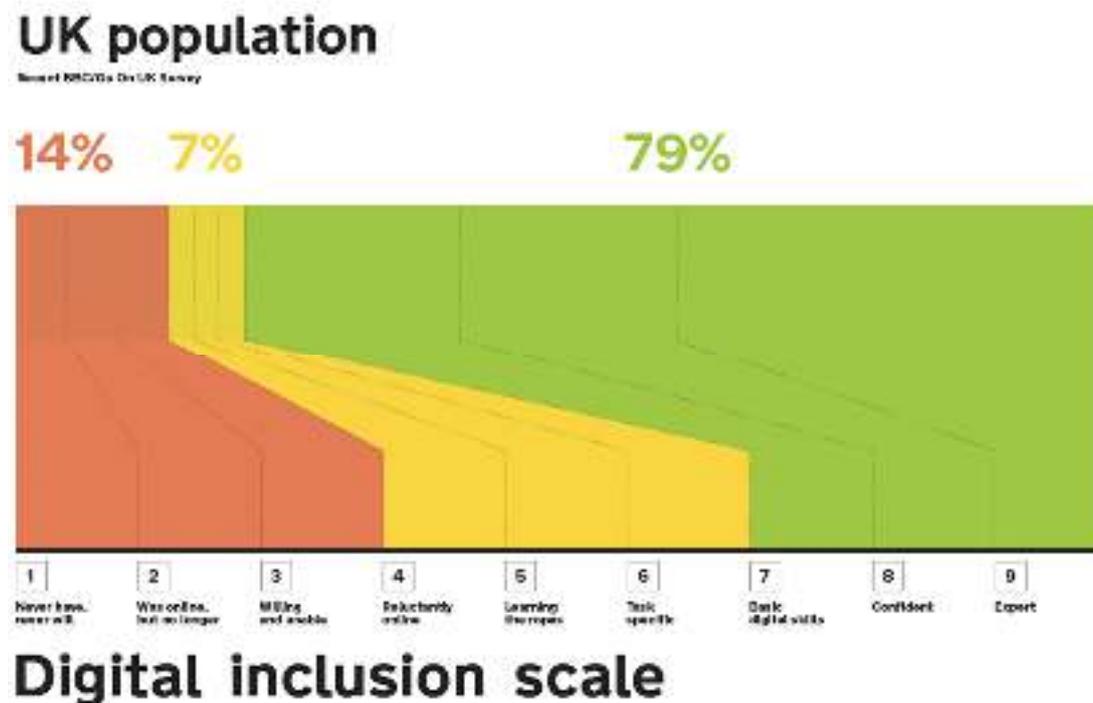
There has also been a deliberate focus on supporting “digital” or “smart” villages (ITU-D 2021c) . This recognises that building up the digital literacy of individuals and enabling them to engage with their communities (physical or virtual) is an important part of enabling inclusive digital societies to evolve.

The UK Digital Inclusion Strategy (UK Cabinet Office 2014) suggested that there are 4 main kinds of challenge people face:

- Access - the ability to go online and connect to the internet.
- Skills - to be able to use the internet.
- Motivation - knowing the reasons why using the internet is a good thing.
- Trust - the risk of crime, or not knowing where to start to go online.

The UK Government Digital Service developed a digital inclusion scale. It ranges from those people who may have consciously decided not to use the internet and therefore never have been online and never will, to experts whose primary income comes from online services. There are nine categories used and the proportion of the UK population that were in them (in 2014) are shown below (UK Cabinet Office 2014). 14% of the population were digitally excluded, and a further 7% only able to use it for specific tasks. Improving digital literacy is one of the ways to improve digital inclusion.

Figure 5: Digital Inclusion in the UK



Source: (UK Cabinet Office 2014)

Paradoxically, as more people are connected to the Internet, with the increasing number of services and applications to enhance digital wellbeing, digital inequality is increasing not decreasing (Mothobi 2019), and COVID-19 has brought into stark relief the need to accelerate digitization of economies in ways that are inclusive of all people, everywhere. (Cheney 2020). Or, as the Director of Digital Development at the World Bank puts it, “I can’t think of a better cause than contributing to close the digital gender divide. This is particularly the case during the COVID-19 pandemic when digital technologies have become our lifeline. The crisis may in fact reinforce the digital gender divide, including through its impact on girls’ education. Now is the time to do something about it,” (World Bank 2020). In addition to improving digital literacy, investment in assistive digital technologies is also needed.

2.6 Some digital technologies to assist inclusion

There are a range of assistive digital technologies that are emerging to address some of the inclusion challenges. These include:

2.6.1 Speaking

Digital resources that enable individuals with issues about speech to communicate easily and maintain a higher degree of independence and control of their daily lives include:

- Text-to-speech software can convert any written text such as Microsoft Word, webpages, PDF files into spoken words, e.g., <https://www.naturalreaders.com/>.

- Dictation voice-to-text allows you to easily speak and instantly see text or email messages e.g., <https://www.nuance.com/dragon/dragon-accessories.html> and there is also webcaptioner <https://webcaptioner.com/>.
- Alternative keyboards and multi-access devices. Eye-gaze systems allow people with severe physical disabilities to access a computer, and multi-access keyboards (with touch-based speech generation) give individuals the freedom to use direct selection methods to suit them. e.g., <https://thinksmartbox.com/story/ellas-smartbox-eye-gaze-clinic/> and <https://www.tobiidynavox.com/en-GB/products/Devices/>, and <https://therapy-box.co.uk/chatable> provides a grid of symbols that can be pressed to speak words and construct sentences.

2.6.2 Hearing

Assistive Technology solutions, such as listening devices designed to reduce background noise and enhance a speaker's voice, can help to overcome hearing difficulties. There are a range of apps for the deaf and hearing impaired, e.g., <https://appadvice.com/applists/show/apps-for-the-deaf> including sign language, volume control and noise detection (<http://myhealthapps.net/app/details/22/tap-tap>). Speaklize, offered developed by Ecuadorian start-up Talov (<https://www.talovstudio.com/speakliz>) has a Sign Language Recognition feature which transforms classic sign language into a modern form of communication, by converting it into voice and text in real time just with the phone camera. With good connectivity, (and Android) LiveTranscribe https://play.google.com/store/apps/details?id=com.google.audio.hearing.visualization.accessibility.scribe&hl=en_GB&gl=US offers options for automatic speech and sound recognition.

2.6.3 Vision

A range of Assistive Technology products has been developed for blind or partially-sighted individuals, from the more traditional aids e.g., talking books <https://www.rnib.org.uk/talking-books-service>, screen magnifiers <https://shop.rnib.org.uk/magnification/magnifiers/electronic-magnifiers>, USB and media players <https://shop.rnib.org.uk/reading/reading-devices/usb-and-media-players> and text-to-speech software (see 2.6.1).

2.6.4 Writing

A variety of Assistive Technology is available aimed at making the written word more accessible. Software has been designed which improves reading and writing skills, with useful features such as speech feedback, spell check, and word prediction, e.g., <https://edshelf.com/tool/ireadwrite/>.

These technologies, when allied to delivering health and care at a distance, are an important part of addressing the telehealth and digital inclusion agenda.

2.6.5 Innovation and Training

In Indonesia, currently, there are 224 Healthtech start-ups⁴. "Healthtech start-ups have stepped in to fill treatment voids as Indonesia's healthcare system was becoming overrun with pressure from COVID-19", but this upbeat assessment (Devanesan 2020), resonates more with young, mobile-savvy populations, than older, rural populations.

The GSMA runs an Assistive Technology Programme (GSMA 2021) which provides support to address the digital inclusion gap for persons with disabilities and identify innovation opportunities for making mobile technologies enablers of assistive technology. A recent report noted Innovation

⁴ <https://tracxn.com/explore/HealthTech-Startups-in-Indonesia>

hubs, incubators and accelerators provide key resources for digital Assistive Technology innovators, even when located in other countries. For example, TuneMap⁵ was established in Indonesia and accepted onto an incubator in Malaysia, which facilitated global links to mentors such as the Open Data Institute in London (Aranda-Jan 2020).

There is a comprehensive training programme, produced by the GSMA (GSMA 2021), to teach people the basic skills they need to access and use mobile internet services. It uses a 'train the trainer' approach and consists of short lessons that can be easily adapted to local needs and languages.

2.7 Summary

Having introduced some of the key issues, this chapter has laid the basis for this report. It is concerned less with telemedicine as practiced between doctors, and more on the broader challenges of telehealth. The importance of having connectivity has been made, but the objective is to improve usage. This requires an understanding of the issues around capacity building and community engagement⁶. The next chapter addresses these but starts with considering in more detail the people and groups most at risk of social and digital exclusion.

⁵ <https://tunemap.org/> Captures unsafe conditions of city pavements (i.e. holes, no guiding block, etc).

⁶ The Regulatory Issues are also, addressed in the separate UK Global Trade Programme (GTP) Telemedicine Regulation project (delivered through the British Embassy, Jakarta).

3 Health and Digital Inclusion

This chapter begins by outlining the range of interests that a GESI framework includes, together with a flavour of the opportunities and barriers to supporting them with telehealth. The next section briefly outlines some of the opportunities and barriers for capacity building and community engagement experienced elsewhere. Then the situation regarding different GESI groups and issues in Indonesia is considered. This is followed by a section dealing with some key aspects of capacity building and community engagement in Indonesia relating to digital literacy, and capacity building for health staff, and for citizens. The chapter concludes with a section considering the cross-sectoral challenges being faced by governments everywhere, including Indonesia, and in particular the range of stakeholders who have an involvement in the evolution of a digital health ecosystem.

3.1 GESI and Telehealth

Within the definition of “Gender Equality and Social Inclusion” (Tropical Health Education Trust 2020) are women and girls as well as other vulnerable groups who are at risk of exclusion within a particular context. Such groups may include: women and girls, adolescents and young people, the elderly, people living with disabilities, ethnic minorities, religious minorities, people living with a stigmatising illness, internally displaced people, migrant populations, nomadic communities, members of minority clans or subclans, people living in urban settlements or geographically inaccessible districts, the Lesbian, gay, bisexual, transgender, queer (or questioning), and intersex community, groups with less education, and the very poor.

The WHO estimate that over 1 billion people worldwide experience some form of disability (World Health Organisation 2021). Barriers to inclusion and participation are exacerbated by the lack of access to affordable, relevant assistive technology. Only one in 10 people have access to the assistive technology they need to live independent and autonomous lives (GSMA 2021). People with disabilities often have complex healthcare and access needs for which telehealth is particularly well-suited, especially in management of chronic diseases (Noel 2020). COVID-19 has reinforced the challenges faced in caring for the elderly, as well as the opportunities of using digital technologies to support them. There are some good practices emerging which show that digital health can open up access to online health and care support, enabling people to get more out of life, keep in touch with others, and make life easier, but the dangers of an increasing digital divide have been noted too (Sieck 2021).

Telehealth can positively influence how healthcare is received. For example, a low-cost mhealth intervention was developed in Vietnam for ethnic minority women who experience disproportionately high incidence of infant and maternal mortality and suffered from other forms of exclusion. The researchers (McBride B 2018) addressed local language needs and provided information about maternal and child health via SMS and their community healthcare workers. Results showed a measurable increase in demand for quality ante- and post-natal care. But gender and power also impact on the provision of digital health services. In Ethiopia, (Rosalind Steege 2018) examined the impact of an mHealth intervention on the gendered experiences of Health Extension Workers and how gender inequalities can weaken attempts to positively scale-up mHealth initiatives. As the OECD have pointed out (OECD 2018), hurdles to access, affordability, lack of education as well as inherent biases and sociocultural norms curtail women and girls’ ability to benefit from the opportunities offered by digital transformation, and this certainly applies in the context of receipt and delivery of telehealth.

3.2 Capacity Building and Community Engagement, and Telehealth

Some people have good health literacy but limited digital access, skills, and confidence (more likely among older adults). Some have poor health literacy but good digital skills (more likely among younger adults). Some people lack both digital literacy and health literacy (Stone E 2020). For many, gaining digital health skills, and being able to deploy them, depends on the availability of a Centre of some sort in their community where there is internet connectivity, power, and support for learning, (apps and, preferably, a facilitator). This is a key part of building their confidence and capacity. In Malaysian Borneo, a recent study (Tabassum 2019) on the impact of a telecentre showed that the Bario community benefited, both directly and indirectly, including intangible impacts such as connectedness, a sense of belongingness, strengthened social ties, and psychological empowerment. As the availability of mobile technology becomes more ubiquitous so the focus can shift towards the development of community networks (Roveri 2020).

Regarding recent experience of Community Health Centres and the use of telehealth in the USA, the COVID-19 pandemic has transformed the landscape of ambulatory care with rapid shifts to telehealth. Well-resourced hospitals have quickly made the transition to offering telehealth. But Community Health Centres (CHCs), which serve more than 28 million low-income and disproportionately uninsured patients in rural and underserved urban areas of the United States, have not fared as well. This is because ambulatory visits have declined, resulting in furloughs, layoffs, and more than 1,900 temporary site closures throughout the country (June-Ho Kim 2020) as people have increasingly been offered online support whilst at home.

In developing countries there is good evidence that diagnostic services of public hospitals using telemedicine may improve the health diagnosis in remote community health centres at relatively low cost (Pedro Galván 2018). From a sustainability-oriented standpoint, a recent literature review on telemedicine in rural areas suggested that it enhances both emergency and diagnostic healthcare by decreasing the cost of services, expanding coverage of specialist cares, and increasing the quality of the outcomes. For health policies, telemedicine can be considered a suitable solution for providing cost-effective and sustainable healthcare (Gabriele Palozzi 2020). However, there are gender issues in the use of multi-purpose telecentres. For example, in Western Cape, South Africa, women are still facing exclusion in the use of telecentres, largely because of cultural perceptions that they are responsible for the home; telecentres are also widely perceived appropriate for men to find employment (Abiodun Alao 2017).

3.3 Gender Equality and Social Inclusion in Indonesia

Gender Equality and Social Inclusion Strategies (GESI) in Indonesia have focused on the barriers to economic engagement. As the table below indicates, they provide a helpful summary of some GESI demographics in the Indonesian context (Vanessa Valentino 2019).

Table 1: GESI groups in Indonesia

Women	People with Disabilities	Youth	Indigenous People
Around 40% of smallholder farmers in Indonesia are women (7.4 million women farmers according to the 2013 Agriculture Census). Women farmers are involved in almost all the agricultural processes, including many vital functions. While men are seeking employment off-farm, the majority of women in rural households stay in agriculture.	An estimated 10-15% of Indonesians have some form of disability. Agriculture is the main industry for people with disabilities, with ~46% working in this sector. Disability prevalence in Indonesia also increases with age (33% of farmers are aged 55 and above)	Youths (aged ≤ 34) account for less than 13% of agricultural labour. However, unemployment is more pronounced among youth (unemployment rate of youths aged 20-24 is 2.5 times that of the overall population). Indonesia is entering a youth demographic dividend, a period where a significant proportion of the population will be youths	Indigenous people make up roughly 50% and 51.5% of Papua and West Papua provinces, respectively. They are disproportionately poor compared to transmigrant populations. Many of the indigenous Papuans rely heavily on government subsidies and live in upland areas where there is limited access to markets

Source: (Vanessa Valentino 2019) PRISMA Gender Equality & Social Inclusion Strategy

The following sub-section amplifies some of the digital inclusion issues being faced in Indonesia.

3.3.1 Women and girls

Women and girls suffer with gender-based violence, and the number of child marriages in Indonesia has seen a significant increase during the COVID-19 pandemic. Supporting maternal and child health services is of course an important feature of addressing the challenges that women face, and such services often must overcome social and cultural barriers to access to digital services.

In Indonesia, whilst almost as many women as men bought their own smart phone, overall there is a gender gap in mobile ownership of 10%. This implies that the major challenges are likely in the rural areas where the proportion of basic phones in use is much higher. Awareness of mobile internet via smart phones is lower among women than men but is increasing. In 2019 64% (vs 70% men) of women were aware, whilst in 2017 only 41% (vs 47% men) were aware (GSMA 2020). But awareness does not mean readiness to use, and a recent report notes a clear gender gap in digital readiness, with only 38% of women digitally knowledgeable (UK-Indonesia Tech Hub 2021). Telemedicine services, such as Temenin, support women's reproductive rights, but more evidence is needed that demonstrates that they are overcoming the gender barriers to access. There are many other barriers to consider too.

3.3.2 Gender identity

For those who identify as Lesbian, Gay, Bi-sexual, Transgender, Intersex and Queer (LGBTIQ), technology creates a space, which preserves status quo, discrimination and violence against LGBTIQ that has previously been evident in offline spaces. So, whilst, the LGBTIQ communities may be relatively well connected and freedom of expression is increasingly easy in Indonesia, online harassment has been documented (Kamilia Manaf 2014), and is another barrier to engaging with telehealth technology that must be overcome.

3.3.3 People with Disabilities

To guarantee the rights of PwDs, there are regulations on accessibility to enable physical access to health facilities for disabled people that apply to any building owned by the government and private/nongovernment buildings, other than private houses, which are open to the public. This includes hospitals and other health service facilities (Government of Indonesia 1997). The regulation provides detailed guidelines (including illustrations of the measures to be implemented) of accessibility requirements for disabled people that include pathways, parking spaces, doors, ramps, toilets, stairs and elevators. Nonetheless, these guidelines are not implemented fully in hospitals and health centres/clinics. No sanctions have ever been enforced (Krishna Hort 2017). This means that PwDs are excluded from easy access to the places where they can access telehealth services.

3.3.4 Language and media

With so many small indigenous populations amongst the archipelago of Indonesia, it is not surprising that there are over 700 distinct languages spoken (Government of Indonesia 2021). The challenges, therefore, are for the generation of local language content and the training of health professionals, or volunteers, or literate citizens, to understand and deliver good quality care and support. But providing text-based information may itself be a barrier, and there is growing potential for the use of audio and video channels. The creation of such content (for radio transmission) by Kapal Perempuan, or the development of videos and cartoons (such as those produced by Scientific Animations Without Borders re.COVID-19 in Bahasa (SAWBO 2021), and the work of media labs (e.g., at Kasepuhan Ciptagelar Tech Hub Village run by Common Room Networks Foundation) provide examples of innovative generation of media that can be localised.

3.3.5 Mental Health

Mental illness-related stigma includes that which exists in the healthcare system and among healthcare providers; it creates serious barriers to access and quality care. It is also a major concern for healthcare practitioners themselves, both as a workplace culture issue and as a barrier for seeking help (Stephanie Knaak 2017). The prevalence of severe mental disorder in the Indonesian population is 1.7%. People with mental disorders are often stigmatized by their communities. One of the most common form of discrimination toward people with mental disorder is the practice of *pasung* - confining and restraining the mentally ill (Nurul Hartini 2018). There is an increasing range of online self-assessment tools for anxiety, depression and other mental health issues available through WhatsApp, and Halodoc have introduced similar services – but these are for the digitally literate.

3.3.6 The Elderly

In Indonesia, the traditional concept of family or extended family members taking informal care of the elderly or disabled family members has started to shift with the changes in social values, the shift to nuclear family structures and increasing mobility of younger Indonesians in search of employment. Additionally, local social offices at province, district and municipality level provide home nursing services to the elderly although the numbers are very limited, and whilst Puskesmas also have a public health nursing programme which provides outreach services to the elderly at home, again the scale of these services is limited (Krishna Hort 2017).

3.3.7 Religious minorities

Indonesia has historically been known for its moderate expression of Islam and its pluralist society. Over the last decade the country has seen a rise in extremist Islam and the politicisation of religion. The state is seen by some as a key driver of persecution against Christians both actively through its blasphemy legislation and passively in its failure to protect the Christian community from attacks. The task is to enable religious minorities to receive information and messaging about health programmes that concern them, as well as encouraging their involvement and meaningful representation health service delivery (Avis 2019).

3.3.8 Migrants

While Indonesia is not a party to the 1951 Refugee Convention or its 1967 Protocol, it has a long tradition of allowing access to and hosting refugees. Refugees have access to primary medical care through public health facilities, as well as community maternity and childcare, which provides immunizations. As of November 2020 13,745, persons were registered with UNHCR including - 72% adult (73% of them are men) and 28% children (UNHCR 2020). As per the Government of Indonesia's protocol, refugees have access to COVID-19 related services, including testing and treatment, provided by Kemenkes. Refugee communities throughout the country have been informed of the protocol through various communication channels (e.g., posters, flyers, and townhall meetings) and actors (such as other Relief Services) (Suryono 2020).

3.3.9 Legal identity

Civil registration and the provision of legal identity are fundamental services that all humans have the right to expect from their governments, but there are many barriers to achieving a legal identity in Indonesia (Anne L. Buffardi 2016). A study in 2016 in Indonesia found that one in three children had no legal documentation of their birth, and two in five marriages were considered illegitimate by the state. Almost one in five adults could not readily produce an ID or family card with their name on it, and death certificates were almost non-existent. Unlike population registration authorities, which are at the district level, primary healthcare providers are accessible to most villages, and generally have strong relationships with local communities. Yet, providers of basic services had brokered less than 5% of birth certificates documented in the study. The report recommended that civil registration processes should be made more accessible for communities through integrated and mobile services that target community and village health clinics, health posts (Posyandu), family planning clinics, hospitals, and private clinics (Clara Siagian 2016).

3.3.10 Labour market

The challenges facing PwDs in Indonesia have been known for some time (International Labour Organisation 2013), and work undertaken (by multiple UN Agencies) to promote the rights of PwDs (International Labour Organisation 2015). The socio-economic conditions of PwDs, the characteristics of employed PwDs, and the wage distribution of PwDs has been reported on by the ILO (International Labour Organisation 2017). Their report notes the different definitions of disability in use but brings together the findings from 5 different surveys to indicate which are the top 10 provinces in terms of prevalence of disability. They find that, consistently, Gorontalo appears as a top-10 province in five data sources, while South Sulawesi, West Sumatera and West Sulawesi appear as top-10-provinces consistently in four data sources; East Nusa Tenggara is a province which appears as top-10 in three data sources. The National Rural Water Supply and Sanitation Project (PAMSIMAS) has focused on institutionalizing disability inclusion in the project cycle and mainstreaming disability in project policies. The project supported training on disability inclusion in development and in water, sanitation, and hygiene (WASH) activities for government

officials, and WASH facilitators. PAMSIMAS has incorporated the topic of disability inclusion in community implementation training reaching about 4,200 facilitators, followed by pilot projects in 200 villages. Disability is also included in process and output monitoring (McClain-Nhlapo, et al. 2018).

Indonesian women's need for digital media literacy skills to effectively use the Internet and to raise their quality of life has been recognised (Suwana 2017). For example, the "Girls in Tech Indonesia" community initiative has shown a contribution to women economic empowerment through ICT education and engagement through "Womanpreneur Digital Acceleration" (Afiani 2018).

3.4 Capacity building and community engagement

3.4.1 Digital literacy

The 2021 International Inclusive Internet Index⁷ found that Indonesia performs within the top half of countries in the Availability and Relevance categories. The country scores within the bottom half of countries however, in Affordability and Readiness, with particular weaknesses in its competitive environment and low literacy rates. (The Economist Intelligence Unit 2021).

Since 2002 the ICT Watch has worked to support the Internet Sehat digital literacy movement in Indonesia and establish a "Healthy Internet" (Internet Sehat 2021) for:

- a) Fostering positive, useful, and interesting local content for the development of children and adolescents and the productivity of the local community / community.
- b) Encouraging parent-child or teacher-student communication and introduce parental control tools for self-filtering of illegal content at home or school.
- c) Initiating inclusive dialogue and cooperation on Internet governance with multiple stakeholders in child protection on the Internet.

With support from 110 institutions and various communities, on 20th May 2021 the President of Indonesia launched a National Digital Literacy programme noting "Many negative contents continue to emerge, crimes in digital space continue to increase. Hoaxes, online fraud, gambling, child sexual exploitation, cyberbullying, hate speech, up to radicalism must be watched out since they could threaten the nation's unity and integrity.... I hope the programme will continue to grow so that it can encourage various initiatives in other places, to carry out concrete work in the community so they become more competent in using the internet for educational purposes and productive activities". (Cabinet Secretariat of the Republic of Indonesia 2021).

Studies of digital literacy education for Indonesians have focused on what works best for a range of learner roles e.g., mothers, children, teens etc., (Rahmah 2015). In the more specialised role of teaching English as a Foreign Language, a qualitative study showed just how important having a digitally literate teacher is in modelling the behaviours that learners can then absorb (Bambang Widi Pratolo 2020). A (currently unpublished) DAP⁸ report for the Ministry of Education, Culture, Research and Technology (Kemdikbud) has provided recommendations on developing a remote learning and digital skills strategy and made recommendations on improving connectivity to support schools and village ownership of these assets. These examples of recommendations for education

⁷ The index assesses the performance of 120 countries in four categories of inclusion: Accessibility, Affordability, Relevance and Readiness. Each category incorporates key indicators of Internet inclusion, including quantitative measures such as network coverage and pricing, and qualitative measures such as the presence of e-inclusion policies and the availability of local-language content.

⁸ Technical Support for Strategy Development of Remote Learning and Digital Skills of the Indonesian Ministry of Education and Culture

are also relevant in the health sector where there are a variety of roles, a need for digitally literate health educators, and the need for a digital health literacy strategy.

3.4.2 Capacity building – for health staff

A recent report suggests some medical professionals fear the risks of data loss, incorrect data input, connectivity problems, and breaching Indonesia’s medical ethics and regulations (Deloitte Indonesia and Bahar 2019). The Indonesian Medical Council (KKI) Regulation 74 clarifies that doctors and dentists are allowed to provide telemedicine services through applications/electronic systems. “Telemedicine services” under KKI Regulation 74 means consultation or teleconsultation services in the form of writing, voice and/or video to diagnose, treat and cure patients. Doctors and dentists who provide medical treatment through telemedicine services must (be trained how to) provide a medical record for every patient and archive it at the healthcare facility in accordance with the prevailing laws and regulations. The medical record may be in written or electronic form and may be provided to patients in the form of a transcript but the original one must be kept at the healthcare facility where the doctors and dentists are registered (Cahyani Endahayu 2020). A recent study of 100 clinicians’ perceptions of the telemedicine system in Makassar City found that 78% of the clinicians were satisfied with the telemedicine system, and 69% said that telemedicine allowed quicker diagnosis and treatment. The main barrier (for 47%) was poor internet connectivity and electricity supply (Dea Indria 2020). As more recording is done digitally, so the requirements for all clinicians to be digitally literate increases.

Overall, in the GTP study⁹ which focuses on the regulatory issues of telemedicine in Indonesia, the assessment is that the capacity of health workers to use telemedicine, including digital literacy, needs to be strengthened. But there is more than just “digital” literacy that is required.

Telemedicine enables exchange of views between clinician and patient/citizen who may not only be distant in terms of miles, but also in terms of culture. In understanding health-seeking behaviour, the cultural norms of Indonesia, and the variety of peoples within it need to be understood (Anna Wahyuni Widayanti 2020). For example, whilst the dominant Indonesian culture largely reflects characteristics of Javanese and Islamic society, the Balinese population, are mostly Hindu and follow different customs and traditions (Cultural Atlas 2021).

3.4.3 Capacity building – for citizens

Many Indonesian citizens are already digitally literate. Indonesia has emerged as the global leader of online shopping with over 86% and 76% of internet users in Indonesia having made purchases on eCommerce and mCommerce platforms, respectively. With 74% of the population having internet connectivity, there is a massive potential for growth in the sector (Wong 2019). So, once embraced, the digital world is intensively used in Indonesia. But there are still the barriers of digital exclusion to be overcome and digital capacity and competencies to be built.

WHO has defined “self-care” as “the ability of individuals, families and communities to promote health, prevent disease, maintain health, and to cope with illness and disability with or without the support of a health-care provider” (World Health Organisation 2013). Globally, and stimulated in part by the pandemic, there has been an increasing use of “digital self-care” (Peter 2021). People are increasingly ready to use mobile messaging, chatbots, call centres, help desks, apps and websites – in effect providing themselves with care “at a distance”. But not everybody. Whilst telemedicine providers such as the Kemenkes (e.g., Temenin, SehatPedia) and the private sector (e.g., Halodoc, Sehati, Alodokter), encourage the engagement of patients and/or citizens, the

⁹ The UK GTP Telemedicine Regulation project (delivered through the British Embassy, Jakarta).

practicalities of addressing this digital inclusion agenda remains to be addressed – in essence the focus of this study.

3.5 Digital Health Ecosystems

To ensure inclusion for all, as this report shows, many issues and barriers need to be considered, e.g., increasing digital literacy; overcoming language barriers; special provision for marginalised, and disability groups; special provisions for women and for people with specific medical and health conditions, as well as addressing the issue of improving Civil Registration and Vital Statistics (CRVS).

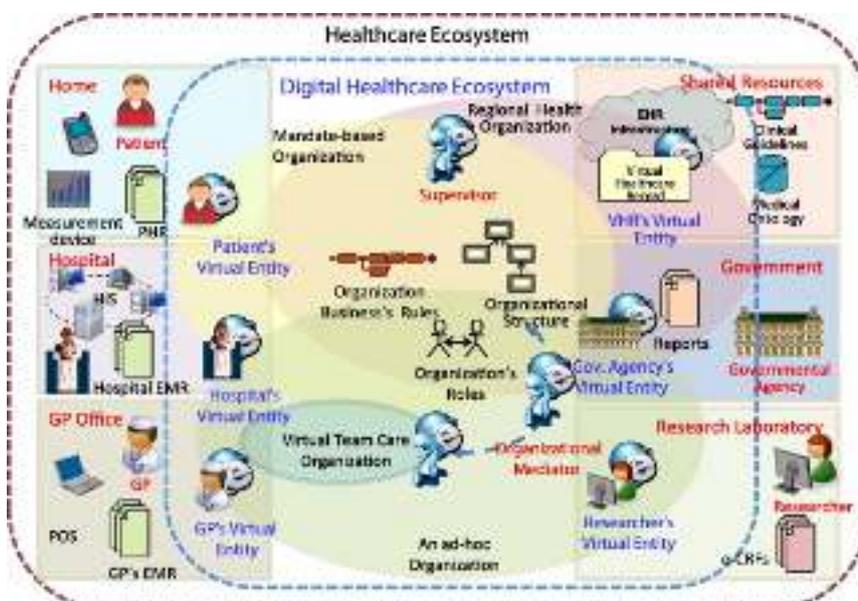
These barriers are inherently cross-sectoral in nature. For example, among the policy-related stakeholders identified who are involved in resolving them are:

- Kemenkes (Ministry of Health).
- Kominfo (Ministry of Communication and Information).
- KemenPPPA (Ministry of Women's Empowerment and Child Protection).
- Bappenas (Ministry of National Development Planning).
- BPJS (Healthcare and Social Security Agency).
- Kemendesa (Ministry of Village, Underdeveloped Regions and Transmigration).

Addressing these cross-sectoral challenges is to work within the paradigm advocated for implementing the SDGs (Ann Florini 2018). The ITU and WHO recently noted that “Taking a ‘whole of government approach’, thinking holistically and flexibly about digital systems design is increasingly essential, given the limited resources – financial or otherwise – available for public sector digital development in many countries. A ‘platform concept’ design approach also makes sense from a technical standpoint: re-using platform components improves system efficiency, increases return on investment, and provides a coherent and consistent environment that promotes seamless interoperability and allows software developers to focus efforts on ongoing improvements and innovations” (Hani Eskandar 2020). The SDG Digital Investment Guide also makes this case (ITU and DIAL 2019).

Digital Healthcare Ecosystems exist in the context of a healthcare ecosystem (Luca Dan Serbanati 2011). Some of the complexities of this are illustrated below:

Figure 6: A Digital Health Ecosystem and its context



Source: (Luca Dan Serbanati 2011)

A simplified approach stresses that there are providers, patients, and payers, and that a digital healthcare ecosystem is an infrastructure that supports the shift from an organization-centric to a patient-centric model of delivering healthcare services using digital platforms. The primary goal of is to encourage cross-organizational, multidisciplinary, and collaborative healthcare delivery (Sinhasane 2020).

From the payer perspective, it is suggested (Mathis Friesdorf 2019) that the key components are those which are consumer facing (e.g., providing personalised health services), provider facing (e.g., providing integrated electronic health records), and internal (e.g., customer analytics and claims).

But a broader perspective is required concerning key organisations and interests involved in digital health ecosystems. It should include: industry, clinicians, health policy makers, academics, innovators and funders - as in the Digital Health Ecosystem of Wales (Digital Health Ecosystem Wales 2021). There are other interests too, e.g., Other Government Departments (e.g., ICT), Development Partners, Non-Governmental Organisations (NGOs), citizens, pharmaceutical organisations, research organisations, telecommunications operators, and the media.

There are a number of motivations for each of these stakeholders to play a part in developing the digital health ecosystem. The following is an illustrative table of some of their key interests.

Table 2: Stakeholders and some Key Interests

Stakeholder	Key Interests
Health Policy Makers (at Kemenkes) and Payers (at JKN)	Delivery of a strengthened health system, with better management control (quality, timeliness, scope and granularity of information) delivering value for money.
Other Policy Makers (Kominfo and other Government Departments)	Coordination and savings from investments in common platforms and standards
Clinicians - Medical	Delivery of better quality care to patients
Clinicians - Nursing	Delivery of better quality care to patients
Clinicians – Public Health and Community	Delivery of health care and information for populations
IT Industry	Return on investment
Telecommunications Operators	Potential new users and revenue streams
International and National Standards Organisations/Agencies	Development and implementation of standards for secure handling of meaningful health data.
NGOs	Opportunities to engage and align with other NGOs and interests
Citizens	Ensuring the health of people fundamentally guides digital health policy and practice
The Media	Insights, leads and news
Healthtech companies, Innovators and startups	Opportunities to expand or start up new companies to exploit new niches
Research Organisations	Commercial gain from applied research
Pharmaceutical Organisations	Research and commercial gain
Funders	Getting insight into where investments are needed and likely to generate Return on Investment
Development Partners	Country-led opportunities to deploy or develop solutions that support their funders' goals
Academia	Insight into pure research opportunities

A Digital Health Ecosystem needs to evolve so that there is less work being done in organisational silos and more being done as part of a broader system. Health systems operate in many ways and at different organisation levels. Some aspects are purely concerned with the delivery of care; other aspects involve research and development; others focus on innovation etc. And the way health systems are evolving is changing, both in response to health threats, changing socio-demographics, and digital technologies such as Artificial Intelligence. Standards agencies can provide cross-sector guidance on good practice e.g., dealing with cyber-security.

Promoting telehealth and digital inclusion should be a part of the interests of the stakeholders in this framework. Within Indonesia there is a clear recognition of the need to support digital inclusion. The Minister of ICT has recently stated “The government believes that digital transformation is not only a physical form of digital infrastructure, but also about how technology can increase the capacity of society in an inclusive and humane manner... here is ample space to ensure equal digital access for friends with disabilities, in order to be able to increase their capacities and capabilities” (Voice of Indonesia 2020).

A Digital Health Strategy that is developed with the engagement of some (if not all of) these stakeholders is needed to provide some practical next steps for the future improvements, and the telehealth and digital inclusion issues raised in this report should make a useful contribution.

4 Methodology

Given the constraints of conducting research during a pandemic, this is a qualitative study based around (online) interviews and workshops. The data sources used were guided by an extensive review of relevant literature. The study was conducted in three phases. After Phase 1 (Inception) was completed, the Phase 2 (Stakeholder Engagement) selection of participants and topics for discussion was guided by the UKFCDO and Kemenkes, as well as from the issues identified in Phase 1. Informed by the outcomes of this, and earlier work by the UK Global Trade Programme, a Digital Inclusion Framework was developed, and has been used to guide the analysis of the findings reported in Chapters 5 and 6. In Phase 3, there was a process of review, reflection (with input from two workshops given in Chapter 7), and a report with conclusions and recommendations (in Chapter 8).

4.1 Constraints

The assumption that the impact of the COVID-19 pandemic would restrict both international and national travel in support of this project has proved valid. Accordingly, whilst reviews of published reports were an important source of insights, the bulk of the research was based on qualitative techniques using online interviews (via Teams or Zoom).

The challenges for rapid qualitative studies in the context of a pandemic include setting up research teams, obtaining ethical approval, collecting and analysing qualitative data in real-time and sharing actionable findings are documented (Vindrola-Padros 2020). But the essential principles of triangulating perspectives have remained sound (Donna M. Mertens 2012).

4.2 Research questions

The questions listed in Chapter 1.2 are unpacked further in Annex 2. Essentially, to understand the relevant issues concerning telehealth and digital inclusion in Indonesia requires an understanding both of the international perspective (as already outlined in preceding Chapters), and the local. As far as local stakeholders are concerned, the selection was guided by the need to understand the perspectives of Government, Associations, the Private Sector and NGO/Development Partners. The selection was informed by the collective wisdom of the DAP team, as well as being open to other suggestions made in “snowball sampling” during the interview process¹⁰. This list of interviewees was not exhaustive. Ideally, the views of the media, of “ordinary citizens” and village community leaders, and wider range of technology companies, and Development Partners, such as the WHO, would have been interviewed. But the time and travel constraints of doing research in a pandemic meant that this was not possible.

4.3 Data Sources

In this study, the data sources included:

- Policy Reviews. This included policies of Indonesia, as well as international policies, e.g., concerning digital inclusion and telehealth.
- Media Reviews. This included relevant Indonesian and international media stories.
- Interviews with Senior and Middle management staff.
- Frontline staff interviews.

¹⁰ This is where research participants are asked to assist researchers in identifying other potential subjects.

The full set of references of sources are provided at the end of the report. During Phase 2 the synthesis of emerging findings led to the development of a Digital Inclusion Framework (see Section 4.6 below). This helped provide a check that there was a reasonable balance of types of organisations, geographies and organisational responsibilities in the interviewees selected.

4.4 Phases

The research consisted of three phases:

- Inception.
- Stakeholder Engagement.
- Review, Reflection and Report Writing.

The timings and activities are summarised in Annex 3.

4.4.1 Phase 1 – Inception Report

The Inception phase began with preliminary meetings with the FCDO team to clarify the scope of work. This was followed with further meetings with a sample of stakeholders which included:

- Kapal Perempuan.
- Remote Learning and Digital Literacy programme for the Ministry of Education and Culture.
- Common Room.
- Global Trade Programme (GTP).

The GTP project concerning telemedicine was concluding the first phase of its work but had produced initial reports focusing on guidelines and international best practices, as well as Kemenkes's telemedicine functions. It was agreed that this programme would ensure that it did not replicate work in this area.

Beginning in this phase and continuing in Phase 2 was the collection of international experiences in digital inclusion issues, and these have been referred to in the report, in particular in Chapters 2 and 3.

4.4.2 Phase 2 – Stakeholder engagement

To help the study provide some practical solutions to improve digital inclusion regarding telehealth in Indonesia and point to some of the strategic policy issues arising, there was engagement with a wide range of stakeholders. The list of key stakeholders at the start of this phase, and those interviewed during it, are shown in Annex 1.

As was anticipated, the list grew as further recommendations were made, but it was still not possible in the time available to arrange all the interviews desired (see 4.2).

As expected, during this Phase some issues, themes and potential areas of focus emerged. The organisation-oriented findings are reported in Chapters 5, and the cross-sector findings in Chapter 6.

The expectation was that the interviews would inform one or more workshops. Initially the expectation had been that the focus would be on training for staff in the Kemenkes telemedicine programmes. However, delays in that process and a simultaneous richness of input from stakeholders involved in capacity development and community-focused activities meant that instead of one large training-oriented workshop being held, two smaller workshops were.

They focused on the telehealth and digital inclusion issues relevant to:

- a. Staff in Puskesmas.
- b. Communities.

4.4.3 Phase 3 - Review, Reflection and Report Writing

In this final phase, the key themes emerging from the literature review and stakeholder engagement interviews were reviewed, and plans made to hold two workshops were firmed up. These gave an opportunity to test and reflect on the issues with participants (see Chapter 7).

The expectation set for the research report was that the primary customer of the report would be Kemenkes, but that it should also raise practical issues for others to address where appropriate. The final report would:

- Set the context for the doing the work and provide the background to it (Chapters 1-4).
- Present the findings from the engagement with stakeholders and the workshops (Chapters 5-7).
- Make recommendations (Chapter 8).

4.5 Topics to guide discussions

The approach taken was to conduct interviews with key representatives from the stakeholder organisations and projects. For each stakeholder there was a series of issues that guided the discussions in virtual face to face hour-long semi-structured interviews (see Annex 2).

4.5.1 Interview notes

The interviews were conducted either in English, or in Bahasa with translation into English. This of course meant that less information could be shared in the time available. The notes were transcribed and shared. They provided the primary input to the material reported on in Chapters 5 and 6.

4.5.2 Existing Telemedicine Stakeholder Analysis

The UK GTP's analysis¹¹ of the stakeholders of telemedicine in Indonesia gave an overview current telemedicine development and regulations. For each of these stakeholders a structured assessment was made of their coverage, role, level of influence and support, main interests, opportunities, and barriers to expansion.

The key stakeholders identified were:

1. Government: Ministry of Health
2. Government: Ministry of Communications and Informatics
3. Government: Ministry of Home Affairs
4. Government: Ministry of National Development Planning
5. Public Institution: Social Security Administrator for Health (*BPJS Kesehatan*)
6. Public Institution: National Agency of Drug and Food Control (*Badan Pengawasan Obat dan Makanan*)
7. Public Institution: Telecommunication and Information Accessibility Board (*Badan Aksesibilitas Telekomunikasidan Informatika - BAKTI*)

¹¹ The UK GTP Telemedicine Regulation project (delivered through the British Embassy, Jakarta).

8. Local Government: Health Office (*Dinas Kesehatan*)
9. Association: Indonesian Medical Association (*Ikatan Dokter Indonesia – IDI*)
10. Association: Indonesian Medical Council (*Konsil Kedokteran Indonesia – KKI*)
11. Association: Health Office Association (*Asosiasi Dinas Kesehatan – ADINKES*)
12. Association: Indonesian Hospital Association (*Perhimpunan Rumah Sakit Seluruh Indonesia (PERSI)*)
13. Association: Indonesian Health Tech Association
14. Private: Insurance Provider (Prudential)
15. Private: Telemedicine technology provider (Sehati, Halodoc)
16. Healthcare Provider: Community Health Centre (*Pusat Kesehatan Masyarakat – Puskesmas*)
17. Community: Community Integrated Health Service (*Posyandu*)
18. NGO: e.g., Doctor Share
19. International stakeholder: British Chamber Indonesia
20. International stakeholder: WHO
21. International stakeholder: UK Government.

4.6 Digital Inclusion Framework

Phase 1 and the early stages of Phase 2 of this study suggested that there were essentially four different types of stakeholders to engage with.

1. Government / Public Institution.
2. Associations.
3. Private Sector.
4. NGO/Development Partners.

In addition, from the work conducted in Phases 1 and 2, a simple framework emerged for bringing together the issues uncovered, and which reflects the concepts introduced in Chapters 1-3. Essentially, there are digital inclusion issues facing:

1. Delivery of telehealth care services within the **health facilities** (public and private).
2. Delivery of telehealth care services and support to **communities** and their citizens.
3. **Capacity** building and knowledge support for staff, citizens, and communities.
4. **Policy** issues that respond to and guide the approach to 1-3 above.

Of course, many stakeholders have an interest in more than one of these issues, and they may not be easy to categorise, but, based on the GTP's classification, the (four broad groups of) stakeholders interviewed were matched to the four key issues.

This approach enabled analysis to be based, firstly, on an Organisation-oriented perspective, and secondly to use a cross-sector perspective on the key issues raised. This led to the development of a "Digital Inclusion Framework".

The Table 2 below presents a view based on the four **key sectors** involved, and, within each sector which stakeholders are involved in each of the four issues. In Chapter 5 of this report, the analysis is presented using this sector and **organisation-oriented approach**.

Table 3: Organisation-based Approach to Key Issues

Sector	Stakeholders	Health Facilities	Communities	Capacity	Policy
Government / Public Institution					
	Kemenkes				√
	Temenin	√		√	
	Sehatpedia	√	√	√	
	BPJS		√	√	√
	Papua Dinkes			√	√
	Desk Papua	√	√		
	Puskesmas	√	√	√	√
	Kominfo TIAA		√	√	√
	KemenPPPA		√	√	√
	Kemensos		√	√	√
	Kemendesa	√	√	√	√
Association					
	ATENSI	√	√		
	IMA	√		√	
	AHI	√	√		
	PERSI	√			√
Private Sector					
	ProSehat		√		
	LaporCovid-19		√		
	Sehati TeleCTG	√	√		
	Telkom Indonesia	√			√
NGO/Development Partner					
	Common Room			√	
	Kampoeng Cyber			√	
	Kapal Perempuan			√	
	KOMPAK			√	√
	Humanity and Inclusion		√	√	
	Yakkum		√	√	
	UNDP	√	√	√	√
	UNICEF		√	√	√
	World Bank		√	√	√

5 Stakeholders: The Organisation-oriented perspective

In this Chapter we report on our engagement with stakeholders so that their different perspectives on telehealth and digital inclusion issues are captured. The material is summarised from an organisation-specific perspective. This is because, for most organisations, this is the perspective they are most concerned with. While this enabled the issues reported on in this Chapter to be documented, the interview process also explored the cross-sector issues that they might also be concerned with. These topics are considered in Chapter 6. Four broad categories of organisation are used to cover the key types of organisational perspective. The material is presented in the sequence of Government (including Public Institutions), Associations, Private Sector, and NGOs/Development Partners. Given the topics for discussion (see Annex 2) the stakeholders we interviewed gave examples of many of the issues raised in Chapters 2 and 3. A summary of the key comments and findings is provided in a concluding summary that is framed in terms of the GESI categories of people whom the different interviewees mentioned, and also in terms of the challenges and opportunities that were referenced which are addressed in terms capacity building and community engagement. The recommendations based on analysis of these findings are in Chapter 8.

5.1 Government

5.1.1 Kemenkes

The first element of the “Mission” of the Kemenkes is to “Improve public health status, through community empowerment, including the private sector and civil society” (Indonesia Ministry of Health 2014). Based on Permenkes 64/2016, article 3 in carrying out its duties, Kemenkes carries out several functions, e.g., the formulation, stipulation, and implementation of policies in the field of public health, disease prevention and control, health services, and pharmaceuticals and medical devices (Indonesia Ministry of Health 2021). Though none of these make explicit mention of the “inclusion” agenda, as already mentioned, the major policy commitment to Universal Health Coverage requires addressing it.

So far as telemedicine is concerned, several recommendations have been made in the GTP report. They include:

- A strengthened leadership.
- Defining a long-term strategy for development and implementation of telemedicine.
- Building electronic record systems.
- Defining the objectives and limitations of patient-to-doctor tele-consultation.
- Investing in digital literacy at both central and peripheral levels.
- Investing in digital infrastructures.
- Determining how to finance (reimbursing/pricing) telemedicine services.
- Identifying and minimising the barriers to inclusion.

Of these, the last is the primary concern of this report, though other recommendations, e.g. concerning digital literacy and infrastructure investment, are also relevant.

Kemenkes has two major telemedicine programmes: Temenin and Sehatpedia. We were told that the future of the Telesehat programme was under review.

There is no Digital Health Strategy.

5.1.2 Temenin

Temenin provides doctor to doctor telemedicine. The intention is to enable the doctor in one setting (typically in primary care) to get advice and guidance from another specialist doctor about interpreting test results and proposed diagnoses. Enabling the exchange of tele-Radiology, or tele-ECG, or tele-USG data together with tele-consultation means that the swift and improved advice is available to the provider at the point of care (Kemenkes 2021).

From 2012-2019 there have been 181 Health facilities across 28 Provinces using Temenin. However, experience in West Papua indicated that there was low utilisation because of unstable internet connections, limited ease of use and lack of features suitable for the Province's needs (Riski Nugraheni 2019).

Perceived barriers to using Temenin include the prevailing working culture and its unfamiliarity with digital technology; the lack of both stable and widespread internet connectivity in many health facilities; and uncertainty over covering the costs if telemedicine is used which means that many patients prefer to go directly to the specialist hospital.

In terms of the impact of COVID-19, the indications are that within cities patients prefer not to travel and therefore welcome telemedicine services, whilst in the rural areas (which, at present, are less affected) there is a preference for face-to-face consultations.

Successful implementation of Temenin requires:

- Socialisation with, and the support of, the hospital director, Chief of Primary Health care and Local Government.
- Careful choice of the facilities to pilot Temenin so that it triggers utilisation (one Puskesmas interviewed suggested being in the same District as the Temenin Hospital would help in the piloting stage).
- Coordination between Kemenkes and Kominfo. This concerns the provision of VSAT satellite connection of sufficient bandwidth. At present these solutions are unstable in bad weather conditions and provide insufficient bandwidth for swift uploading of the high volumes of (image) data required.
- Training of staff.
- Agreed telemedicine financing. There are pilots with BPJS in 5 areas of Indonesia to address this.

Though Temenin is open for consultation of any health problem, the reality is that it depends on the leadership, and support, of the health professionals involved. At present we were told that there is no use being made of it to provide services for mental health issues.

The need for synergy with other programmes, such as Sisrute (the integrated referral system), Electronic Medical Records, and Sehatpedia is recognised. Though Temenin and Sehatpedia are at present within the same Directorate of Kemenkes, they are in different sub-Directorates. These arrangements are under review.

The use of a special central budget allocation to support Temenin (*Dana Alokasi Khusus*) for infrastructure and equipment does not apply to Sehatpedia, but there may be the opportunity to develop one training package because the locus for the Temenin implementations may provide opportunities for piloting the training for community health care staff.

5.1.3 Sehatpedia

Sehatpedia is another Kemenkes telemedicine platform, but one whose focus is on Communication, Information and Education (CIE). It uses a technical platform (provided by a private company, C-care), and has been implemented with the support of experts from 34 Kemenkes hospitals. The app is downloadable (e.g., Google Playstore), and offers consultation and education. The consultation services are in the form of Live Chat and Messages on the Sehatpedia application which can be used to ask expert Doctors (from various specialties for various hospitals) about health problems. So far, the services are still related to tele-education only, and not yet for therapy (treatment). The education services are essentially a range of articles, e.g., about COVID-19. There is the opportunity for ensuring that Sehatpedia demonstrates a commitment by both the public and private sectors to improve inclusivity by design.

In 2021, the plans are to expand the tele-CIE services to also provide free teleconsultation services at Puskesmas. Much of the impetus for these developments have come from the impact of COVID-19. Staff at Puskesmas recognised that people were increasingly hesitant in attending because of the risks posed by COVID-19 and began using WhatsApp to provide services to them – something that is, for the moment at least, recognised by BPJS. Kemenkes is planning to train staff at Puskesmas to initiate a consultation with Sehatpedia and enable a consultation with a patient at home using WhatsApp. This would generate the input directly into the BPJS P-Care record system at the Puskesmas for onward transmission to the BPJS for insurance purposes.

The plan for 2021 is to firstly pilot the use of Sehatpedia in up to 3 Puskesmas, and then to extend it to 20-30 Puskesmas. All the selected Puskesmas for this pilot were proposed by stakeholders such as the Association of Primary Doctors and the Association of the Puskesmas, i.e., a bottom-up approach. Kemenkes will conduct training on how to use the system for Puskesmas staff.

At the same time Sehatpedia will do a pilot project for teleconsultations at the hospital. It is planned to do this in 3 hospitals. For the patient, the teleconsultation service is not free at the hospital level, and Sehatpedia are now in the process of agreeing how this is included as part of the national health insurance package. However, at the Puskesmas level, the service is free for the patient as it is already part of the national health insurance scheme. At the Puskesmas level, the payment mechanism is based on a capitation system. The patients that need medical services will only be facilitated at the Puskesmas in their respective area where they are registered.

Indicators of usage are that in a recent three-month period there were 80,000 downloads from the IOS and Playstore, and this may increase when consultation services are offered. In the early days of the pandemic there were 20,000 hits a day, but it has now dropped back to the pre-pandemic levels of about 500. Most users are from the big cities and large proportions are women aged 25-35. It seems those who probably feel shy to consult directly make use of online features. There is no information about PwD users. Low digital literacy levels, particularly in rural areas is a barrier.

Sehatpedia recognise the potential to provide one training package with Temenin.

5.1.4 BPJS Kesehatan

The National Health Insurance program actually began to be planned in 2004. There were different schemes that were brought together under the BPJS umbrella in 2014 and since then the Jaminan Kesehatan Nasional – JKN scheme has extended health insurance coverage from less than 50% to 83% in 2020.

The JKN scheme is administered by the National Health Insurance Administrator (BPJS Kesehatan). The national insurance program was originally called Kartu Indonesia Sehat (KIS), and subsequently has become known as the JKN-KIS program (National Health Network-Healthy

Indonesia Card). The JKN-KIS program is an insurance program with tiered, quality and cost-controlled services (managed care), consisting of primary care and progressive/advanced care. It is mandatory for all Indonesian residents to become JKN-KIS participants, including foreigners who have worked for at least six months in Indonesia, and there are detailed rules for membership, and registration procedures.

While the expansion of coverage has been remarkable, there are still close to 50 million people without health insurance (World Bank 2020), the challenges of including the hard to reach remain. The biggest challenges reported to us were not so much among those who were poorest, but among those in informal employment who do not qualify for contribution subsidies. This is the “missing middle”. There are difficulties in locating where they live, they do not have pay checks, they do not have the ability to pay, and most of them have low literacy. They feel they do not need insurance until they get sick.

To support its drive to getting 100%, or Universal Health Coverage, BPJS has been developing a mobile JKN app. Early evaluations showed that the number of participants visiting BPJS Kesehatan offices to register there fell by 65.8% whilst user satisfaction increased (with online registration, being able to make appointments online etc). Most app users belong to the non-poor informal sector (1.2 million users) and the private formal sector (1.5 million users). This is in line with the programme’s objective as these two categories have the most need for the app due to the nature of their membership (having to individually check and update their membership status, class, personal information etc). These segments are also most likely to own and use smart phones.

5.1.5 Dinkes Provinsi Papua

The Papua Provincial Health Office (Dinas Kesehatan Provinsi Papua – or Papua Dinkes) is responsible for health-related matters in the Province, which has a population of over 3m but a low population density.

Papua Dinkes started the telemedicine project using Temenin from Ministry of Health in 3 hospitals in Biak and Supiori. The telemedicine services are: TeleECG, TeleUSG, teleradiology and teleconsultation. The interaction is between the health professional at Supiori hospital (a small hospital) with Biak hospital (referral hospital). The primary challenge is the internet connection. A radiology specialist from Biak hospital reported that the consultation process was working, but if the internet was not good, they use WhatsApp or have a direct call.

Staff in approximately 10 hospitals and 15 Puskesmas have been trained, with Kemenkes support, but it is not being implemented yet at the Puskesmas. Though a budget for the telemedicine infrastructure is in the central government plan, the implementation process at provincial and district levels has not been implemented yet. Though the pandemic has generated momentum for the use of telemedicine, discussions have not yet been held at District level.

At present the (relatively costly) use of online consultations with private service providers are not yet popular within the local communities. There is a hospital-based call centre service, but it really only began to be used during the pandemic, though there is an initiative from the Kemenkes for a Public Service Centre that will also support referrals. This is still in the early stages.

Gender and PwD issues are less important at the moment in explaining uptake in Papua than the socioeconomic status of people.

5.1.6 Desk Papua

Presidential Instruction No. 9 of 2017 concerned the Acceleration of the Development of Welfare in Papua and West Papua Provinces. Bappenas is addressing the many challenges of Papua by taking a holistic approach. This is to combine cultural, inclusive economic approaches and human security. Also, of interest to the health sector will be the ecological approach being taken that respects the environment and climate change. It is also making use of the skills of the Indonesian diaspora, notably the Indonesian American Society of Academics. The intent is to increase access and quality of health services for the community, especially maternal and child health services in Papua Province by paying attention to customs, social culture, geography, and technology, including telemedicine services which are to be designed not only to provide health services, but also as an education and research platform.

5.1.7 Puskesmas

Puskesmas are primary health centres, acting as the healthcare gatekeeper in the Indonesian healthcare system. Most Puskesmas provide outpatient services by general practitioners, but some have inpatient services related to women and pregnancy. Each sub district level (*Kecamatan*) has at least one Puskesmas.

There are no digital literacy competencies required of Puskesmas staff. Temenin have some Districts (and Puskesmas) which are very interested in digital literacy training, but others are not interested in changing current practices, and see telemedicine as an additional burden. Though staff are concerned with social inclusion, there is no focus on digital inclusion issues.

From the staff at three Puskesmas that we spoke with we learned that many have indeed already adapted to the challenges of Covid-19 by following up initial in-person services with teleconsultations with patients (at home) via WhatsApp. These are not just about COVID-19 but also include dealing with under-5s care, and Non-Communicable Disease (NCD) issues, such as tuberculosis screening follow-ups. Regarding the content in these CIE activities, Puskesmas staff said that:

- If related to COVID-19, it comes from the Ministry of Health and the District Office; but for specific local cases, e.g., nutrition, or local maternal health, the content is developed locally.
- Some Puskesmas have a team that modifies the content and develops movies, e.g., in Klaten every Puskesmas will have a team to do this because that is an internal movie competition.

Regarding training and support, we were told that:

- Training for telemedicine has already been undertaken in some Puskesmas, but it needs to be scaled up.
- There are many WhatsApp telemedicine groups for some specific conditions, e.g., “*Stemi Satu Pintu*” for heart emergencies, “*Rindu KIA*” for maternal and child health, but there is not much available for NCDs.
- If possible, the hospitals providing telemedicine support need to be in the same District, and the specialists need to provide the same level of availability as if they were on a WhatsApp call.

Puskesmas staff also shared experiences about engaging with communities. For example, they commended:

- The use of midwives to share information at the village level.
- Ensuring health issues are on the routine meetings at village level, e.g., amongst women at Family Welfare Movement meetings.

- Providing leaflets and booklets to support Posyandu staff with a door-to-door approach with the local health cadres visiting each family.
- Using Instagram and YouTube to educate about the new normal – to use Posyandu services, use vaccinations etc.
- One Puskesmas has targeted a lecture concerning health to the WhatsApp group of the community at village or sub village level and has been using Instagram live to educate like reproductive health or mental health, especially for those who plan to get married.

5.1.8 Kominfo-BAKTI

Within Kominfo is the Telecommunications and Information Accessibility Agency (BAKTI). The focus of Kominfo-BAKTI is on providing connectivity to rural, remote and island areas (DTPK), and its main task is to provide ICT infrastructure and ecosystems for the public, funded by the contribution of the Universal Service Obligation (USO) for Telecommunications Operators, which provides 1.25% of the telecommunications provider's annual gross revenue.

There are 12,548 villages without mobile (4G) broadband. To reach them BAKTI is leveraging fibre-optic technologies, both terrestrial and undersea (the Palapa Ring), and satellites with the SATRIA satellite replacing existing VSAT services and providing fast Internet for public services scheduled from the third quarter of 2023. There are microwave links and over 480,000 Base Transceiver Stations that, together with broadband networks (fixed and mobile) deliver fast connectivity to the end user (Latif 2020).

We were informed¹² that the initiative of Kominfo digital village program was based on success story of Mandala Mekar in Tasikmalaya¹³. In this village, Kominfo provided broadband wireless connectivity services by village officers and the community. The core of the digital village program enabled the digital transformation in the village of sectors such as government, education, health, economic and agriculture and maritime. Kominfo has no specific focus on women or gender issues, but Kominfo-BAKTI is also collaborating with Kemendesa in the development of Smart Villages (see Section 5.1.11).

Kominfo-BAKTI estimate that there are 11,704 health facilities connected and are connecting a further 3,700. It also is targeting providing connectivity to the currently unconnected schools and local government facilities. Also, it is accelerating the deployment of the Base Transceiver Stations and planning to build Base Transceiver Stations (BTS) for 4G in the 12,548 villages by 2022 (Indonesia Ministry of Communication and Informatics 2021). When Kominfo provides the connectivity, they check with the Internet Service Providers as to what works in that area and ask whether they agree to give the service, and if so, then assign them. Close alignment between Kominfo-BAKTI and the Kemenkes is needed in planning this roll-out so that all villages with health facilities have the connectivity speeds required for telehealth.

Kominfo is seeking to improve community digital literacy and skills in the use of digital technology, including the use of telemedicine applications. Through their National Digital Literacy programme, Kominfo is starting to provide basic training on the use of technology and cybersecurity, including some several special training to increase digital literacy of telemedicine users in various regions (see UNOUBLISHED DAP study¹⁴).

¹² By Mr Eka Indarto of Broadband Desa

¹³ <http://mandalamekar.desa.id/profil/>

¹⁴ Technical Support for Strategy Development of Remote Learning and Digital Skills of the Indonesian Ministry of Education and Culture

5.1.9 KemenPPPA

The Ministry of Women's Empowerment and Child Protection (KemenPPPA) provides comprehensive treatment, social rehabilitation, legal support, psychiatric support, and advocacy for women. It deals with support when natural disasters occur, and particularly the needs of women and children who become vulnerable or are refugees.

During the COVID-19 pandemic KemenPPPA has been concerned with the underreporting of Gender Based Violence, and of child abuse when in reality both have been increasing. KemenPPPA runs a data collection system (SIMFONI) that compiles data from 300 institutions across Indonesia concerning gender and domestic violence issues. It suggests that the number of divorces and violence against women and children have been increasing (the probable explanation being due to the COVID-19 related loss of work of the head of the family). They run Family Learning Centres¹⁵ for counselling and consultation (to prevent domestic and child violence) called PUSPAGA (*Pusat Pembelajaran Keluarga*). These Centres offer access to information through Facebook, Instagram, and Email accounts so that clients can send messages and receive responses from a (remote) psychological counsellor. But these Centres have faced challenges, particularly in remote areas, due to lack of internet access, and the human resources to staff them (and they do not offer a 24/7 service).

KemenPPPA has also led on the provision of community-based integrated child protection activity (PATBM) to increase awareness and help to report child violence to the appropriate authorized organisation. The role of PATBM is to prevent violence against children with disabilities¹⁶. These are services mostly using phone and WhatsApp. There is a collaboration with SAPDA (*Sentra Advokasi Perempuan, Difabel dan Anak*), an NGO working on the women and children with disabilities in Yogyakarta, and a collaboration with Kominfo to disseminate the information.

PISA (*Pusat Informasi Sahabat Anak*) information centres are to encourage children to read and to provide "child-friendly" information for them from sources such as broadcasting; books; periodicals such as magazines, newspapers; videos; and the internet¹⁷. But they are not yet available in many districts.

The development of Women Friendly Villages and Child Care villages has been supported by both KemenPPPA and the Kemenkes, and a Guidebook for Facilitating the Empowerment of Women in Villages is being developed in collaboration with the Community Collaboration and Services for Welfare (KOMPAK) and other Development Partners. KemenPPPA is supporting the performance of the female Village Heads by inviting the Village Heads to declare a Woman Friendly and Child Care Village. It is hoped that in the future (male) Village Heads can support activities that support women's empowerment and child protection in his village and reduce levels of violence.

Child and Family friendly services are also being advocated at the District and City Levels, and these include a range of services such as Child Friendly Playrooms, and Child Friendly Puskesmas. One of the initiatives being promoted is "digital parenting" so that parents' digital literacy is improved, and they can assist teenagers in cyberspace. In support of this TikTok have been developing some Community Guidelines, and some educational safety videos. The child-friendly Puskesmas have also been advanced by KemenPPPA not least because it sees these arrangements (with education, socialisation and counselling related to reproductive health) as playing an important role in preventing child marriage, and supporting efforts to accelerate the reduction of stunting.

¹⁵ <https://sipp.menpan.go.id/pelayanan-publik/bali/kabupaten-gianyar/-pelayanan-penggunaan-media-online-pusat-pembelajaran-keluarga-puspaga->

¹⁶ <https://www.antaraneews.com/berita/2073902/kemen-pppa-patbm-desa-berperan-penting-lindungi-anak-disabilitas>

¹⁷ <https://kemenpppa.go.id/index.php/page/read/29/2847/dorong-pembentukan-pusat-informasi-sahabat-anak-pisa-hadirkan-informasi-layak-anak-di-indonesia>

5.1.10 Kemensos

In Indonesia, Law no. 8/2016 states that “The Government, Local Government, State Owned Enterprises, and Regional Owned Enterprises are required to employ at least 2% of Persons with Disabilities (PwDs) of the total number of employees or workers, and private companies are required to employ at least 1%” (Indonesia Ministry of Social Affairs 2020). The Ministry of Social Affairs (Kemensos) has responsibilities that include Social Rehabilitation for PwDs and recognises that it is necessary to develop communication messages that can be accessed by PwDs, including physical, mental, sensory, and intellectual disabilities (Indonesia Ministry of Social Affairs 2021). Not all PwDs are able to use the internet, so Kemensos recruits volunteers to help them teach the PwDs on how to use the technology.

The provision of digital ID services is another aspect of ensuring digital inclusion, and another aspect of the work of Kemensos is to help improve population data recording for marginalized citizens. Kemensos collaborates with the Ministry of Home Affairs (Kemendagri) and Dukcapil to register PwDs if they have no ID. People needing social welfare services need an ID number to be able to do so. After acquiring ID numbers and ID Cards, then Family Cards can be obtained (Indonesia Ministry of Social Affairs 2021). Both marginalised populations and PwDs need access to digital platforms that can support their requirements, e.g., for ease of use and for access to financial, health insurance, and indeed health information. To help with this, Kemensos have established 19 Disability Centres, providing direct services for PwDs, and have an Entrepreneurship Programme for PwDs via the Social Rehabilitation Assistance (ATENSI) platform (Indonesia Ministry of Social Affairs 2021). Kemensos has also developed a digital gallery (<https://creativedisabilitiesgallery.com>) that functions as a marketplace for PwDs to exhibit their products.

5.1.11 Kemendesa

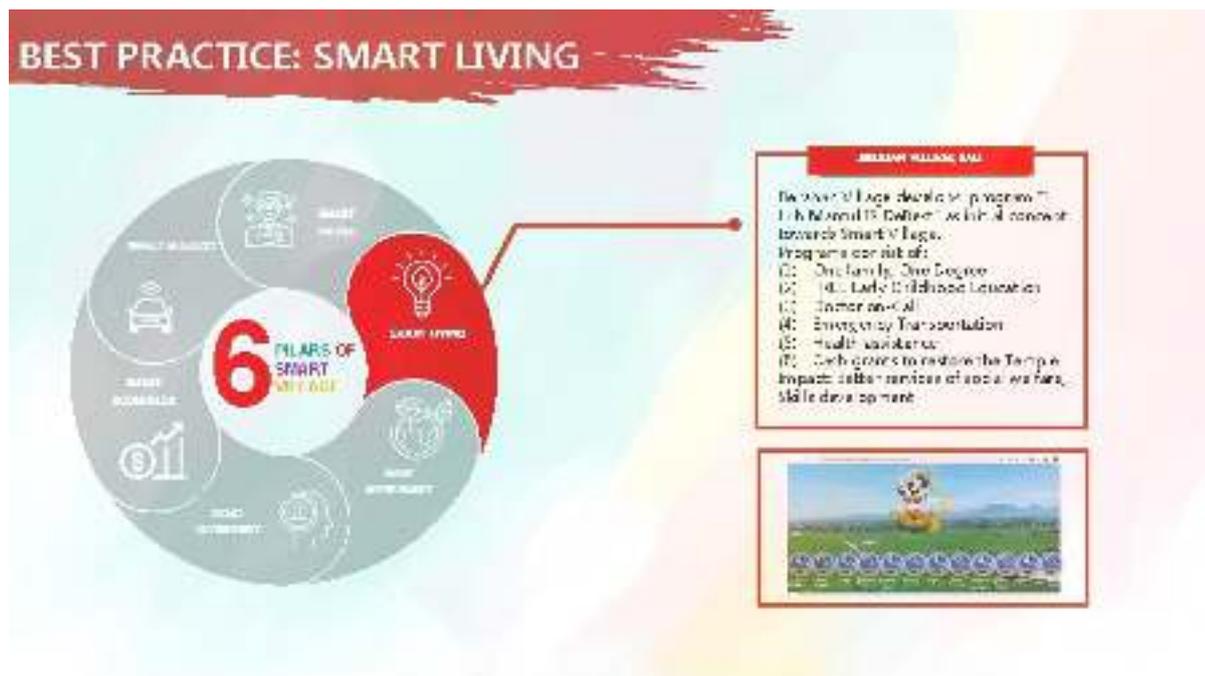
Kemendesa explained that, although there are 17 Global SDG targets, in Indonesia an 18th had been added to address the needs of villages, and a guideline on inclusion is being developed for use within them. It focuses on regulations, source of funding, monitoring and evaluation – at present.

The Smart Village project, initially, was for 350 villages with 31 billion rupiah required. But at present only 10 billion has been made available, and that is being used to cover 50 villages. 9 Districts are currently involved.

There are three main activities underway:

1. Recruiting village digital ambassadors who will train the digital cadres.
2. Capacity building.
3. Developing a community room with a computer, printer, and internet access.

Within the Smart Village programme are six “pillars”, one of which (shown below) is a “smart living” pillar, and this includes the health sector within it.

Figure 7: Smart Village: Smart Living

Source: (Iskander 2020)

Further input from Kemendesa is captured in Chapter 7.3.

5.2 Associations

In Indonesia, an Association is a joint place for individuals, groups, members of a particular company or profession who want to achieve a common goal in the field of non-profit. It is a legal entity established to realize certain goals and objectives in the social, religious, and humanitarian fields. Critically, it does not share profits with its members (IndoService 2020).

5.2.1 ATENSI

ATENSI is an association that houses various individuals, institutions and private companies that are actively involved in developing telemedicine services in Indonesia. Included in the Association are companies such as DokterSehat, Alodokter, Halodoc, SehatQ, Klikdokter, GoodDoctor, ProSehat, Klinikgo, Perawatku.id, Aveeno and Docquity. All platforms have their own policy on how much to charge, but on most it is possible to access a doctor for \$1-2, though for high-profile “celebrity doctors” it can be up to \$40.

ATENSI has an MoU with UNDP to pave the way for an integrated telemedicine platform in Indonesia. The MoU is focused on evidence-based practice, advocacy to the Indonesian government, and learning and capacity building. UNDP support ATENSI members to reach the HIV/AIDS community, who face huge risks in going to health facilities. UNDP facilitate the HIV/AIDS community to experience the provision of clinical and information services via telemedicine that ATENSI members provide. A Kemenkes spokesperson for the SubDirectorate of HIV/AIDS noted that “During the COVID-19 pandemic, people living with HIV and AIDS are one of the groups who are more vulnerable to COVID-19. This is due to a decline in health services for HIV/AIDS patients. Therefore, we really appreciate UNDP, ATENSI, and GoodDoctor who have taken the initiative to develop HIV/AIDS services by utilizing the telemedicine platform. We see telemedicine as a good solution to support PLWHA¹⁸ in getting health services.” (PressRelease.id 2021).

¹⁸ People Living with HIV and AIDS

An ATENSI member we spoke to acknowledged that on his companies' platform there was no provision made to address digital inclusion issues as such. However, since information can be targeted to different age and genders, there was the potential for messages to be conveyed to women (e.g., regarding maternal child health issues), or men (e.g., regarding prostate cancer or men's health issues).

ATENSI members make use of social media and try to make sure that when they reach out to different target groups the materials provided are user-friendly (e.g., language used, messaging). Engagement rates are a good way to gauge the success of any social media campaign.

5.2.2 Indonesian Medical Association

Guided by Law Number 29 Year 2004 on Medical Practice in Indonesia (Government of Indonesia 2004), for the Indonesian Medical Association (IDI) telemedicine in Indonesia must be implemented according to the principle that there is an agreement between doctor and patient. It includes promotive, preventive, curative, and rehabilitative services. Whether using telemedicine or not, the medical practice must follow the Law about how to conduct medical services. The use of telemedicine, however, is restricted to consultations only; there is no prescription service available.

The IDI supports telemedicine in principle, though also acknowledges that not all doctors are excited with telemedicine as many prefer to have direct interaction with patients. In 2018, for example, it reported that 20 Teaching Hospitals participated in the Indonesian Telemedicine Workshop, and in 2019 it began promoting the 'IDI Smart Clinic' in collaboration with Medigo, a health start-up that focuses on digitizing hospitals and clinics. The IDI Smart Clinic fosters collaboration with conventional clinics and is expected to increase the clinic's existing revenue by increasing BPJS capitation, improving general patient services, optimizing clinical services (vaccinations, immunizations, etc.). It also allows the clinic to increase revenue by serving patients outside of its clinical facilities, such as referrals to hospital partners and telemedicine services between health facilities, home care services, and health monitoring for patients who are treated at home.

The IDI are encouraging the development of telemedicine technology (and helping prepare the human resources) so that it is good enough to be able to support better care, e.g., being able to make diagnoses. It is supportive of telemedicine in remote areas and small islands. For PwDs it is also supportive – noting that many attend health care accompanied by a family member and that this is a requirement for addressing the needs of the (disabled) child. IDI remains guided by the principle to do no harm to the patient.

5.2.3 Indonesian Healthtech Association

Whilst the focus of ATENSI is on telemedicine, the Indonesian Healthtech Association (AHI) involves more than 80 companies and stakeholders aiming to work with the government to form a digital-based health ecosystem in the fields of healthcare providers, investment, insurance tech, medical devices etc¹⁹. Its view is that telemedicine requires a proper underpinning information (Electronic Medical Records) system, and that something needs to be done on the ground to improve health data. The way forward that AHI proposes is to have a regulatory sandbox scheme for start-ups in the health tech sector so that innovations can be tested. A key standards area that AHI is focusing on is health information exchange. AHI is also interested in developing the potential of Artificial Intelligence and is pushing for a broader understanding of the value of data, e.g., genomics data, in supporting preventive health.

¹⁹ <https://healthtech.id/>

5.2.4 PERSI

The Indonesian Hospital Association (PERSI) is the only hospital association in Indonesia, and it has sub-associations for each type of hospital in Indonesia (private, religion, government, local government hospital). PERSI is particularly concerned with improving hospital governance. This includes human resources, infrastructure, doctor-patient relationships, ethics, and clinical governance. PERSI promotes better management practices, e.g., lean management, and the use of *Rumah Sakit Online*²⁰ (to enter data to the management information system for the Ministry of Health).

PERSI supports the use of telemedicine. It recognises the importance of telemedicine to facilitate contact between hospitals and Puskesmas. PERSI has had discussions with Kemenkes, and Parliament, about telemedicine. But it recognises that, currently, the regulations only allow it to promote telemedicine between doctors in hospitals and not for consultation between patients and doctors in a hospital. Temenin, for example, cannot provide telemedicine services directly to patients, although during the pandemic there are lots of hospital initiatives to improved communication between hospital staff and patients that are allowed by the Medical Council of Indonesia. For example, for post-surgery patients who cannot visit hospital, and some rehabilitation facilities are allowing teleconsultation.

5.3 Private Sector

5.3.1 ProSehat

ProSehat is presented as the mainstay health marketplace application for Indonesian families to easily get reliable health services at home, from vaccinations to physiotherapy served by health professionals²¹. It offers a “Call the Doctor” service for consultations, with a focus on children, heart conditions and sports injuries.

Within ProSehat there is “Vcare” – a virtual health ecosystem. The service makes extensive use of a WhatsApp Chatbot. ProSehat explained that since 2019 they found that 70% of their requests came from WhatsApp rather than from the app or the website. Having put the WhatsApp button on the platform, the customer service was always busy. A local WhatsApp service was developed for a Jakarta Health District to support the COVID-19 response. The lesson was not to push people to install an app, as their phone may not have sufficient memory, and make full use of WhatsApp and webchats (with clients initiating the call to the call centre and the centre calling back). This enables both message content to be delivered and some interaction.

The most basic challenge being faced is connectivity – Kominfo-BAKTI still has much to do to connect rural areas – and the second key challenge is health literacy. The third challenge is digital health literacy – not just for citizens but also for health workers.

5.3.2 Sehati TeleCTG

The first teleCTG prototype was developed in 2016 (Sehati Group 2021). Since then, this solution has evolved and now, (with a website and apps for midwives and nurses and a full tele-Cardiotocography device), is able to be a solution that helps reduce maternal and neonatal mortality rates and reduce rates of stunting. For the midwife, the app aims to empower her to help the mother in pregnancy and improve both ante- and post-natal care. The app aims to detect 53

²⁰ <https://sirs.kemkes.go.id/fo/>

²¹ <https://www.prosehat.com/>

risk factors (such as blood pressure, anaemia, diabetes etc) using embedded algorithms. In Bener Meriah the app has been used for detecting intrauterine stunting. The programme has conducted training for midwives across Indonesia using Telegram. It has also collaborated with the Mastercard Foundation to provide funding for the training.

Challenges that Sehati TeleCTG surfaced included behaviour obstacles, especially the aged midwife with a lack of digital literacy. Also noted was the fact that the midwife does not directly enter data into the system in front of the patient but uses paper first before transferring the data later. The mothers' app is for communication, information and education purposes and is not yet integrated with the midwife's app. There is also the challenge of staff turnover at Puskesmas and the continuing need to train new staff.

Experience from deployments of SehatiTeleCTG in the field, e.g., in Sulawesi, (and more are planned in 10 Puskesmas around Jakarta), is that there are many applications that are not integrated and are placing a heavy load on health staff. Regulations that enable integration and interoperability are needed. Also, engagement from the relevant Dinkes is needed to encourage uptake at Puskesmas level (and this is a finding that is generally applicable).

At present Sehati's roadmap for the digitalisation of health is being undertaken with the National Population and Family Planning Board (BKKBN). This ensures there is strong alignment with the requirements of midwives, but it should be managed as part of an overall policy framework for improving telemedicine if the risks of incompatible solutions and standards are to be minimised.

5.3.3 **LaporCovid-19**

LaporCovid-19²² was created to give citizens the opportunity to provide information about the Covid-19 situation in their vicinity that the government may not have detected. It provides a forum to help the government and other citizens to find out the spread and magnitude of COVID-19 in Indonesia. The data collected in the LaporCovid-19 channel becomes input for the government to formulate policies and steps to deal with COVID-19 based on data in the field.

With support from 14 Development Partners, and many volunteers, LaporCovid-19 is using its WhatsApp and Telegram chat platforms making reporting easier. This chatbot enables a citizen reporting or crowdsourcing approach so that every citizen can share information about cases related to COVID-19. The chatbot encourages citizens across Indonesia to report on their experiences. Promoting the bot is important so that the public know there is a platform number that they can use to report any violation of health protocol, or where to get tested for Covid-19, or where to go and what to do if they are tested positive. Although telemedicine as such is not on offer it was noted that LaporCOVID-19 offers psychological first aid teleconsulting using the chatbot.

In addition to the chatbot, data is collected that is mapped. The maps generated can be at the level of Indonesia as a whole, or to city level or the districts within it.

It was reported that quite often the data published by central government are different to that derived from the city or province data. LaporCovid-19 also collects data on suspected cases, and, unlike government, makes it public following WHO guidelines.

²² <https://laporcovid19.org/>

One of the major problems is that Government does not have real-time data about bed occupancy, LaporCovid-19 is exploring whether it may be able to help those who need to be admitted with a COVID-19 diagnosis to know where to go in real-time.

5.3.4 Telkom Indonesia

Telkom is one of the entities under the Ministry of State-Owned Enterprises with whom they have initiated a telemedicine platform, called Telemedika, as an insurance platform for which users need to use a smartphone with high resolution and 4G/wifi access. They are supporting the infrastructure for Covid-19 vaccination at 12,000 Puskesmas (with Government funding and on a not-for-profit basis) but are well aware that not all of them have the infrastructure for online reporting.

One of the barriers for health service digitalization that was commented on was that doctors cannot spend a lot of time on online services (as they are busy conducting direct services). Also, it was suggested that specific regulations related to digital health services by health workers are needed. These would, for example, govern health workers who provide online health services using start-up applications outside the scope of health facilities.

Although the Telkom Indonesia Corporate Social Responsibility programme includes a Community Empowerment Programme, that includes disability care, the major focus has been on education rather than health.

Telkom Indonesia told us of research in voice translation into Bahasa text – but this was done ten years ago and not yet followed up.

5.4 NGOs/Development Partners

5.4.1 Common Room

Common Room was originally a forum for various activities developed by the Bandung Centre for New Media Arts led by four founders and started in 2001. Building on the 2018-19 development of a local community-based internet infrastructure, the current version of the project was initiated in April 2020 with support from the DAP. It has been developing an Indigenous Community Network Platform & Tech Hub for Rural Innovation with a training Centre and media lab in Kasepuhan Ciptagelar Village (Sukabumi Regency, West Java Province) which has a population of about 25-30,000 people spread across 300 small hamlets. It is also expanding to seven other cultural villages in rural areas in eastern Indonesia. Common Room has been organizing Rural ICT Camps and conducting digital access coverage and gap mapping, as well as deploying public dissemination activities.

Common Room recognise that telemedicine offers great opportunities, particularly for hard-to-reach communities, but also pointed to many of the challenges. They stressed that people and communities need swift access to diagnostic and treatment services, as well as follow-up; and the training of health workers needs to be improved. Also, it was important that materials and publications, e.g., relating to the COVID-19 pandemic, were in the local language. As yet this project has not focused on health. They noted that the Regency government has just opened a new healthcare facility about 5kms away from the Kasepuhan Ciptagelar village, but that it lacked internet connectivity – so there was some potential for Common Room's services to be used for sending health data to Kemenkes. Further, there was the potential for the training and media lab work to address the issues presented by the health sector.

The Common Room approach has been concerned with its sustainability. Their business model has been based on using internet voucher systems with pricing adjusted to the local situation (per day, per hour etc). This has brought in a steady income with 10% of it being reinvested for infrastructure and maintenance. With a sustainable business model, it has been possible (so far) to offer a free service to two local schools to enable them to send data to Kemdikbud. With a viable media lab, Common Room has the potential to develop the training and video production services that enable localised products to be made (and sold).

5.4.2 Kampoeng Cyber

In contrast to the Common Room's rural setting, Kampoeng Cyber is located in the Centre of Yogyakarta, Central Java which is a city with a rich cultural heritage. There has always been a strong sense of cooperation (*Gotong Royong*) within the community, which consists of 158 people in 40 or so households. Kampoeng Cyber is considered small in terms of both population and space. Inside the neighbourhood, there is only room for pedestrians, bicycles and motorbikes.

As with Common Room, there is a long history that began with some visionary founders. Kampoeng Cyber was started in 2008 by two members of the community to provide affordable internet access for the community, but progress was slow. It took about two years to introduce the internet to all people in the village, since most of them were not familiar with technology. At the beginning only 5 houses were connected to the internet. At first, they installed the internet at the Security Post (*Pos Ronda*) in the village, because at that time, the phone was still exclusive and could not be afforded by most of the villagers (let alone computers). So, the Security Post PC was used, and people started to learn how to use the internet. After 7 years, 90% of the villagers were using it, for specific purposes such as to support the business of the villagers (they have a lot of batik business in the village). In 2015 the computer network was upgraded. It seems that the people enjoyed the social activity of coming together and getting to know each other, as well as using the internet (Safirotu Khoir 2019). Nowadays, however, everybody has their own smart phones so they can go online at home.

Typically, people use messaging apps such as WhatsApp, Telegram or Facebook chat to find information about their health concerns. They use the technology more for making appointments at health facilities rather than having online consultations. There is not much information provided by either the local city or national health authorities, and people find it easy to use Google to find the information they want.

Based on their data and knowledge there are no disabled people within the village. So far as gender is concerned, the issue was more one of generations, with the elderly finding new technology difficult. Socially, everyone is self-educating themselves and trying to be self-sufficient. However, the poorest still need help to become involved.

5.4.3 Kapal Perempuan

Kapal Perempuan was established in 2000 by activists concerned over situations of conflict and violence due to ethnic and religious-based identity politics that have occurred in various regions in Indonesia. Also, they were concerned about violations of women's human rights including sexuality and women's reproductive health as well as discriminatory practices against marginalized and minority groups. More recently, Kapal Perempuan has been highlighting issues such as the Prevention and Management of Trafficking in Women and Children and the Gender Perspective in handling COVID-19.

Kapal Perempuan explained that there was an urgent need to improve the information for, and digital access of, communities during the COVID-19 pandemic because there is evidence showing that domestic violence is increasing, children are being married earlier, reproductive healthcare is suffering and there are more unwanted pregnancies. Kapal Perempuan has responded to the COVID-19 pandemic with community radio, such as Sipurennu FM Covid-19 Emergency Women's Radio. This development of media communication for women and a tutorial service for school children through community radio demonstrates how to overcome remote learning during the pandemic when there is limited smart phone ownership and poor internet access in remote areas.

In Sulawesi Selatan and North Nusa Tenggara, we were told that reproductive health is still considered taboo, and if women are not yet educated about this taboo, they cannot educate others. Through community radio Kapal Perempuan expect to improve women's knowledge and understanding of reproductive health. Kapal Perempuan already had education modules and adjusted their contents to the local situation. They have focused on economic education first and then, when trust in the educator was established, introduced the gender issues, including reproductive health.

5.4.4 KOMPAK

KOMPAK (Community Collaboration and Services for Welfare) is an Australian Government funded facility to support the Government of Indonesia in achieving its targets of reducing poverty and addressing inequalities. KOMPAK started its activities in January 2015 and will operate until 30 June 2022. KOMPAK aims to remove barriers that may prevent equitable participation, particularly for women, PwDs, indigenous persons and marginalized groups.

Concerning health, a division of innovation at KOMPAK is collaborating with Sehati TeleCTG to develop an android-based App to monitor pregnant women. KOMPAK is working with Bondowoso district health office in East Java, and the data collected is related to Maternal, Neonatal and Child Health. This helps to identify the high-risk pregnancies, the kind of health services that the mother has received from health facilities, whether they have received, and consumed, their iron tablets, and also checks for anaemia during pregnancy. The idea of the application is to help the midwife and Puskesmas staff monitor the pregnant women with the aim of reducing maternal mortality. With Sehati TeleCTG, there is a training package for midwives (on how to use the app, analyse data and follow up patients).

KOMPAK is also supporting Papua government deliver its Maternal and Child Health programme for indigenous Papuan children and is working closely with Kominfo-BAKTI to develop the *Bangga Papua* programme which has developed a number of communications activities, including advice on health promotion and which also includes training for mothers on how to manage money.

At present the apps do not collect any data related to disabilities.

KOMPAK is also supporting the *Akademi Paradigta* as a forum where grassroots women can learn to develop their leadership qualities, including dealing with issues related to health.

KOMPAK is supportive of good governance and village development. Though encouraging village information systems, there is nothing specifically done by KOMPAK that concerns health, though guidelines concerning CRVS have been developed. But there are some models on how to improve village governance and planning. There are "affirmative forums" to include women, PwDs or other vulnerable groups so that their needs are integrated in the planning and budgeting in the village level. KOMPAK provides guidance to local government and supports them organize these forums and increase the capacity of them.

5.4.5 Humanity and Inclusion

Humanity and Inclusion began (as Handicap International) in 1982 in response to the crisis in Cambodia. It rebranded to Humanity and Inclusion in 2018 and implements programmes in around sixty countries.

In Indonesia, Humanity and Inclusion's work is focused in 3 Districts: Yogyakarta – very urban; Gunungkidul – rural; and Sleman which is in-between. Humanity and Inclusion realised that all its materials should be digitized if they are to be readily accessible, and now is focusing on 3 main areas:

1. For education for the community, Puskesmas, Provincial and District Health Office.
2. Curative services.
3. Campaign and advocacy.

The development of the digital platform has been done with extensive consultation. This has included, for example, considering the needs of the deaf. They discussed what sign language to use together with a committee that consists of people from Kemenkes, Provincial and district health offices and Puskesmas. They invited Posbindu cadres, and health volunteers to discuss their needs and how to reach the community. They are involved also in the development and trials. This committee meets every 2-3 months.

There has been a particular focus on diabetes (with funding coming from the World Diabetes Foundation). In the Posbindu (which are healthcare posts for NCDs in general) Humanity and Inclusion have strengthened the diabetes aspect, stressing the importance of nutrition, exercise, medicine, self-blood sugar monitoring and education.

Humanity and Inclusion is now in the process of handing over materials to District and Provincial Health Offices. The materials are available on their website, and via Facebook, Instagram, WhatsApp, and Telegram.

5.4.6 Yakkum Rehabilitation Centre

The Yakkum Rehabilitation Centre was established in 1982 under the name Bethesda Rehabilitation Project to help people with physical disabilities in Indonesia. Initially services offered were physical rehabilitation with surgery, clinical services, physiotherapy, education, provision of assistive devices and skills courses. Then between 1996-2004 occupational therapy and psychosocial programs were added. In 2011, the Yakkum Rehabilitation Centre also started to develop an Inclusive Disaster Risk Reduction Program. This program is an educational program for the community (and its PwDs) to help reduce disaster risks as well as being an advocacy area for PwDs to be able to have a role in society. Since late 2016, they have assisted organisations for the disabled including 10 in Bantul, 9 in the east part of Yogyakarta, and 10 in Purworejo Central Java. They also assist communities in 17 villages.

Yakkum is an umbrella partner with the National Peduli Program. The Peduli Program aims to improve social relations and strengthen social inclusion for community groups organized by the government. It helps to increase the access of these groups to social services and assistance, development, and participation in society, and strengthen policies and regulations related to social inclusion at the national and local levels. Disability is one of the six pillar groups included in the Care Program, and Yakkum works in collaboration with 9 implementing partner organisation in 13 districts/cities in 7 provinces.

Yakkum have 12 hospitals, mostly providing for poor patients, and, because of COVID-19 some of the hospitals have telemedicine programmes, but elderly people find them difficult to use. They also support 3 "extramural" services: *Pusat Rehabilitasi Yakkum* (on disability issues), Yakkum

Emergency Response, and Community Development (on health, sanitation, infectious disease) which has also developed a platform to provide communities with online health consultation. During COVID-19 times this has been important because there are high number of people with depression and anxiety, and this means support can be provided to people with disabilities and caregivers. In Indonesia, though there are a lot of health platforms such as Halodoc and Alodokter, they are too costly for those whom Yakkum serves. Their platform is not part of Social Security for Health Administering Body/BPJS Kesehatan.

Yakkum supports a community-based rehab program, urban farming program, involvement of women with disability, village community volunteers. It also produces video tutorials and best practices, so those who are not able join offline training can see the video.

5.4.7 UNDP

Of the many programmes that UNDP is supporting in Indonesia, those of relevance here concern those involving Kemenkes and private sector telemedicine providers, as well as ATENSI, and Kemendesa.

With Kemenkes, there is a shared focus on responding to the COVID-19 pandemic which has disrupted routine services and programs in health facilities. UNDP is responding with provision of healthcare equipment, helping in the management of medical waste, provision of masks, vaccine logistics improvements etc. UNDP and Kemenkes are working in partnership to ensure greater access to affordable and reliable health services, including for those impacted by Gender Based Violence.

UNDP estimates that 63% of people using telemedicine services are women, with COVID-19, Obstetrics and Gynaecology, and tuberculosis being the key concerns. Wanting to support the development of telemedicine, UNDP signed an MoU with ATENSI that is intended to strengthen advocacy support for the use of telemedicine and support policy development in this area. Indeed, in their view, telemedicine is becoming the backbone for the health services. UNDP has been working with the Spirita Foundation to connect with Halodoc to support people living with HIV to access health services during the COVID-19 pandemic. It is also working with GoodDoctor on addressing TB services. Mental health and Gender Based Violence issues were flagged as being of great concern.

UNDP is supporting Kemendesa to initiate a Cash for Work Programme using the Village Fund to provide much needed cash for vulnerable communities. UNDP also has an SDG Academy which helps the government with its SDG-related policy. This includes awareness raising around different SDG topics, such as telemedicine, and the Indonesian approach to delivering on the SDGs in Villages.

Finally, UNDP is working with UNICEF, UN Women, and World Food Programme, to support the Government scale-up inclusive social protection programmes in response to COVID-19.

5.4.8 UNICEF

In 2020 at the start of the COVID-19 pandemic, UNICEF was managing 30 projects with multisectoral collaboration with the Kemenkes, Kemdikbud, Kemensos and UNDP. This work continues.

UNICEF commented that for the next new normal post-COVID-19, a lot more antenatal care will be provided online. Much depends on how the midwife or health worker helps patients give a good account of their medical history. Also, the Kemenkes must improve the health workers' digital health skills because they need to improve significantly. Further, in island areas, such as Maluku, it

is hard for health workers to work, and even with the provision of telemedicine services it is still challenging.

UNICEF has projects that try to address the area of inclusion. One of them is focused on the immunization coverage of marginalized people in urban slums, some of whom do not have access to insurance etc. Also, volunteers (health cadres) can recognize the “left out” people, and record the data needed about them which is then downloaded to the nearest health facility for micro planning.

Experience of using digital technology to enable Puskesmas staff to engage with communities has been developing, building up from urban slum work. Essentially the approach targets health cadres in the community, caregivers, and community health workers. They record the data on children under 2 years old (via WhatsApp and SMS) and the data goes to UNICEF’s databases. This enables registration of both mother and child, and provides support with immunization reminders etc. If the cadres have registered pregnant women, it will also give information about antenatal care schedules, iron intake based on pregnancy trimester etc. Usually, community leaders are aware of outreach vaccinations, but not always. The UNICEF communications team have been working intensively with communities to improve understanding of their perspectives on COVID-19, as well as the perspectives of health workers and teachers.

UNICEF’s approach is to use open-source software (RapidPro), with SMS and WhatsApp. They found about 33% of people use smart phones, and more than 75% of people have a mobile phone (at least one). When introducing reporting systems time is taken to ensure it is understood. UNICEF recognise that for government, and health staff, it is not an easy task to improve the databases; time pressure does not allow much user experience, testing, and feedback to improve the system, and there are still struggles with data accuracy and troubleshooting.

5.4.9 World Bank

The World Bank has been supporting village development initiatives in Indonesia for over 20 years. It is financing a programme on Smart Villages, and in so doing is working with five Ministries (including Kemendesa) and looking to digitise village government services. This means digitising the reporting systems for village government as well as the services delivered by village government. It is also working to develop a single platform that different line ministries can use to pre-load their services on. The idea is to provide server space for them to allow for local innovation and the development and use of apps to enable local communities to solve their own local development challenges.

The key concept is that this is to be an integrated programme that focuses both on last mile connectivity (in conjunction with Kominfo) and capacity. The World Bank is looking to support a large programme of pilot testing (in over 3000 villages over the next 3-4 years) before going to scale and reaching all 80,000+ villages.

In addition, the World Bank has been working with Kemendesa in delivering integrated services at the frontline, focusing on an “Integrated Nutrition for Early Years” programme that will address the prevention of stunting. This involves bringing together five key services at village level: water, sanitation, behavioural change, vaccination, and immunisation as well as nutrition. Now that Kemendesa has agreed how the Village Fund can be used to support the training and deployment of Human Development Workers, there is a process in place that should be able to ensure all at-risk households are receiving all the appropriate benefits and support. However, there remains the challenge of coordinating the nutrition and smart village initiatives and ensuring that the guidelines that the Health Sector has provided are integrated.

5.5 Summary

Concerning telehealth and digital inclusion, the following are some of the categories of people who may be excluded that were explicitly mentioned by stakeholders interviewed. They illustrate many of the GESI issues covered in Chapter 3.

- The poor and those in financial hardship, including those who do not have health insurance.
- Mothers and children, particularly those who are vulnerable.
- Indigenous peoples and people living in remote areas.
- Those suffering gender-based violence.
- People with Disabilities.
- Those challenged by language barriers, including those with learning disabilities.
- Those unable to access services or prevented from accessing support as a result of abuse, domestic abuse or modern slavery or trafficking.
- Those who feel marginalised and stigmatised due to their sexuality or gender or perceptions within social and cultural groups of diseases such as tuberculosis or HIV.
- Adolescents and young people.
- Refugees.
- Ethnic and religious minorities.
- People living in urban settlements.
- Older persons.

The following are some of the Capacity Building and Community Engagement challenges and opportunities to help deliver inclusive access and use that were noted by the stakeholders interviewed:

Challenges

- Unfamiliarity with digital technology and low levels of digital literacy.
- Low levels of digital health literacy amongst health staff in hospitals and Puskesmas.
- Unpopularity of online consultations, particularly in rural areas.
- Villages without mobile broadband access, and few smartphone users in rural areas.
- Unconnected Puskesmas.
- Challenges with VSAT continuity and upload speeds.
- Lack of agreement about telemedicine platform standards.

Opportunities

- Village information systems have been encouraged, but the health input needs strengthening.
- Community engagement in technology needs to nourish local leadership and develop sustainable business models.
- Need for digital IDs and engaging the “missing middle” to get coverage, e.g., with mobile JKN.
- Providing digital support to Family and Child Friendly Puskesmas.
- Emerging use of videos to convey key messages, e.g., educational and online safety.
- Pervasive use of WhatsApp, chatbots, and use of call centres.
- Community radio is a powerful resource to convey health knowledge, and can empower women in the process, but locally appropriate content is key.

Chapter 8 presents recommendations that reflect the telehealth and digital inclusion issues that these organisations are addressing.

Whilst improving organisation-specific issues is important for the organisations concerned, so too is addressing those issues that are inherently cross-sectoral because, as this stakeholder engagement exercise illustrates, supporting many of those who suffer from digital exclusion is also of concern to stakeholders outside the health sector. Important as the delivery of Universal Health Coverage is, in terms of the Sustainable Development Goals, it is only one (SDG 3.8). And almost all the 17 SDG goals impact health. The introduction of an 18th SDG goal to address the needs of villages, mentioned by Kemendesra, provides a helpful basis for Indonesia to address the SDG's cross-sector paradigm shift.

6 Stakeholders: The Cross-Sector Perspective

In Chapter 5 the focus was on what the stakeholders said their organisation was doing. In Chapter 6 the focus is on additional points they made which prompt more attention being paid to some of the cross-organisation and cross-sector issues that they have in common. Four broad cross-sectoral themes are identified: Health Service Technology; Community; Capacity and Content; and Further Policy Issues. Within each theme there are some sub-themes, and the points raised concerning each of them by the stakeholders are noted. Chapter 8 presents recommendations that address the key issues raised which are relevant to this report.

6.1 Addressing the challenges

Based on the material assessed in Chapter 5, this Chapter focuses on four key cross-sectoral themes and provides examples of the feedback from stakeholders that illustrates them.

The first theme concerns improving the use of technology within and between health facilities. How can digital **health service technology** ensure that the use of telehealth is as inclusive as possible? Health services includes all health service facilities (hospitals, Puskesmas etc.,) but also includes the delivery of health services to communities (e.g., as community outreach or mobile “extramural services”). This means ensuring:

- All health facilities are connected with communication services that have the necessary bandwidth, stability, resilience and security that is required for the transmission of health data (text, images, video etc).
- Mobile health services, for both health professionals and patients are supported.
- Connected health services (for both facilities and communities) are interoperable.
- Cross-sector work and initiatives are supported by the people, and organisations, who are involved in delivering them.

But to support the delivery of Universal Health Coverage and Social Health Protection requires every citizen to be able to be informed about health issues and then to behave in ways that enable them to remain or become healthy. The development of people-based approach to digital health, as advocated by the Global Strategy on Digital Health (World Health Organisation 2020), requires a focus on engaging with **Communities** and their citizens. This is the second theme. Without connectivity, communities are, by definition, digitally excluded from the health system, and indeed all other aspects of development.

The issues already arising from the organisation-oriented perspective include:

- Needing an affordable and reliable communications infrastructure that is available 24/7 everywhere to everyone.
- Looking for the synergies between the use of digital technologies for health care with those being used to convey or exchange information about nutrition, education, farming, financial management, entrepreneurship, and business development etc.
- Supporting engagement with communities so that there is coordination and localisation.
- Building digital platforms that can work at scale yet be capable of supporting localisation and innovation.

Many of the issues in engaging communities are well known within a sector-specific perspective; but, as the stakeholder engagement confirmed, there are encouraging examples of cross-sector approaches being taken forward by Kemendesa and Kominfo-BAKTI, and with support from the World Bank.

If the issues to do with engaging communities are in hand, there must also be a focus on building the **capacity and content** to develop and use digital health services. This third theme includes the following:

- Capacity building within the health sector facilities to deliver telemedicine services, such as Temenin, and to engage communities in building their capacity to use community-oriented services, such as Sehatpedia. This includes developing and delivering content for staff and patients.
- Capacity building for communities and citizens, in particular those who are currently excluded. This means adapting content so that it meets the requirements of the socially excluded and supporting communities with digital services to promote health knowledge and care.
- Leveraging call centre services, mobile phones and social media but in ways that do not expose citizens or communities to inappropriate and/or inaccurate content.

Addressing the challenges of improving the inclusive use of telehealth services by patients within health facilities, and similarly by people within communities, requires capacity (both technical and social). But it also requires a range of **further policy issues** to be addressed to enable progress to be made. In this fourth theme are included:

- Major health policy issues, e.g., dealing with COVID-19; stunting, identity etc.
- Regulatory issues²³
- Procurement and strategic investment decisions on digital health in general and telehealth in particular.
- Cybersecurity issues (see unpublished accompanying study²⁴).
- Ensuring sustainability and nurturing innovation and entrepreneurship.

Given this cross-sector approach, the stakeholders who have an interest in each of the four key issues identified are shown in the table below. There are of course some cross-over issues, but this framework is used to present a perspective that is intended to support the identification of practical solutions that take forward the agenda of improving the use of telehealth services for all.

Table 4 presents a view based on the stakeholder engagement oriented around the four key issues involved (the provision of telehealth between health facilities; provision of telehealth services to a community and its citizens; capacity development concerning digital health for health staff and the public; and the development of appropriate policy) each of which have an impact on addressing the digital inclusion issues, in particular those concerning telehealth.

Table 4: Cross-Sector Approach to Key Issues

Issues	Stakeholders	Government	Association	Private Sector	NGO/DP
Health Service Technology					
	Kemenkes	√			
	Temenin	√			
	Sehatpedia	√			
	BPJS	√			
	Papua Dinkes	√			
	Desk Papua	√			
	Puskesmas	√			
	Kominfo-BAKTI	√			

²³ Regulatory Issues are also, addressed in the separate UK Global Trade Programme (GTP) Telemedicine Regulation project (delivered through the British Embassy, Jakarta).

²⁴ Technical Support for the Development of Telemedicine with the Ministry of Health: Data Protection and Cyber Security

Issues	Stakeholders	Government	Association	Private Sector	NGO/DP
	ATENSI		√		
	LaporCOVID-19			√	
	Sehati TeleTG			√	
	Common Room				√
	UNDP				√
Communities					
	Sehatpedia	√			
	KemenPPPA	√			
	Kemensos	√			
	AHI		√		
	ProSehat			√	
	LaporCovid-19			√	
	Common Room				√
	Kampoeng Cyber				√
	Kapal Perempuan				√
	KOMPAK				√
	Humanity and Inclusion				√
	UNICEF				√
	World Bank				√
Capacity and Content					
	Sehatpedia	√			
	Papua Dinkes	√			
	Kominfo-BAKTI	√			
	Kemensos	√			
	HealthTech.id		√		
	ProSehat			√	
	Common Room				√
	Humanity and Inclusion				√
	Yakkum				√
	World Bank				√
Policy					
	Kemenkes	√			
	BPJS	√			
	Papua Dinkes	√			
	Kominfo-BAKTI	√			
	ATENSI		√		
	HealthTech.id		√		
	PERSI		√		
	LaporCOVID-19			√	
	SehatiTeleCTG			√	
	Kampoeng Cyber				√
	Kapal Perempuan				√
	Humanity and Inclusion				√
	UNICEF				√
	World Bank				√

6.2 Health Services Technology

This Section reviews the some of the cross-organisation and cross-sector issues that stakeholders raised that concern digital Health Service Technology, broadly construed. It is organised around the issues that concern:

- Hospitals and Puskesmas.
- Mobile services.
- Interoperability and Connectivity.
- Current Cross-Sector work.

6.2.1 Hospitals and Puskesmas

Temenin is connecting hospitals with Puskesmas to enable telemedicine consultations. At present 100 health facilities are connected, and there are plans to add a further 67 (50 in non-Papua, 17 in Papua). Sehatpedia is piloted in 30 hospitals and there are plans to scale up to more than 40 Puskesmas. But there is no overlap between these initiatives at any Puskesmas. Sehatpedia has used a bottom-up approach to selection whilst Temenin has been more top-down. However, though Temenin is open for any consultation of any health problem, in practice much depends on the leadership and the agreement of the health specialists. This leadership is needed at Provincial level to ensure that Districts most in need of using telemedicine to improve the inclusiveness of health services are prioritised in DPTK areas.

Kemenkes has suggested to Kominfo which Puskesmas should be equipped with an internet connection. Kemenkes is collaborating with Kominfo to provide VSAT (satellite internet connection). This, it should be noted, is a high-cost solution, and one that is difficult to sustain (unless there are other applications using it as part of a Village-wide approach) Usually, Kemenkes has free internet access by VSAT for a certain time (about a year), but whilst Kominfo are treating this as part of their support for Smart Villages, some are unsatisfied with this connection, and are wanting more bandwidth availability for health purposes. Also, most Puskesmas at present are not in a Smart Village, and Kominfo-BAKTI will only facilitate connections that are in remote (DPTK) areas.

BPJS are running a scheme (similar to Temenin) to see if teleconsultations can be conducted from the primary care setting to specialists in hospital. BPJS want to know not only the impact on utilization and health status but also the cost. How much additional benefit is there compared with the cost? How much additional cost is there if telemedicine is one of the benefits as a substitute for a physical visit to the hospital?

In the Puskesmas in Papua there are also many non-technical issues to be addressed, and the use of WhatsApp and phones may be the more acceptable technology at present.

In Kampoeng Cyber the only health apps available from the government are those intended to make appointments with the doctor easier.

UNICEF reported nearly 100% of Puskesmas in Indonesia are already familiar with SMS and WhatsApp based technology.

6.2.2 Mobile

Kemendes noted that the pandemic has prompted Puskesmas to extend access via WhatsApp – enabling patients to communicate with their doctor, and, in some areas, getting drugs delivered via Gojek or Grab online. At present the costs of this use of private services is borne by the user as an out-of-pocket cost, but if the pilot is successful and to be scaled up it may also need to be part of national health insurance coverage.

BPJS have a MoU with Halodoc to work together improving a mobile app. They are trialling a scheme, where the benefit is paid by capitation monthly, for a primary care telemedicine service that enables members or patients to have teleconsultation with primary care doctors. Though it has been used a million times, success depends on many things, like whether (without having fixed time for delivering the service) the doctor will be available to conduct teleconsultation or not, (because it's not mandatory/still voluntary) and whether the primary care facility is open for the service or not. There are issues with internet connection, and whether members are aware that they can conduct teleconsultation. Unfamiliarity of patient and doctor speaking by mobile phone is another factor.

Kominfo-BAKTI is using its BTS cellular to broadcast SMS for important information e.g., COVID-19 messages to rural areas. It is cooperating with Halodoc – helping them to go to some villages and do socialisation. It also has a joint initiative with Sehati TeleCTG and gives its data to local government to be used by them. Based on a pilot (in Lombok/Bangka Island), Kominfo will measure the impact of the project with Sehati TeleCTG and identify the challenges, and then work together with the local government to solve similar challenges before implementing it nationwide.

The Director General of Kemensos has already agreed to provide services during COVID-19, and provide guidelines for the staff to conduct services so that for social rehabilitation, etc., they can use the internet, meet via zoom etc.

HealthTech.id noted that simple technology, such as SMS or USSD chat, enables people to initiate a request via chat, and then for the doctor at the centers to call back. LaporanCovid-19 too show the benefits of chatbot technology.

Kapal Perempuan find that in Sulawesi Selatan, generally women were using the radio app from their smart phone; but in North Nusa Tenggara the radio was used. It has been suggested that the program should provide the radio (but not a smart phone) for those who have no radio.

LaporanCOVID-19's market research found most people in Indonesia even in rural areas use smart phones, but knowing about data and internet access is something else. They also found that when Puskesmas or hospitals reach out to a community they normally use WhatsApp. LaporanCOVID-19 uses WhatsApp to push messages to 49 hospitals.

6.2.3 Interoperability and Connectivity

BPJS has integrated its database with the citizen database. It now uses a single identity platform, though it is still working to clean up the citizen data. This is the first step on validating the population data of Indonesia.

A Kominfo Press release on 12 January 2021 stated that “the Ministry of Communication and Information Technology has prepared internet access infrastructure for 3,126 health service facilities throughout Indonesia. According to the Minister of Communication and Information, Johnny G. Plate, this number complements the 13,011 health facilities that are connected to the internet in all corners of the country. “If you are asked whether internet access is available at the Puskesmas, yes, it is, because it is connected or directly connected to a satellite to bridge our telecommunication needs in the framework of one Indonesian data to support the success of

Covid-19 Vaccination in Indonesia,” (Kominfo News 2021). However, the connectivity bandwidth requirements for a vaccination programme are clearly less than those for telemedicine. Sehatpedia noted that existing interactions using the WhatsApp system are already recognized by the BPJS. In due course Sehatpedia will be bridged (integrated) with P-Care of BPJS. P-care consists of the patient data that linked with the membership of the national health insurance scheme.

6.2.4 Current Cross-sector work

Sehatpedia is in discussion with Kominfo-BAKTI to improve coordination with their work at the village level, but do not yet know if it will be possible to use the village budget to help with this work.

ATENSI members are working closely with the IDI, and they are supporting the advocacy for telemedicine regulation. ATENSI members are also working closely with HealthTech.id.

UNDP is collaborating with Halodoc, and GoodDoctor (regarding tuberculosis).

Common Room wants to discuss alignment of its cultural villages with Kominfo. This is to include internet access and digital platform utilization, regulations, and a syllabus to improve digital literacy.

SehatiTeleCTG is collaborating with Nutrition International (in Indramayu Regency, West Java) to detect mothers with anaemia. They are also working with 15 private clinics, and with more than 100 public facilities.

Kampoeng Cyber noted that In Yogyakarta, there is App called Jogja Smart Service (JSS) by the City Government that facilitates public services including health (but only for appointments). But it is not widely used.

6.3 Community

This Section reviews the some of the cross-organisation and cross-sector issues that stakeholders raised that concern Communities. It is organised around issues that concern:

- Digital Villages.
- Community Engagement.
- Digital Platforms.

6.3.1 Digital Villages

Common Room indicated that regarding Digital Villages they were in touch with many initiatives, e.g., being supported by:

- Kominfo.
- Kemendes.
- Kemdikbud.
- ITU.
- Internet society.
- ICT Watch Indonesia.
- Indonesia ICT volunteer.
- Indonesia ISP association.

Kampoeng Cyber pointed out that communities are different and might need different types of intervention. They tried to replicate their approach in a neighbouring village, but that community only wanted to have the internet connection, and they did not want to have the same social and economic activities as in Kampoeng, and “The spirits of the villagers are also different”. Perhaps the important factor was that in Kampoeng the initiative came from within the village, where people have been eager to spend money to develop the internet connection, to buy the computers, and to learn. In their neighbouring village things were different.

Yakkum have, with local government, developed Inclusive Village guidelines at national level. In Purworejo, Central Java, they have developed a technical guideline/pocketbook. It is already published by Kemendesa, but it does not specifically mention digital technology.

The Kemendesa-led Smart Village Project (with World Bank support) will increase the technical and managerial capacities of village institutions and supporting systems to oversee and manage more cost-effective, efficient, and demand-driven service delivery, supported by digital infrastructure. Significant technical assistance will be provided under the Project to facilitate adopting digital systems, and to ensure that adequate time and resources are devoted to the behavioural change needed for this adjustment. The Project focuses both on building new systems, and on building the capacity of existing government institutions to take over the operation and management of the digital systems effectively.

6.3.2 Community Engagement

Sehatpedia users are mostly in the big cities such as Jakarta, Surabaya, Yogya, Makassar, Bandung and Padang. Sehatpedia can only monitor engagement in terms of users at a city level (not the sub city). Sehatpedia recognises that for village communities there need to be meetings and socialization to introduce their system. Also, Sehatpedia is planning to work together with Puskesmas to provide educational materials such as flyers.

KemenPPPA wish to collect more data from communities concerning children with disabilities. Although the Central Agency for Statistics (BPS) have data about this it is not what KemenPPPA needs. KemenPPPA expect to have a data collection instrument from the village level that will be linked to their SIMFONI system at the central level.

Private sector telemedicine providers (e.g., Unair, GoodDoctor, Halodoc) try their best to speak the language of their “customers”, to make their materials is as easy possible for them to understand the message that they want to convey. It is also important to time the engagements with each community carefully, as well as monitoring engagement rates closely.

For LaporCoVID-19 the challenge is how to promote the chatbot. They successfully involved local government to promote the chatbot but also found they needed to follow up all the reports that received from the public. This has required a dedicated team, but they found this encouraged people to report.

Kompak have a model on how to improve the participation of women, PwDs and other vulnerable groups into the development planning process. There is an affirmative forum to include them and is integrated in the planning and budgeting in the village level. Kompak provides technical assistance to local government and is supporting them in developing a guideline on how to organize the forum and develop its capabilities.

Humanity and Inclusion build the capacity and sensitization of their community health volunteers, and of the health professionals at the Puskesmas, to help prevent disability, and with a particular focus on diabetes management. They have Puskesmas staff (and Provincial and District Health

Offices) giving health education for the community via WhatsApp classes on a weekly basis (about 1-1.5 hours) and have 36 villages involved.

Every Yakkum hospital has extramural staff who use WhatsApp, video calls, zoom calls etc as part of the way they engage with communities.

6.3.3 Digital Platforms

There are different types of digital platforms that were mentioned by the stakeholders interviewed.

ProSehat discussed the use of a health kiosk platform. They start from the health kiosk so people do not have to go to hospital for healthcare as they can check their condition either through membership or not. But at the same time this activity strengthens the local kiosk, because perhaps they can sell the medicine over the counter or herbal medicine and can sell phone credit or enable access to the e-commerce marketplace.

Humanity and Inclusion has found that during the pandemic WhatsApp is the most accessible platform that works, and is used they estimate, by 87% of the Indonesian population. Zoom has been booming but does not work properly in rural areas.

UNICEF is helping Kemensos to implement the Primero database, the only system available in the country that supports tracing and family reunification. Used particularly in the context of emergencies, this case management system helps social workers to care for and protect children in case of violence, abuse or exploitation. However, this has not been deployed nationwide.

6.4 Capacity and Content

Capacity building for digital health literacy, whether within the health sector or in the community, requires content that is relevant to health organisations and those in other sectors, e.g., communities or other Ministries who are supporting the health sector. The cross-organisation and cross-sector issues in this Section are organised around these two issues.

6.4.1 Capacity

Sehatpedia will provide training materials for doctors at Puskesmas and hopes to do training for community members as well. At present it has not yet prepared the materials for training (as it is waiting until after the pilot in 3 Puskesmas). It has produced a promotional video of SehatPedia.

Kominfo-BAKTI is in discussion with Kemenkes about the development of training for health staff. But Kominfo does not currently have sector-specific training (either for health workers or for communities concerning health). They do have a basic digital literacy syllabus.

ATENSI is still working on digital literacy and how access can be opened to more Indonesians. They are working with Kominfo in this area though there is no specific program implemented yet on digital literacy. Each of the private sector telemedicine platforms have some form of Continuing Medical Education for the doctors to introduce telemedicine (and of course about on medical subjects such as the new treatment, disease management). For the public at large these private providers use Instagram, and webinars with specific information, e.g., concerning mental health, the pandemic situation etc. These efforts stress the importance of both being able to access doctors through telemedicine and provide disease awareness.

IDI is collaborating with Kemenkes and Kominfo to improve knowledge of the regulations related to telemedicine. The IDI too is supporting Continuing Medical Education of doctors, and their online discussions about medical cases.

Kemensos has training (using zoom) on health issues led by invited experts, e.g., physicians, psychiatrists. They also have a program on finance literacy, and train PwDs on how to use digital banking. They have helped over 22,000 PwDs get access to digital banking.

6.4.2 Content

The SehatPedia channel also aims to respond to the hoaxes and infodemics²⁵. There are articles about vaccines to educate people. The idea of Sehatpedia is to improve the access for the community related to health, either via articles or consultation.

BPJS recognises that it must consider Indonesian culture, where telemedicine may only be used by people with good health literacy.

Kominfo-BAKTI is collaborating with Kemenkes, and other Ministries, on content related to vaccination and nutrition.

A challenge for KemenPPPA is that they lack people that have capability to design digital media in interesting formats.

ProSehat have a YouTube channel, with video produced fortnightly for health education, and, with the support of clinic partners, are creating frequent webinars. Only Bahasa is used. Their motion graphic team want to address inclusion issues, and, though this takes longer to do than setting up webinars, it is seen as worth it.

Common Room started with training for local technicians, and, now that they have a training facility and Media labs (with video production facilities), they can support the use of ICT for health services and public administration. They collaborate with Medco to iterate the prototypes for distance education, and may be able to use this platform for training for health workers.

DAP has animation videos for cybersecurity for children and teens.

When Humanity and Inclusion develop videos, they include sign language, close caption, colour contrast, and make them accessible for everyone - not only people with disabilities, but also for elderly and other people.

6.5 Further Policy Issues

From the stakeholder engagement conversations there were several further policy issues identified.

6.5.1 COVID-19

LaporCOVID-19 are trying to use their chatbot, but are not yet able to send back the message about which hospitals lack beds or have ICUs with ventilators. Since the end of November 2020, it has been hard to find hospital beds, and the Government unfortunately has no bed occupation data. So LaporCOVID-19 is trying to get the data and use the platform to help people find a hospital with available beds. The issue is having real-time bed state reporting.

6.5.2 Stunting

The national priority to address stunting has led the Provincial and District Health Offices to speed up the process by adopting technology e.g., Sehati TeleCTG which offers a solution for reducing

²⁵ An infodemic is an overabundance of information, both online and offline. It includes deliberate attempts to disseminate wrong information to undermine the public health response and advance alternative agendas.

the stunting problems (see Section 5.3.2). Other apps have been developed to address the challenges of stunting (such the *anak bunda* app – see Section 7.3.1.1).

6.5.3 Health Technology Assessment and Regulations

As a payer, BPJS Kesehatan said it must be careful about adding telemedicine coverage if this increases the volume of claims above what they can pay. At present BPJS do not have the data to know if the availability of telemedicine attracts people (particularly in the “missing middle”) to join BPJS.

The initial policy priority for the Kemenkes was for telemedicine to be expanded to provide access to health workers in remote areas. From the BPJS health financing perspective the goal has been to find out the approximate description of telemedicine costs, especially in the referral health facilities, so that the consequences of adding telemedicine into the JKN can be established, and decisions made as to whether member premiums must be increased. A health technology assessment of telemedicine is what JKN stakeholders would really like to have so that both the health and financial impacts can be assessed. Should it cover all diagnoses, or certain conditions such as chronic stable disease? There is also the potential for double costing that must be studied further.

BPJS also noted that there are continuing discussions in the medical profession regarding the legal, effectiveness and efficiency aspects of telemedicine. After BPJS have piloted telemedicine, they want to encourage health technology assessment for telemedicine. They want JKN stakeholders to know the costs and benefits, the budget impact and consequences of adding telemedicine.

ATENSI is working together with the AHI in revising the regulations with the Indonesian National Agency of Drug and Food Control (BPOM), and they are now considering digital inclusion issues in this.

6.5.4 Quality assurance

PERSI indicated that, at present, there are no explicit health care quality assurance standards for the care of PwDs. This is an issue of concern for all types of hospital and Puskesmas. The building regulation aspects are not being enforced (Krishna Hort 2017), and the digital inclusion aspects need to be developed.

6.5.5 Procurement

In Papua, the budget for the telemedicine infrastructure was planned from the central government, but due to the limited time it has not been possible yet to complete the process. But it is not yet clear also who should provide the budgets for the necessary devices, either from central government, province or district level. This needs to be resolved before training commences. These issues were being discussed before COVID-19 disrupted them.

In 2022, SehatI TeleCTG will join with government procurement systems which have a plan to buy 3250 teleCTGs.

6.5.6 Identity

For Kominfo-BAKTI promoting connectivity and encouraging people to use it also has to address the ID issue. But the regulations are not yet ready. As temporary arrangements they have used the number of mobile phones as a limited form of digital identity.

Concerning identity, UNICEF reckons only 5 million adults are without electronic ID cards in Indonesia, and many children now have a child ID. UNICEF supports birth registration and collaborates with other Ministries on this, but there is also fragmentation as Kemensos has another system (*Sispanduk*) for population records, though they (like UNICEF) use Primero as a case management system for data on tracking vulnerable children. But this has not yet got nationwide coverage. UNICEF also commented that when they introduced their RapidPro community system most of the parents registered who had targeted children, did not have an ID for them. UNICEF's policy has been to issue a dummy ID and enable access to the system using it, but they acknowledged that this creates problems for linkage with National IDs.

6.5.7 Cybersecurity

The DAP and the UK-Indonesia Tech Hub aim to raise public awareness on cybersecurity; providing information and how to minimise risks for active internet users from cyber-attacks and developing skills and capacities to further safeguard individuals from digital security risks, specifically targeting individual between 12 and 18 years old. Kemenkes can leverage the role of the National Cyber and Crypto Agency (BSSN) to help protect health data.

6.5.8 Sustainability

Kominfo-BAKTI is concerned with ensuring strategies that support sustainability. They see their role as an enabler, and that as demand increases they can provide the data to the cellular operators and Internet Service Providers with the hope they can come to a given area and generate a sustainable business.

Kapal Perempuan's approach to sustainability is:

- Train local women to be able to run the radio community.
- Facilitate the radio station's registration with the authorities to conform with the regulations from Kominfo.
- Nurture local teamwork including reporters, script writer and the call centre.
- Provide local content, e.g., Good Morning to discuss current issues at the village level, or a Gadai-Gadai program every Saturday to support the local business promoting their product via interactive calls. The coverage of community radio is only 2 kilometres to conform with the regulations. But they also upload the content to YouTube to reach a wider audience.

Kapal Perempuan have been discussing with the village government whether the Village Fund can be used to provide this radio service on an ongoing basis. The heads of both villages are men, and they have been very supportive of the programme.

Humanity and Inclusion found that one of the challenges has been that the minimum standards for NCDs, such as Diabetes, released by the Kemenkes in 2019, have not been well sensitized with the Provincial and District Health Offices they have been working with. However, Humanity and Inclusion are now in the process of handing over their platform and materials, and the maintenance of them is now budgeted for by the Offices for the next few years. So, in Yogyakarta, for example, there are now educator groups, doctors, nurses, and nutritionists who can support the education process. For Puskesmas staff who have the task to educate the people, it has been found that having the digital platform saves them a lot of money, time, and energy.

Whenever UNICEF design any intervention, it is always planned with a handover strategy, training, capacity building, as well as troubleshooting throughout, until the government can take over and self-maintain the technologies. Also, their practice is not only to collect data but also to give feedback (via SMS, WhatsApp, or a web dashboard).

6.5.9 Entrepreneurship

The UK-ID Tech Hub in collaboration with KemenPPPA have developed a pilot programme for virtual training for marginalised women of home industry business owners in targeted districts. This programme aims to enhance digital literacy skills and internet safety of the targeted beneficiaries, by maximising use of technology to support their businesses to become digitally ready entrepreneurs and increase better livelihood (UK-Indonesia Tech Hub 2021).

Kampoeng Cyber educated people to use the internet positively - not only for consumerism, but also for their productivity side, such as how to use social networks, and how to promote their product using a website. The culture of the community is one of self-sufficiency.

And, as indicated (in 2.6.5), there are many healthtec start-ups in Indonesia, and a willingness to engage in developing the new opportunities that telehealth is opening up.

6.6 Summary

A summary of Chapter 6 is that cross-sector findings about stakeholders' views on telehealth and digital inclusion issues illustrate various aspects of a digital health ecosystem (see Section 3.5). Engaging with stakeholders is a pre-requisite for initiating and maintaining such an ecosystem. These findings, and those of Chapter 5, could contribute to the development of a digital health strategy and a digital health ecosystem.

The Stakeholder Engagement exercise generated interest in holding two workshops to test some of the practical ways in which the challenges of delivering digitally inclusive health services at a distance could be addressed. The first workshop was to consider the issues from the point of view of those working in Puskesmas, and this then provided some suggestions for further consideration at a second workshop that was focused on the Community perspective.

7 Puskesmas and Community Workshops

This Chapter briefly summarises the issues raised at two workshops. The first workshop was primarily for staff working in Puskesmas. Some key issues were raised concerning digital inclusion both in this setting, and which might also be of relevance to a community. The second workshop took the relevant community-oriented material from the first workshop and focused on the issues facing a digital community, given the context of the Smart Village programme being developed by Kemendesa.

7.1 Introduction

Discussions with staff at three Puskesmas had indicated that digital technologies are being embraced. WhatsApp, Instagram, YouTube are all in use to provide health information and to support individuals; some are generating their own content and movies. But there is a shared desire for improvement in training in the use of telehealth services, and a desire to improve delivery of health services to villages.

Complementing the increasing use of mobile technologies by Indonesians, Kemendesa, together with the World Bank and others, are running an Improved Village Service Delivery Project and are in the early stages of developing Smart Villages to support the Village SDGs. They are supportive of the health sector articulating its telehealth and digital inclusion requirements in ways that the platforms and processes they are developing can support.

Accordingly, it was proposed to hold a workshop that focused on the Puskesmas perspective, and then, in a second workshop, to explore how the community-oriented issues they raised could be developed with particular reference to the early stages of the Smart Village programme.

7.2 The Puskesmas workshop

The 18 invitees to this workshop came from Kemenkes, nine Puskesmas, two NGOs for PwDs, and DAP staff. Those attending the workshop received a four-page briefing paper that essentially condensed many of the findings of this research. After the introductions and scene setting was done, the attendees were split into two (pre-determined but balanced) groups, for a facilitated discussion in two parts. The first part was focused on issues around the digital inclusion needs of social groups both in the Puskesmas and in the Community. The second part addressed the training and capacity building issues for both Puskesmas staff and those needed in the Community.

More specifically the questions posed were:

1. What are the needs of the social groups that could be supported, using digital technologies, by Puskesmas staff **in the Puskesmas**? What is needed in terms of digital support (technology, apps, content, media etc) to support Puskesmas staff? Are there best practices to be shared?
2. What would Puskesmas staff wish to see in terms of digital support (technology, apps, content, media etc) being provided to address the health needs (improving health-seeking behaviours etc) of these social groups **in their homes/communities**?
3. What training and development in digital health do **Puskesmas staff** require? This includes essential digital literacy building, as well as training in telehealth and digital inclusion.
4. What training and support will be needed for digital health capacity building in people's **home/communities**? This includes the role of health cadres.

The following are some of the observations made in answering these questions:

What is needed in the Puskesmas?

For People with Disabilities

- For PwDs, problems highlighted included: 1) communication barriers for deaf people (with a lack of ability for Puskesmas staff to use sign language) 2) for people with physical or mentally disabilities communication with doctors can be difficult; for some, using other media such as videos or comics are helpful.
- Blind and deaf people need suitable devices such as earphones or hearing aids, as well as writing tools.
- PwDs are vulnerable and little attention so far has been paid to their needs; telehealth and telemedicine are part of the solution, but the obstacles include the lack of internet broadband (and power) in rural communities.
- Puskesmas Tonjong was considered to be difficult to access. So, in order to solve this, they are involving health cadres or mobile Puskesmas to reach PwDs in hard-to-reach areas. The literacy of the community is relatively low, there are many patients that are not able to read and write.
- In Puskesmas Kalikotes, to facilitate the physically disabled patients dedicated staff have been assigned to help them when they visit the Puskesmas. But there are still difficulties for the deaf and blind patients that come alone to the Puskesmas. There is no technology available as yet for these patients.
- Puskesmas Sekayam has an outpatient and inpatients clinic and gives healthcare services around the clock. The community still prefers to have direct contact with the health staff. There are also many PwDs. But when they offered to provide the consultation using technology, patients are not satisfied and prefer to have a direct face-to-face meeting with the health staff.

Other Social Groups

- The social groups considered included: mental health, women and children, elderly, indigenous people, and people with specific diseases such as leprosy and tuberculosis who are also stigmatised.
- Tuberculosis patients need long term treatment and digital technology to remind them about their medication regime would be helpful.
- The screening of patients with mental health issues, including those in acute states, would benefit from some digital health decision support.
- At Sleman, they used WhatsApp groups for monitoring pregnant women at the Puskesmas and the associated Posyandu. This includes monitoring the growth and development of the under five children. Digital recording of weight has been used in every village as well.
- Cohorts of pregnant women are monitored using web-based services.
- Jakarta has begun use of the mobile “*e-jiwa*” app for mental health screening in the community using the SRQ 29.
- Apps like *e-jiwa* could be scaled up to other areas as well to be used for mass screening of mental health at the community.

What is needed at home or in the community?

- A digital Centre is needed at the village level. Patients then do not need to come to the Puskesmas, but can come to the digital centres to help them to consult the Puskemas staff.
- Health cadres need to have digital health literacy opportunities and apps for them to understand and then be able to share.
- Teleconsultation is needed and should be able to provide actual services for villagers.

- Health promotion, using YouTube and social media is needed - so far, the health promotion strategy is still through direct meetings.
- Particularly for PwDs, the elderly, pregnant women or people with NCDs who need remote monitoring, e.g., for blood pressure, there are great benefits from having village wifi and affordable devices that enable home-based care.
- Every village usually already has a nurse or midwife. It would be better if, at the village level, there is the digital technology that allows the midwife or nurse to have teleconsultations with the doctor at the Puskesmas to help the patients at the village including PwDs. The patients may contact them from home as well - especially PwDs.

What Capacity building is needed

- Digital literacy training is needed for Puskesmas staff including for health cadres and midwives at the village level. The need for both online and offline training was mentioned.
- All Puskesmas staff need the training for sign language.
- Training is needed to develop media that are inclusive.
- Training is needed for technical issues related to ICT as well as training related the health programmes.
- Training to develop e-learning systems is needed.

7.3 The Community Workshop

To this workshop were invited stakeholders from both Kemenkes and District level, as well as staff from Kemendesa and a Smart Village. In addition, DAP staff attended Those attending also received a four-page briefing paper that essentially condensed many of the findings of this research. In essence the focus was on the requirements that communities have for digitally enabled and inclusive healthcare and communication, information, and education. There were two rounds of discussion (each of 45 minutes) that were each guided by two questions. Between each round rapporteurs from each group summarised their view of the key points. The results are summarised below, and the detail found in sections 7.3.1-7.3.4:

Round 1 – Content and Capacity

1. What is the digital health **content** that needs to be provided in Digital Villages? What is needed in terms of digital support (mediator/facilitator, technology, apps, content, media etc) to help Community members? Are there best practices in digital inclusion to be shared?

Responses to this topic focused on:

- Apps.
- Language and localisation.
- Smart Village programme.
- Community Education.
- Services for GESI groups.

2. What digital health **capacity** building is needed for Health Cadres and citizens? Digital inclusion training? Digital literacy for all? Digital health literacy for Health Cadres? Online/offline training? Sign language?

Responses to this topic focused on:

- Government support.
- Capacity development process.
- Health Cadres.

- o Community engagement.

Rapporteurs' summary of Round 1

- o It is important that a village/community can develop their own application and have good collaboration with other sectors.
- o Make sure to consider the local characteristics and local wisdom for developing digital content.
- o Increase the awareness of IT at the community level.
- o Training needed can be about graphic design, how to design simple communication accompanied by pictures.
- o There is some health content that is already available and being used in the field by cadres or communities, like Doctor on Call and Posyandu Online.
- o Digital literacy and ICT training for health cadres is important, as well as training in how to recognise and interact with disabled people
- o There is an issue in North Nusa Tenggara province that the stunting levels are high because people believe in local leaders rather than health cadres. Local people may not be familiar with technology.
- o One approach is to train the youngest first, and later on they inform the rest of the community.

Round 2 - Sustainability and Governance; Platforms and Connectivity

3. What is the potential contribution of the health sector to the **sustainability and governance** of Digital Villages? What do Digital Ambassadors need to know about digital health and inclusion? What funding is available for supporting digital health inclusion (devices etc)?

Responses to this topic focused on:

- o Village Fund.
- o Digital Ambassadors and Digital Cadres.
- o Sustainability.

4. What are the contributions and requirements of the health sector in the development of Digital Village **Platforms and Connectivity** requirements? Can telehealth consultations be facilitated? Can local health content be developed and shared across local Digital Village platforms, e.g., via online learning academies?

Responses to this topic focused on:

- o Platforms.
- o Connectivity.

Rapporteurs' Summary of Round 2

- o The importance of collaboration.
- o Smart villages from Kemendesa can be a catalyst in improving the use of information technology including in expanding health care services.
- o Kominfo also have tried to develop certain initiative to expand internet connection.
- o The challenge remains basic: power supply and internet connectivity.
- o Village level development is good because the development comes from what the villages need and their characteristics.
- o One of the issues related to sustainability and governance is identifying local champions.
- o From the Smart Village program there are digital ambassadors at the district level that oversee digital cadres at the village level. Digital ambassadors and digital cadres are

- funded by the Village Fund. There is already a village regulation whose activities are handed over to the village level. Village councils are used to identify priority problems.
- o There is potential for self-supporting funding, such as entrepreneurs in Cyber Villages.
 - o Collaborative strategies are needed for sustainability, for example in Bogor there are village-owned enterprises working in collaboration with Puskesmas so that there are clinics that work outside of normal Puskesmas working hours.
 - o Kemendesa and Kominfo are collaborating about providing connectivity to 3000 villages.

The suggestions made concerning Content, Capacity, Sustainability and Governance, Platforms and Connectivity are presented below.

7.3.1 Content

7.3.1.1 Apps

The Desa Bulakan (Smart) Village has created a website²⁶ and developed some apps, including the *anak bunda* app²⁷. This app collects anthropometric data concerning toddler weight and development, with reference to stunting. The app uses a data collection system using (Government-provided) Smart Cards for toddler participants. When the toddler is brought to the Posyandu the health cadre there scan the card and record the toddler's nutritional data, and its weight and height (and they also hold data about the child's mother, father and address). The system calculates their Body Mass Index automatically and flags if there is evidence of stunting. At the moment, the tool is still a prototype. Bulakan Village has funded this from their Village Fund, from which they allocate budget each year of 20 million rupiahs for research. Their hope is that the Smart Village programme will adopt the *anak bunda* app, and that other health content can be added.

At Graban Village-Bali, Kemendesa noted, there is a health application - "Doctor on Call" - that is used by the community in emergency situations to send an ambulance or an emergency doctor.

Kampoeng Cyber has made an application - "*Posyandu Online*" - for the sub-district. This integrates the population database with the Puskesmas using national ID number. The application can be used by all residents. The aim of this application (just like direct telemedicine service) is to increase access to the Puskesmas for all residents.

In West Kalimantan, there is an android based application for the public called "*Bunga Nakita*" related to maternal health, but it has not reached all Puskesmas.

As noted by Kemendesa, there are many applications right now, and the risk is that the more applications there are the more people will be confused. There are also concerns about the capability of devices that can download the applications, and also about which people buying what sorts of data package.

7.3.1.2 Language and Localisation

In Indonesia, there are lots of different cultures including languages. Somehow providing specific information or knowledge needs a localization and contextualization process to adjust for custom and social conditions. Localisation is not just to do with specific knowledge of health issues, but also language or even software and hardware utilization.

²⁶ <https://bulakan.desa.id>

²⁷ <https://anakbunda.bulakan.desa.id>

Locally, as in Bulakan and Kampoeng Cyber, there are creators who have the potential to develop content at the local level. Promising collaborations can happen involving government, local community, and the private sector, as long as they have a pathway to achieve shared objectives.

From Sehatpedia's perspective, the content that needs to be provided is generally basic information and neutral. Many digital platforms provide formal, long and elaborate articles that are really only suited to urban people. The language used needs to be easily understood, and the content concise, if it is to be effective especially for rural people.

More content is needed relating to digital inclusivity, and then included as part of training programmes and activities that can be deployed to support digital access, including in the health sector.

Traditional medicine needs to be facilitated to become available as digital content in the regions, especially outside Java.

7.3.1.3 Smart Village programme

Kemendesa explained that one of the six pillars of Smart Villages relates to “smart people” – that includes all people in the village such as women, children, and PwDs. A Smart Village does not directly add applications but integrates what the village is developing. Making sure that the content is accessible for everyone is very important

Kominfo-BAKTI is collaborating with Smart Villages to provide connectivity to remote areas. The Smart Village programme is collaborating with Kemendagri to develop the links with Smart Cities. Collaboration between the Kemenkes and Kemendesa is needed to increase the availability of wifi at Village offices.

7.3.1.4 Community Education

Bulakan village developed an “information-aware engineering group” (*kelompok teknik sadar informasi*) which educates the community about IT. Village IT people are basically volunteered from the village to help the people learn about the digital information, e.g., providing digital literacy training for mothers.

7.3.1.5 Services for GESI groups

Several suggestions related to digital inclusion: People with visual impairment/disability can use telephone or audio, or screen readers, or a web-based webcaptioner. For example, on a laptop there is Job Access with Speech (JAWS) or smart voice application. For deaf people, if it is not possible to train people to use sign language, then (given the connectivity) free applications in Googleplay can be used, such as LiveTranscribe. Text or video calls are other options. People with intellectual disabilities need caregivers to help them, and it is necessary to simplify the language, information and reproduce images.

In Yogyakarta it was reported that village nurses visit the homes of elderly people 1-2 times a month. This is paid by the village's finances. Because many elderly people are not able to use phones it is difficult to reach some of them digitally, particularly when they are living alone.

It was also noted that women have a lack of confidence to share information about their health issues linked to sexual education. They also lack education and confidence about using apps.

7.3.2 Capacity

7.3.2.1 Government Support

The Dinkes in West Kalimantan is using local government funding to hold a telemedicine class and supports regular monthly tele-consultations between specialists and the primary health care doctors related to health cases.

Kemenkes has been supporting telemedicine in Yogyakarta, involving local Puskesmas Mlati 2 and Tegalorejo and RSUD Kota Yogyakarta hospital as the referral hospital. Kemenkes has supported implementation with provision of webcams and computers. They have requested additional Puskesmas and hospitals to join and have been coordinating with Kominfo about this to make sure that there is support for internet connections.

Kampoeng Cyber is also collaborating with Kominfo to get access to connectivity and technology infrastructure. They also noted the benefits provided by having local champions (selected from 20 cities) that Kominfo have used to support a program that covers the 4 pillars of digital literacy: digital ethics, culture, safety and skills. The goal is that digital literacy can be evenly distributed to the regions.

Kasepuhan Ciptagelar are planning to work with a community network which collaborates with several ministries, doing training of trainers with Kemdikbud about how to utilize digital platforms.

7.3.2.2 Capacity Development

The health sector is not a standing on its own but has an intersection with other sectors as well. But the health sector needs to include digital health topics in the capacity building of digital technology and digital empowerment.

The first thing to do is making sure people in the village are aware of the issue of digital health, and before starting any training make sure all the policy in the village is accessible to everyone.

If the capacity building is friendly to women, then women can play a big role. Girls in the villages still have challenges or barriers to be included in health literacy. There is a need to make sure women have good materials and content about health and are given the freedom to also bring their children into the classes.

How local society can come up with their own initiatives is important. Development cannot be done by a single institution, it is about how people work together, involving several stakeholders, and being multisectoral.

Capacity building related to increasing awareness of digital information and literacy is important, but there are different needs in villages and cities.

7.3.2.3 Health Cadres

Training is needed for cadres to help them interact with PwDs. There are variations in the needs of PwDs, such as the blind need voice assistance, the deaf need sign language/translators and text/subtitles for pictorial media/applications. In some areas, there are still difficulties in connectivity, so outreach from cadres is needed.

An offline training model helps clarify what commitment there is and may be better, initially at least, for digital cadres, but for health workers at Puskesmas online training will work.

In Kampoeng Cyber, there was training for cadres at village level on how to enter the data and using the “Doctor on Call” application.

7.3.2.4 Community Engagement

Sensitization related to disability is more effective if the training is carried out offline followed by simulation. To approach indigenous peoples, indigenous youths can be involved in training to reach communities that are still remote or not very “open”.

In North Nusa Tenggara Province, where stunting cases are high, pregnant women believe in culture more than health information from cadres (e.g., that they are not allowed to eat nuts). It is necessary to invite community leaders to increase health literacy and awareness in addition to advocating directly to the community.

One of the responsibilities of counsellors at Posyandu is to collect data and information related to their community. The information collected by them can be utilized by other health care stakeholders including the Puskesmas, or Dinkes.

Some Puskesmas in West Kalimantan have tried to use mobile vehicles for dental and oral services for pregnant women, called “*Dental Imunisasi*” which also identified stunting risk factors. To be effective such visits need to be well publicised.

7.3.3 Sustainability and Governance

7.3.3.1 Village Fund

The Smart Village will use village funds according to the Kemendesa Regulation No. 13 of 2020 concerning the priorities for use of village funds in 2021. This includes health priorities such as SDGs, stunting, inclusion, and telehealth. The Village Fund can be used for making the internet access more accessible. The Village Council is used to determine the priority activities.

Kemendesa also has a programme called 'Inclusive Village' which is being run by its Directorate of Basic Social Services. The Village Fund in 2021 can support the development of Inclusive Villages, making sure that all policies, and programmes in the village are accessible and beneficial for everyone including women, children, elderly, indigenous, and persons with disabilities. The Inclusive Village guideline will be published after final revisions.

7.3.3.2 Digital Ambassadors and Digital Cadres

Kemendesa is preparing the Smart Village Program with digital ambassadors and digital cadres, targeting 300-3000 villages. These ambassadors and cadres will help increase digital literacy in the villages. Digital ambassadors will be based in the District, overseeing 5 villages. One village has 1 digital cadre chosen by the local leader whose job is to assist the use of technology in the village. If there is a local champion in the village, they can become digital cadres.

Digital ambassadors will give empowerment to the village community. The digital ambassador can have materials or modules linked to digital health inclusion. Capacity building will be prepared for digital ambassadors and digital cadres and this can be related to telehealth.

The collaboration of digital ambassadors and Posyandu cadres is needed to maximize the potential of health care services.

7.3.3.3 Sustainability

Smart Villages coordinate with the private sector, government, and Director General of Village Government Development at Kemendagri to support digitization. For sustainability, a two-year contract is planned to be financed by village funds with regular capacity building. Village selection is based on commitment and interest via a proposal to Kemendesa.

In Bogor there is a village-owned enterprise which, in collaboration with the Puskesmas, opens a clinic outside the Puskesmas' working hours.

7.3.4 Platforms and Connectivity

7.3.4.1 Platforms

Kasepuhan Ciptagelar mentioned examples of how the local community can work with the health sector using digital platforms but noted that the early stages of such developments had a lot of risks and challenges. Accordingly, a multisectoral approach that involves government, national and local level as well as private sector, and civil society organizations, that can collaborate with and support each other was commended.

Kemendesa will include information about economic, social, and health information on their platform. The platform will be website-based. Consultation is planned to determine how best to support health communication between the village community, doctor, and cadres. The application and platform need to be easy to use

In Lampung there is a local champion who developed a village information system platform as an inter-village collaboration. The digital community space already exists there, but in other Smart Villages a digital community space, with computers and access to the internet is still needed.

7.3.4.2 Connectivity

Kominfo is the Ministry responsible for connectivity, and the problems at community-level relate to the range of connectivity, the bandwidth, the ability to buy data packages, and willingness to use the applications.

It is legal for a local community to sell and resale internet services to rural areas from a licensed Internet Service Provider or a telkom company. Specific models are needed to accommodate the social, culture, topography, and geographical difference so solutions can be scaled up.

In West Kalimantan there are 246 Puskesmas, and they have great variations in internet availability. The challenges in some areas are that electricity is only available at night and there is no internet connection.

7.4 Summary of the Workshops

In both workshops, participants shared a great deal of knowledge and experience. Working from a background paper, and in small groups with a focus on some key questions generated useful insights. These are reflected in the conclusions and recommendations that follow.

8 Conclusions and Recommendations

This Chapter provides recommendations for policy makers and other stakeholders which will enable telehealth and digital inclusion to be improved. Referring to different aspects of the GESI framework throughout, and making reference to supporting sections in the report, we make recommendations that follow the following logic:

1. **Support Puskesmas.** *They are at the intersection of community and hospital care and are getting increasingly involved in telemedicine and telehealth. They are building up knowledge of their requirements and these should inform how to:*
2. **Develop Capacity and Content:** *this is to recognise that digital health literacy and digital inclusion training is needed to support telehealth, and this requires content that helps better health-related decisions by both health staff and citizens. And this in turn will help and inform how to:*
3. **Engage with Digital Villages and Communities** *so that digital services which enable everybody to get (affordable) access to (affordable) health care, communication, information and education, are available in every village. And this in turn requires action to:*
4. **Implement Standards and Interoperability** *so that telehealth services can be integrated across the health system and enable them to address specific health sector issues, and, to develop a:*
5. **Focus on Cross-sector issues,** *(such as COVID-19 and stunting) which are key to better health and development in general, and are better addressed when there is a commitment to:*
6. **Foster Digital Health Ecosystems and Strategy Development** *so that synergies can be identified and delivered, with a Digital Health Strategy being an initial step.*

The challenges for telemedicine that relate to digital inclusion can best be framed and understood in the context of the overarching research question: “How can digital inclusion for telehealth be improved in Indonesia?” In answering this question, the research has confirmed the importance of recognising that the first challenge is to “connect the unconnected” and explores the contributions of the health sector to do this by encouraging the contribution of the health sector to the development of “digital villages”. The broader context for the study has been implementation of the Sustainable Development Goals, and of the sub-goal of Universal Health Coverage with reference to coverage and use of digital services, particularly those which are assistive technologies (Chapter 2).

The use of digital services in general, and telehealth and telemedicine in particular are influenced by a range of social factors. The GESI framework has proved helpful in distinguishing the many different groups of people and issues that need to be considered. But then it is also important to understand what the capacity building issues are for both citizens and health staff so that no one is digitally excluded (Chapter 3).

Rather than focus on the specifics of particular health issues, or different medical services and technologies, this report recommends that actions are taken which build up an understanding of how different stakeholders’ interests can be engaged in developing a digital health ecosystem that can support telehealth and digital inclusion.

8.1 Support Puskesmas

Some Puskesmas staff have embraced digital technologies and are supportive; others have not. Recognising that Puskesmas staff have a pivotal role to play in supporting telehealth,

We recommend that Kemenkes:

Ensures that in the development of its Temenin and Sehatpedia solutions, Puskesmas staff are given digital health literacy training which also promotes digital inclusion. (5.1.7). The opportunity to develop a unified training package for Puskesmas staff (5.1.2 and 5.1.3) should be taken. Further aspects of this training should:

- Improve the sensitivity of staff to the needs of different GESI groups, in particular the use of sign language, and the use of assistive technologies (7.2 and 7.3)
- Enable staff to use media, such as WhatsApp, to provide consultations with patients at home (5.1.3)
- Reflect on the lessons learned from the initial training programme, paying particular attention to the challenges of staff turnover, and the potential to train Puskesmas staff in how to improve their engagement with other community-based health cadres, and help them feel comfortable to use telehealth services and digital communications, information, and education (7.2).
- Ensures that there are Puskesmas where staff are trained in using both Temenin and Sehatpedia.

Promotes good practices in Digital Inclusion; for example, to support different groups of people, or to focus on a particular health concern, some Puskesmas have a team that modifies content and develops movies, and others use Instagram and YouTube to educate people about the new normal, how to use Posyandu services, have vaccinations etc. (5.1.7).

Continues to collaborate with KemenPPA to develop more Child-Friendly Puskesmas and ensure they can provide digital support to children and their parents and ensure health content is provided for their child-friendly information centres (5.1.9).

Works with Development Partners to support the use of digital technology to help Puskesmas staff engage with communities. UNICEF, for example, has shown mobile technologies can help Puskesmas staff to improve mother and child care, e.g., with immunization reminders. (5.4.8).

8.2 Develop Capacity and Content

Digital health literacy and digital inclusion training is needed to support telehealth, and this requires content that helps better health-related decisions by both health staff and citizens, so:

We recommend that Kemenkes:

Commissions the development of digital health literacy training and content for all health service staff, and communities. In doing this work (which will clearly need to be phased) the Kemenkes will need to collaborate with other Ministries, in particular Kominfo (and their National Digital Literacy programme), and also Kemdikbud.

Commissions staff training in digital health inclusion. We found no training materials focused on a holistic approach to digital health inclusion. The material in this report points to many of the potential resources that can be used as a starting point, e.g., those developed by the ITU and GSMA. There are some issue-specific good practices in Indonesia, for example the work of ATENSI and UNDP regarding learning and capacity building to support PLWHA to use

telemedicine, clinical and information services (5.2.1). This training needs to be adapted to the needs of policy-makers, hospital, Puskesmas and community health cadres.

Works with Development Partners (global, national, and local), academia, professional bodies, and Associations to determine the technical and quality criteria that content developers need to meet to enable their digital content (that supports telehealth and digital inclusion) to be delivered safely to communities and health staff. For example, this will require agreement on how best to check the quality of the content and avoid infodemics (6.4.2).

8.3 Engage with Digital Villages and Communities

To have digital services which enable universal access to health care, communication, information, and education, requires provision of such services in community, so:

We recommend that Kemenkes:

Works with Kominfo and Kominfo-BAKTI to connect all the health facilities in Indonesia. The roll-out of the Base Transceiver Stations and the delivery of 4G to health facilities, the expansion of VSAT and then the transition to the use of the Satria satellite should be carefully and jointly planned (5.1.8), and bear in mind the likely increase in bandwidth requirements as telehealth services and requirements develop. As part of this process the following issues also need to be addressed:

- The digital maturity of the health services in particular areas and their capacity to incorporate the installation and maintenance of telehealth services.
- The different demographic and geographic characteristics of the Regions, and the particularly challenging requirements of DPTK areas for telehealth services and their use of existing and upgraded technology.

Works with Kemendesa to support the development of digital villages. This should not be construed too narrowly, as other Ministries (e.g., Kominfo, Bappenas) and the World Bank are involved, but Kemendesa has the lead role in the SDGs and Smart Villages.

Kemenkes can make some positive contributions by working to:

- Agree the core requirements for digital platforms that support the health requirements of inclusive communities, and how they can be sustained and refreshed. This will reflect the health content that is being developed (see 8.3) and the requirements of health staff (e.g., in Puskesmas, see 8.2) and health cadres. The health-related work of Human Development Workers also needs digital support (2.1.4).
- Agree how telehealth and digital inclusion initiatives can best be introduced via village governance arrangements and supported by appropriate use of the Village Fund (7.3.3.1).
- Support the development of the role of Digital Ambassadors (7.3.3.2) in terms of their briefing about telehealth and digital inclusion, and the way they convey these issues to the Digital Cadres they support.
- Offer training opportunities for local digital or health cadre to be able to facilitate the setup of a teleconsultation with a local Puskesmas (or hospital) with those who would benefit but lack the necessary skills or confidence (3.2).
- Support the scale up of “digital villages” by contributing best practices concerning the provision of digitally supported health services, communication, information, and education (see below).

Works with Development Partners and entrepreneurs to promote telehealth and digital inclusion. For example, Kapal Perempuan, with respect to the use of community radio (5.4.3), or Humanity and Inclusion regarding the use of sign language (5.4.5), or Common Room’s Tech Hub

for Rural Innovation (5.4.1), or Yakkum's support of women with disability and production of video tutorials and best practices (5.4.6), offer some best practices in terms of innovative uses of digital technology that support community development and health. They also provide evidence that supporting entrepreneurship in village communities can develop and provide locally relevant (but quality assured) health knowledge and products.

8.4 Implement Standards and Interoperability

To enable telehealth services to be available when and where they are needed requires standards so that systems and services can work together, so

We recommend that Kemenkes:

Works with Kominfo and the technology providers (and their Associations), and other relevant organisations, to agree the technical standards to support telehealth services. This may be a role for the Digital Transformation Office, and also involve the BSSN regarding cybersecurity (6.5.7). The work will involve a subset of the full range of standards-related issues that are needed to support digital health systems, but will need to address:

- Bandwidth requirements for teleconsultations (e.g., for broadband, VSAT etc)
- Identity management (especially for children)
- Data, cybersecurity and risk management, e.g., concerning use of smart phones, social media, hacking, and online abuse.

Works with Development Partners and the Private Sector to understand how other aspects of telehealth are being provided. At present, and particularly in the context of the COVID-19 pandemic, there has been an accelerated growth in telemedicine and telehealth services by the private sector. But for the poor, these services are too costly to use. Also, the private sector recognises that it is not doing enough to support digital inclusion though it does have a vested interest in gaining and maintaining customer engagement (5.2.1, 5.3.4). Development Partners have commented on the plethora of apps and standalone systems (5.4).

8.5 Focus on Cross-sector issues

With greater interoperability (both technical and in terms of governance arrangements) so the potential for addressing cross-sector issues is improved, and these are key to better health and development, so

We recommend that Kemenkes:

Contributes its expertise on telehealth and digital inclusion to collaborate with other sectors in addressing two key issues: COVID-19, and Stunting. In addressing these grand challenges, it should be seeking to learn lessons that can be applied for other cross-sectoral issues, such as reducing non-communicable diseases.

For example,

- COVID-19 requires cross-sectoral changes, including those within the health system. One issue highlighted here was the lack of a real-time data about bed occupancy (5.3.3), and of course there are others e.g., the pressures to deliver vaccines and provide accurate information about them (6.4.2). Changes to the regulations concerning the use of telemedicine that have been stimulated by COVID-19 need to be kept under review too²⁸.

²⁸ Regulatory Issues are also addressed in the separate Telemedicine Regulation project (delivered through the British Embassy, Jakarta).

- The high prevalence of stunting is another cross-sectoral and high priority issue (2.1.4). Providing engaging content about nutrition e.g., via videos and cartoons (3.3.4) to help improve health behaviours is one aspect; another is the collaboration between development partners and the private sector e.g., KOMPAK (5.4.4) and Sehati TeleCTG (5.3.2), as well as community-developed apps, e.g., Desa Bulakan's *anak bunda* (7.3.1.1). But dwarfing these initiatives is one that involves multiple Ministries that the World Bank (5.4.9) is supporting which focuses on 5 different services that need to come together at village level (water, sanitation, behavioural change, vaccination and immunisation, and nutrition). This provides a focus for work to deliver telehealth support with digital inclusion.

Works with the healthtec innovators and nurtures innovations, in particular those that support telehealth and digital inclusion. For example, can the health sector leverage innovation, e.g., the use of simple SMS, USSD or WhatsApp, so that services (information, consultation, drugs etc) can be ordered and provided (including in DPTK areas) as well? There is much for the Kemenkes to gain from understanding how the private sector telehealth innovators are developing their business models, e.g., managing risk and identity (5.2.1, 5.3). Sehatpedia can implement with its private sector partners an inclusivity by design approach (5.1.3). There are a range of assistive technologies too which are needed by PwDs (2.6), some of which need to be provided within Puskesmas (7.2) and hospitals to make it easy for PwDs to access services.

Works with BPJS, and the Professional Associations to enable health technology assessment of telemedicine and telehealth quality standards. There is a desire to better assess what the costs and benefits of telemedicine are (6.5.3). Also, ATENSI are working together with AHI and the BPOM in revising the regulations for tech products and will be working to have digital inclusion issues considered, whilst PERSI indicated that explicit health care quality assurance standards for the care of PwDs are needed (6.5.4), and the IDI supports the advocacy for telemedicine regulation (6.5.3).

Works with the private telemedicine providers and BPJS to monitor the use of telehealth services that they are offering so that the public sector telehealth provision is focused where effort is most needed to ensure there is both coverage and usage (2.4).

Works with the Kemensos and Kemendagri to improve the processes for enabling everyone, including PwDs and the marginalised, to get their national ID cards, status and be able to access digital platforms (5.1.10).

8.6 Foster Digital Health Ecosystem and Strategy Development

These recommendations show that the Kemenkes has a key role to play in orchestrating the development of a Digital Health Ecosystem within which the telehealth and digital inclusion issues of particular concern here can be considered. There are many stakeholders whose interests need to be understood, and, of course, the sort of ecosystem that could be envisaged (see 3.5), could not be established straight away, so:

We recommend that Kemenkes:

Commissions the development of a Digital Health Strategy, with the establishment of a core group whose remit would include using the process to help develop a Digital Health Ecosystem for Indonesia. Within this, the issues of improving telehealth and digital inclusion can be developed with the informed engagement of the relevant Ministries, Development Partners and other organisations, and actions taken so that the results can be deployed at scale and sustained.

References

1. Abiodun Alao, Tandi Edda Lwoga, Wallace Chigona. 2017. "Telecentres Use in Rural Communities and Women Empowerment: Case of Western Cape." *IFIP Advances in Information and Communication Technology*, vol 504 (Springer). https://link.springer.com/chapter/10.1007%2F978-3-319-59111-7_11.
2. Afiani, Isyfi. 2018. "Advancing Women's Digital Skills and Economic Empowerment through Girls in Tech Indonesia: A Case Study." *SALASIKA: Indonesian Journal of Gender, Women, Child, and Social Inclusion's Studies*, vol 1 no.2 21-32. <http://salasika.org/index.php/SJ/article/view/39>.
3. Aljazeera. 2020. *Digital doctors: Indonesia uses 'telehealth' to fight coronavirus*. 10 April. <https://www.aljazeera.com/economy/2020/04/10/digital-doctors-indonesia-uses-telehealth-to-fight-coronavirus/>.
4. Alliance for Affordable Internet. 2020. *Affordability Report 2020*. Web Foundation. <https://1e8q3q16vyc81g8l3h3md6q5f5e-wpengine.netdna-ssl.com/wp-content/uploads/2020/12/Affordability-Report-2020.pdf>.
5. Andriyan B. Suksmono, U. Sastrokusumo, Tati L.R. Mengko,. 2004. "Overview of Telemedicine Activities in Indonesia: Progress and Constraints." *Proceedings. 6th International Workshop on Enterprise Networking and Computing in Healthcare Industry - Healthcom*. ITU. https://www.researchgate.net/publication/4087352_Overview_of_telemedicine_activities_in_Indonesia_progress_and_constraints.
6. Ann Florini, Markus Pauli. 2018. "Collaborative governance for the Sustainable Development Goals." *Asia Pac Policy Stud.* 2018;5:583–598. Vol 5, pp583-598. <https://onlinelibrary.wiley.com/doi/epdf/10.1002/app5.252>.
7. Anna Wahyuni Widayanti, James A. Green, Susan Heydon, Pauline Norris. 2020. "Health-Seeking Behavior of People in Indonesia: A Narrative Review." *Journal of Epidemiology and Global Health* Vol. 10(1) , pp. 6–15. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7310809/>.
8. Anne L. Buffardi, and Kwan Men Yon. 2016. *Realising the right to legal identity: A case study as part of an evaluation of the Australia Indonesia Partnership for Justice*. London: Overseas Development Institute. <https://cdn.odi.org/media/documents/10716.pdf>.
9. Aranda-Jan, Clara. 2020. *Opportunities for digital assistive technology innovations in Africa and Asia*. London: GSMA. https://www.gsma.com/mobilefordevelopment/wp-content/uploads/2020/07/GSMA_ATInnovation-Landscape_28pp_FINAL_Accessible_WEB.pdf.
10. Avis, William Robert. 2019. *Challenges religious minorities face in accessing humanitarian assistance*. London: K4D. https://reliefweb.int/sites/reliefweb.int/files/resources/666_Challenges_Religious_Minorities_Face_in_Accessing_Humanitarian_Assistance.pdf.
11. Bambang Widi Pratolo, Hana Amri Solikhati. 2020. "The Implementation of Digital Literacy in Indonesian Suburban EFL Classes." *International Journal of Scientific & Technology Research* vol 9, no 1, pp 1508-1512. <http://www.ijstr.org/final-print/jan2020/The-Implementation-Of-Digital-Literacy-In-Indonesian-Suburban-Efl-Classes-.pdf>.
12. Blank, Grant and Dutton, William H. and Lefkowitz, Julia. 2020. *Oxis 2019: Digital Divides in Britain are Narrowing But Deepening*. SSRN. <https://ssrn.com/abstract=3522083>.
13. Cabinet Secretariat of the Republic of Indonesia. 2021. "Cabinet Secretariat of the Republic of Indonesia." *Remarks of President of the Republic of Indonesia at the Launching of the National Digital Literacy Program, 20 May 2021*. 20 May . <https://setkab.go.id/en/remarks-of-president-of-republic-of-indonesia-at-the-launching-of-the-national-digital-literacy-program-20-may-2021/>.

14. Cabinet Secretary for State Documents & Translation. 2020. "Villages Ministry Committed to Achieving Sustainable National Development Through Village SDGs." *Cabinet Secretariat of the Republic of Indonesia*. 17 September. <https://setkab.go.id/en/villages-ministry-committed-to-achieving-sustainable-national-development-through-village-sdgs/>.
15. Cahyani Endahayu, Reagen Mokodompit and Cesario Putra Benyamin. 2020. "Indonesia: New Indonesian Medical Council Regulation on Telemedicine Services During COVID-19 Pandemic." *Lexology*. 28 July. <https://www.lexology.com/library/detail.aspx?g=cbca0f47-e8c7-42aa-9867-585840b22022>.
16. California Telehealth Resource Centre. 2020. "What is telehealth?" *California Telehealth Resource Centre*. <https://www.caltrc.org/get-started/what-is-telehealth/>.
17. Cheney, Catherine. 2020. "Digital inclusion will be critical to pandemic recovery." *DEVEX*. 25 September. <https://www.devex.com/news/digital-inclusion-will-be-critical-to-pandemic-recovery-98127>.
18. Clara Siagian, Cyril Bennouna, Santi Kusumaningrum. 2016. *Out of Sight, Out of Reach: Breaking the Cycle of Invisibility – CRVS and Social Protection Program*. Center on Child Protection Universitas Indonesia (PUSKAPA). <https://puskapa.org/en/publication/620/>.
19. Claudia Rokx, Ali Subandoro, and Paul Gallagher. 2018. *Aiming High: Indonesia's Ambition to Reduce Stunting*. Washington DC: World Bank. <https://openknowledge.worldbank.org/handle/10986/30151>.
20. Cultural Atlas. 2021. *Cultural Atlas - Indonesia*. <https://culturalatlas.sbs.com.au/indonesian-culture/indonesian-culture-communication>.
21. Curtis Hanson, Emily Allen, Margie Fullmer, Rachel O'Brien, Kirk Dearden, Joshua Garn, Cut Novianti Rachmi, Jeffrey Glenn, Joshua West, Benjamin Crookston, and Parley Hall. 2020. "A National Communication Campaign in Indonesia Is Associated with Improved WASH-Related Knowledge and Behaviors in Indonesian Mothers." *Int J Environ Res Public Health*. 2020 May; 17(10): 3727. 17: 10. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7277176/pdf/ijerph-17-03727.pdf>.
22. Dea Indria, Mohannad Alajlani & Hamish S F Fraser. 2020. "Clinicians perceptions of a telemedicine system: a mixed method study of Makassar City, Indonesia." *BMC Medical Informatics and Decision Making* 20: 1-8. <https://bmcmmedinformdecismak.biomedcentral.com/articles/10.1186/s12911-020-01234-7>.
23. Deloitte Indonesia and Bahar. 2019. *21st Century Health Care Challenges: A Connected Health Approach*. Jakarta: Deloitte Indonesia and Bahar Law. <https://www2.deloitte.com/content/dam/Deloitte/id/Documents/public-sector/id-gps-ehealth-publication-Indonesia.pdf>.
24. Devanesan, Joe. 2020. "Why mobile-first Indonesia was ready for healthtech." *TechwireAsia*. 10 November. <https://techwireasia.com/2020/11/why-mobile-first-indonesia-was-ready-for-healthtech/>.
25. Digital Health Ecosystem Wales. 2021. "Digital Health Ecosystem Wales ." *Life Sciences Hub Wales*. <https://lshubwales.com/dhew>.
26. Donna M. Mertens, Sharlene Hesse-Biber. 2012. "Triangulation and Mixed Methods Research: Provocative Positions." *Journal of Mixed Methods Research* 6(2) 75–79. <https://journals.sagepub.com/doi/pdf/10.1177/1558689812437100>.
27. Gabriele Palozzi, Irene Schettini, Antonio Chirico. 2020. "Enhancing the Sustainable Goal of Access to Healthcare: Findings from a Literature Review on Telemedicine Employment in Rural Areas." *Sustainability* 1-30. <https://www.mdpi.com/2071-1050/12/8/3318>.
28. Government of Indonesia. 1997. *Act of the Republic of Indonesia Number 4, of 1997 Concerning Disabled People*. Government of Indonesia. <https://www.refworld.org/pdfid/4da2d1b92.pdf>.

29. —. 2021. “Facts and Figures.” *Embassy of the Republic of Indonesia*. <https://www.embassyofindonesia.org/basic-facts/>.
30. Government of Indonesia. 2014. *Law of the Republic of Indonesia concerning Village*. Government of Indonesia. <https://www.kemenkeu.go.id/sites/default/files/pdf-peraturan/16.pdf>.
31. —. 2004. “Law of the Republic of Indonesia N. 29 of 2004 regarding the Medical Practice.” *WHO MiNDbank: More Inclusiveness Needed in Disability and Development*. <https://www.mindbank.info/item/3751>.
32. GovInsider. 2021. “Exclusive: Inside Indonesia’s vision for an inclusive digital recovery.” 27 April. <https://govinsider.asia/transformation/exclusive-inside-indonesias-vision-for-an-inclusive-digital-recovery-johnny-plate-kominfo/>.
33. GSMA. 2019. *2019 Mobile Industry Report: Sustainable Development Report*. GSMA. <https://www.gsma.com/betterfuture/resources/2019-mobile-industry-report>.
34. —. 2021. “Assistive Tech Programme: Advancing digital inclusion of persons with disabilities.” *Mobile for Development*. <https://www.gsma.com/mobilefordevelopment/assistive-tech/>.
35. GSMA. 2021. *Mobile Internet Skills Training Toolkit*. London: GSMA. <https://www.gsma.com/mobilefordevelopment/connected-society/mistt/#mistt-module-10-accessibility-features>.
36. —. 2021. *Principles for Driving the Digital Inclusion of Persons with Disabilities*. <https://www.gsma.com/mobilefordevelopment/principles-for-driving-the-digital-inclusion-of-people-with-disabilities/>.
37. GSMA. 2020. *Spotlight on Indonesia: Seizing the digital transition opportunity now*. GSMA. <https://www.gsma.com/spectrum/wp-content/uploads/2020/02/Indonesia-Digital-Dividend.pdf>.
38. GSMA. 2020. *The Mobile Gender Gap Report 2020*. London: GSMA. <https://www.gsma.com/mobilefordevelopment/wp-content/uploads/2020/05/GSMA-The-Mobile-Gender-Gap-Report-2020.pdf>.
39. Handayani, Heidira Witri. 2021. *Telemedicine in Indonesia: A Path towards Universalizing Healthcare?* 13 January. <https://cfds.fisipol.ugm.ac.id/telemedicine-in-indonesia-a-path-towards-universalizing-healthcare/>.
40. Hani Eskandar, Sameer Pujar. 2020. *Digital Health Platform Handbook: Building a Digital Information Infrastructure (Infostructure) for Health*. Geneva: ITU. https://www.itu.int/pub/D-STR-E_HEALTH.10-2020.
41. HealthIT.gov. 2019. “What is telehealth? How is telehealth different from telemedicine?” *Official Website of The Office of the National Coordinator for Health Information Technology (ONC)*. 17 October. <https://www.healthit.gov/faq/what-telehealth-how-telehealth-different-telemedicine>.
42. Herawati, Franzone, R., Chrisnahutama, A.. 2020. *Universal Health Coverage: Tracking Indonesia’s Progress*. Perkumpulan PRAKARSA: Jakarta. <http://theprakarsa.org/en/universal-health-coverage-tracking-indonesias-progress/>.
43. Hootsuite. 2021b. *Digital 2020: Indonesia*. Hootsuite. <https://www.slideshare.net/DataReportal/digital-2021-indonesia-january-2021-v01>.
44. —. 2021a. *Digital 2021 Global Overview Report*. <https://wearesocial.com/digital-2021>.
45. Huin, Steeve. 2020. “Connected Health, Digital Health, Telehealth, and Telemedicine – What are the key differences and why the need for security?” *Irdeto Insights*. 17 April. <https://blog.irdeto.com/healthcare/connected-health-digital-health-telehealth-and-telemedicine-what-are-the-key-differences-and-why-the-need-for-security/>.

46. Indonesia Ministry of Communication and Informatics. 2021. "PR Newswire." *BAKTI and Kominfo Accelerates Auction and Framework Agreement of BTS 4G Infrastructure Development*. 1 February. <https://en.prnasia.com/releases/apac/bakti-and-kominfo-accelerates-auction-and-framework-agreement-of-bts-4g-infrastructure-development-307326.shtml>.
47. Indonesia Ministry of Health. 2020. <https://www.kemkes.go.id/article/view/20043000002/cegah-penyebaran-covid-19-pelayanan-kesehatan-dilakukan-melalui-telemedicine.html>.
48. —. 2021. "Job and Function." *Indonesia Ministry of Health*. <https://www.kemkes.go.id/folder/view/01/tugas-dan-fungsi.html>.
49. —. 2014. "Vision and Mission." *Indonesia Ministry of Health*. 12 June. <https://www.kemkes.go.id/article/view/13010100001/profil-visi-dan-misi.html>.
50. Indonesia Ministry of Social Affairs. 2021. *Ministry of Social Affairs Supports Disability Millennial Empowerment Program*. 24 February. <https://kemensos.go.id/index.php/en/ministry-of-social-affairs-supports-disability-millennial-empowerment-program>.
51. —. 2021. *MOSA Facilitates Population Data Recording for the Marginalized Citizen*. 13 January. <https://kemensos.go.id/en/ministry-of-social-affairs-facilitates-population-data-recording-of-marginalized-citizens>.
52. —. 2021. *The Importance of Information on COVID-19 and Vaccines for Persons with Disabilities*. 24 February. <https://kemensos.go.id/en/the-importance-of-information-on-covid-19-and-vaccines-for-persons-with-disabilities>.
53. —. 2020. "The Work Participation of Persons with Disabilities is Still Low in the Formal Sector." *Kementarian Sosial Republik Indonesia*. 8 December. <https://kemensos.go.id/ar/masih-minim-partisipasi-kerja-penyandang-disabilitas-di-sektor-for>.
54. IndoService. 2020. "Type of Association in Indonesia." *IndoService*. 8 July. <https://indoservice.co.id/type-of-association-in-indonesia/>.
55. Indozone. 2021. *How Kominfo Accelerates Digital Transformation in 2021, Increases Palapa Ring Utilization*. 01 March. <https://www.indozone.id/news/6gsj3ng/cara-kominfo-percepat-transformasi-digital-tahun-2021-tingkatkan-utilisasi-palapa-ring>.
56. International Labour Organisation. 2013. *Inclusion of People with Disabilities in Indonesia*. ILO/Irish Aid Partnership Programme. https://www.ilo.org/wcmsp5/groups/public/---ed_emp/---ifp_skills/documents/publication/wcms_210477.pdf.
57. International Labour Organisation. 2017. *Mapping persons with disabilities (PWD) in Indonesia labor market - Final report*. Jakarta: ILO. https://www.ilo.org/wcmsp5/groups/public/---asia/---ro-bangkok/---ilo-jakarta/documents/publication/wcms_587669.pdf.
58. International Labour Organisation. 2015. "Promoting Rights of People with Disabilities in Indonesia (UN Partnership to Promote the Rights of Persons with Disabilities - UNPRPD) - Phase II." https://www.ilo.org/jakarta/whatwedo/projects/WCMS_211048/lang--en/index.htm.
59. Internet Sehat. 2021. *Early History of the Healthy Internet Movement Gerakan*. <https://internetsehat.id/sejarah/>.
60. Iskander, Abdul Halim. 2020. "Implementing Smart SDG Village in Indonesia: Opportunities for Rural Advancement." 25 June. <https://slidetodoc.com/implementing-smart-sdg-village-in-indonesia-opportunities-for/>.
61. ITU and DIAL. 2019. *SDG Digital Investment Framework - A Whole-of-Government Approach to Investing in Digital Technologies to Achieve the SDGs*. Geneva: ITU. https://www.itu.int/dms_pub/itu-d/opb/str/D-STR-DIGITAL.02-2019-PDF-E.pdf.

62. ITU. 2019. *How the Broadband Commission is working to ensure meaningful connectivity for all*. Geneva: ITU News. <https://news.itu.int/meaningful-trusted-connectivity/>.
63. ITU-D. 2021b. *Digital Inclusion Resolutions*.
64. —. 2021a. *Digital inclusion resources*. https://www.itu.int/en/ITU-D/Digital-Inclusion/Pages/Reports_and_Resources.aspx.
65. —. 2021c. *ITU-D*. <https://www.itu.int/en/ITU-D/ICT-Applications/Pages/smart-village.aspx>.
66. June-Ho Kim, Eesha Desai, Megan B. Cole. 2020. “How The Rapid Shift To Telehealth Leaves Many Community Health Centers Behind During The COVID-19 Pandemic.” *Health Affairs*. 2 June. <https://www.healthaffairs.org/doi/10.1377/hblog20200529.449762/full/>.
67. Kamilia Manaf, Dewi Nova Wahyuni, Ikram Baadila. 2014. *Queering internet governance in Indonesia*. y Institut Pelangi Perempuan in cooperation with Association for Progressive Communication and Ford Foundation. https://www.genderit.org/sites/default/files/queering_internet_governance_in_indonesia_final_research_book__0.pdf.
68. Kemenkes. 2021. *Temenin*. <https://temenin.kemkes.go.id/>.
69. Kominfo News. 2021. *Kominfo Prepares Internet Access at 3,126 Health Facilities in Three Months*. 12 January. https://www.kominfo.go.id/content/detail/32044/kominfo-siapkan-akses-internet-di-3126-fasyankes-dalam-tiga-bulan/0/berita_satker.
70. Kominfo Siberkreasi. 2021. “Short Report Digital Literacy Roadmap 2021-2024.” *Literasi Digital*. 29 January. <https://litasidigital.id/books/short-report-roadmap-literasi-digital-2021-2024/>.
71. KOMPAK. 2018. *Gender Equality and Social Inclusion Strategy 2018 -2022*. KOMPAK. <https://www.dfat.gov.au/sites/default/files/indonesia-kompak-gender-equality-and-social-inclusion-strategy.pdf>.
72. Krishna Hort, Walaiporn Patcharanarumol eds. 2017. “The Republic of Indonesia health system review.” *Health Systems in Transition* Vol 7, n 1, pp 1-292. <https://apps.who.int/iris/bitstream/handle/10665/254716/9789290225164-eng.pdf>.
73. Latif, Anang Achmad. 2020. “How Partnership Boosts BAKTI Contribution to Close the Digital Gap.” *ITU Regional Development Forum Online 2020 Session 2a*. <https://www.itu.int/en/ITU-D/Regional-Presence/AsiaPacific/Documents/Events/2020/RDF2020/Session%202a/Final%20PPT%20-%20ITU%20RDF%20-%20Anang%20Latif.pdf>.
74. Luca Dan Serbanati, Fabrizio L. Ricci, Gregorio Mercurio, Andrei Vasilateanu. 2011. “Steps towards a digital health ecosystem.” *Journal of Biomedical Informatics* Vol 44, pp621-636. <https://www.sciencedirect.com/science/article/pii/S1532046411000402?via%3Dihub>.
75. Mathis Friesdorf, Ulrike Deetjen, Ajit Sawant, Greg Gilbert, and Florian Niedermann. 2019. “Digital health ecosystems: A payer perspective.” *McKinsey & Company*. 2 August. <https://www.mckinsey.com/industries/healthcare-systems-and-services/our-insights/digital-health-ecosystems-a-payer-perspective>.
76. McBride B, O'Neil JD, Hue TT, Eni R, Nguyen CV, Nguyen LT. 2018. “Improving health equity for ethnic minority women in Thai Nguyen, Vietnam: qualitative results from an mHealth intervention targeting maternal and infant health service access.” *J Public Health (Oxf)*. Vol. 40, Supplement 2, pp. ii32–ii41. <https://pubmed.ncbi.nlm.nih.gov/30252117/>.
77. McClain-Nhlapo, Charlotte Vuyiswa, Lauri Heikki Antero Sivonen, Deepti Samant Raja, Simona Palummo, and Elizabeth Acul. 2018. *Disability inclusion and accountability framework*. Washington DC: World Bank Group. <https://documents.worldbank.org/en/publication/documents-reports/documentdetail/437451528442789278/disability-inclusion-and-accountability-framework>.

78. Ministry of Communications. 2021. "Accelerate the Equity of 4G BTS, Stimulate National Economic Improvement." 29 January. https://www.kominfo.go.id/content/detail/32410/siaran-pers-no-28hmkominfo012021-tentang-percepat-pemerataan-bts-4g-pacu-peningkatan-ekonomi-nasional/0/siaran_pers.
79. Ministry of Village PDTT. 2021. "Village Digitization, Telkom Presents Smart Village Nusantara." *NEWS MINISTRY OF VILLAGE PDTT*. 4 March.
80. Mothobi, Alison Gillwald and Onkokamd. 2019. *2018_After Access_Africa Comparative report*. Cape Town: Research ICT Africa. https://researchictafrica.net/wp/wp-content/uploads/2019/05/2019_After-Access_Africa-Comparative-report.pdf.
81. NHS Digital. 2021. "What we mean by digital inclusion." *NHS Digital*. 11 March. <https://digital.nhs.uk/about-nhs-digital/our-work/digital-inclusion/what-digital-inclusion-is>.
82. Noel, K., Ellison, B. 2020. "Inclusive innovation in telehealth." *npj Digit. Med.* 3, 89 1-3. <https://www.nature.com/articles/s41746-020-0296-5.pdf>.
83. Nurul Hartini, Nur Ainy Fardana, Atika Dian Ariana, Nido Dipo Wardana. 2018. "Stigma toward people with mental health problems in Indonesia." *Psychology Research and Behavior Management* Vol 11 p 535–541. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6217178/pdf/prbm-11-535.pdf>.
84. OECD. 2018. *Bridging the Digital Gender Divide*. OECD. <https://www.oecd.org/digital/bridging-the-digital-gender-divide.pdf>.
85. Pascoal, Fabian. 2020. "The Rise of Telemedicine in Indonesia." *Lexology*. 18 November. <https://www.lexology.com/library/detail.aspx?g=4c41ab2d-987e-49fb-a3f3-93797dfe08e9>.
86. Pedro Galván, Miguel Velázquez, Ronald Rivas, Gualberto Benitez, Antonio Barrios and Enrique Hilario. 2018. *Health diagnosis improvement in remote community health centers through telemedicine*. Sage; Medicine Access @ Point of Care. <https://journals.sagepub.com/doi/pdf/10.1177/2399202617753101>.
87. Peter, Joanne. 2021. "Is "Digital Self-Care" the Best Term for Direct-to-Client Digital Health Services?" *ICT Works*. 13 May. https://www.ictworks.org/digital-self-care-direct-to-client-health-services/#.YMDI5_IKg2w.
88. Prasyda, Yunindita. 2020. *Major Indonesian hospitals go digital to tap into growing telemedicine market*. 20 May. <https://www.thejakartapost.com/news/2020/05/20/major-indonesian-hospitals-go-digital-to-tap-into-growing-telemedicine-market.html>.
89. PressRelease.id. 2021. "Good Doctor Supports UNDP Collaboration and Attention for the Development of HIV Services through Telemedicine." *PressRelease.id*. 28 January. <https://pressrelease.kontan.co.id/release/good-doctor-dukung-kolaborasi-undp-dan-atensi-untuk-pengembangan-layanan-hiv-lewat-telemedis?page=all>.
90. Rahmah, Amalia. 2015. "Digital Literacy Learning System for Indonesian Citizen." *Procedia Computer Science* Vol 72, pp94-101. https://www.researchgate.net/publication/289991565_Digital_Literacy_Learning_System_for_Indonesian_Citizen.
91. Ramirez-Rubio O, Daher C, Fanjul G, Gascon M, Mueller N, Pajín L, Plasencia A, Rojas-Rueda D, Thondoo M, Nieuwenhuijsen MJ. 2019. "Urban health: an example of a "health in all policies" approach in the context of SDGs implementation." *Globalization and Health* 1-21. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6924052/pdf/12992_2019_Article_529.pdf.
92. Riski Nugraheni, Guardian Yoki Sanjaya, Siti Setyawati Mulyono Putri, Anis Fuad, Lutfan Lazuardi, Ariani Arista Putri Pertiwi, Surahyo Sumarsono, Mei Neni Sitaresmi. 2019. "Low Utilization of Telemedicine in the First-Year Trial: A Case in the Province of West Papua, Indonesia." *Proceedings of the 4th International Symposium on Health Research (ISHR 2019)*. Atlantis Press. 568-571. <https://www.atlantis-press.com/proceedings/ishr-19/125934984>.

93. Rosalind Steege, Linda Waldman , Daniel G Datiko , Aschenaki Z Kea , Miriam Taegtmeier , Sally Theobald. 2018. "The phone is my boss and my helper' - A gender analysis of an mHealth intervention with Health Extension Workers in Southern Ethiopia." *Journal of Public Health* , Volume 40, Issue suppl_2, December 2018, Pages ii16 – ii31,. https://academic.oup.com/jpubhealth/article/40/suppl_2/ii16/5247465.
94. Roveri, Florencia. 2020. "A pathway towards community access: From telecentres to community networks." *Association for Progressive Communications*. 29 May. <https://www.apc.org/en/news/pathway-towards-community-access-telecentres-community-networks>.
95. Royal College of Nursing. 2021. "Royal College of Nursing." *Inclusion health care*. 8 March. <https://www.rcn.org.uk/clinical-topics/public-health/inclusion-health-care>.
96. Safirotu Khoir, Robert M Davison. 2019. "The art of good neighboring in Kampoeng Cyber: Community economic development through ICTs." *Community Development*. <https://doi.org/10.1080/15575330.2019.1663227>.
97. Samboh, Esther. 2020. *Will Indonesia's telemedicine start-ups be the next unicorns?* 20 April. <https://www.thejakartapost.com/news/2020/04/21/will-indonesias-telemedicine-start-ups-be-the-next-unicorns.html>.
98. SAWBO. 2021. " Video Library." *Scientifici Animations without Borders*. <https://sawbo-animations.org/index.php>.
99. Scaling Up Nutrition. 2015. *Nutrition and the Sustainable Development Goals*. <https://scalingupnutrition.org/nutrition/nutrition-and-the-sustainable-development-goals/>.
100. Sehati Group. 2021. *Maternal Health is Key to a Better Quality of Human Being*. <https://sehati.co/en/about/>.
101. Sehati TeleCTG. 2021. *Maternal Health is Key to a Better Quality of Human Being*. <https://sehati.co/en/about/>.
102. Sieck, C.J., Sheon, A., Ancker, J.S. et al. 2021. "Digital inclusion as a social determinant of health." *npj Digit. Med*, 17 March. <https://www.nature.com/articles/s41746-021-00413-8.pdf?origin=ppub>.
103. Sinhasane, Shailendra. 2020. "Digital Healthcare Ecosystem: The New Era of Medical Care." *Mobisoft*. 12 October. <https://mobisoftinfotech.com/resources/blog/digital-healthcare-ecosystem-the-new-era-of-medical-care/>.
104. Stephanie Knaak, Ed Mantler, Andrew Szeto. 2017. "Mental illness-related stigma in healthcare: Barriers to access and care and evidence-based solutions." *Canada Healthcare Management Forum* Vol. 30(2) 111-116. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5347358/pdf/10.1177_0840470416679413.pdf.
105. Stone E, Nuckley P, Shapiro R. 2020. *Digital Inclusion in Health and Care: Lessons learned from the NHS Widening Digital Participation Programme*. Good Things Foundation. <https://www.goodthingsfoundation.org/insights/digital-participation-lessons-learned/>.
106. Supriyadi, D and Bimantoro, G. 2020. *Digitizing health care is the new normal*. 28 August. <https://www.thejakartapost.com/academia/2020/08/28/digitizing-health-care-is-the-new-normal.html>.
107. Suryono, Mitra. 2020. *Alongside the Government of Indonesia, partner organizations and sister UN agencies, UNHCR ensures that refugees are not left behind in COVID-19 response*. Jakarta: UNHCR. <https://www.unhcr.org/id/en/12397-alongside-the-government-of-indonesia-partner-organizations-and-sister-un-agencies-unhcr-ensures-that-refugees-are-not-left-behind-in-covid-19-response.html>.
108. Suwana, Fiona. 2017. "Empowering Indonesian women through building digital media literacy." *Kasetsart Journal of Social Sciences* 38(3), 212–217. <https://www.sciencedirect.com/science/article/pii/S2452315117303818#>

109. Tabassum, G, Kulathuramaiyer, N, Harris, R, Yeo A. 2019. "The indirect and intangible impacts of a telecentre on a rural community." *E J Info Sys Dev Countries*. <https://onlinelibrary.wiley.com/doi/epdf/10.1002/isd2.12087>.
110. Tanoto, Belinda. 2020. "Stunting Prevention in Indonesia: Strategy, will and collective effort." *The Jakarta Post*. <https://www.thejakartapost.com/academia/2020/07/22/stunting-prevention-in-indonesia-strategy-will-and-collective-effort.html>.
111. The Economist Intelligence Unit. 2021. *The Inclusive Internet Index*. <https://theinclusiveinternet.eiu.com/explore/countries/ID/?category=readiness>.
112. The Royal Society. 2006. *Digital healthcare: the impact of information and communication technologies on health and healthcare*. London: The Royal Society. https://royalsociety.org/-/media/Royal_Society_Content/policy/publications/2006/8218.pdf.
113. Tropical Health Education Trust. 2020. *Gender Equality and Social Inclusion Toolkit for Health Partnerships*. Tropical Health Education Trust. https://www.thet.org/wp-content/uploads/2020/09/22458_THET_-UKPHS-GESI-toolkit_V6-1.pdf.
114. UK Cabinet Office. 2014. *Government Digital Inclusion Strategy*. 4 December. <https://www.gov.uk/government/publications/government-digital-inclusion-strategy/government-digital-inclusion-strategy#challenges>.
115. UK-Indonesia Tech Hub. 2021. "Empowering Indonesia's micro and ultra micro female businesses in digital literacy and entrepreneurship." *Gov.uk*. 18 June. <https://www.gov.uk/government/case-studies/herfuture>.
116. UNHCR. 2020. *Indonesia Fact Sheet*. Jakarta: UNHCR. <https://reporting.unhcr.org/sites/default/files/UNHCR%20Indonesia%20-%20Country%20Fact%20Sheet%20-%20November%202020.pdf>.
117. UNHCR. 2019. *Indonesia: Year End Report*. UNHCR. <https://reporting.unhcr.org/node/10335?y=2019#year>.
118. US Food and Drug Administration. 2020. "What is Digital Health?" *US Food and Drug Administration*. 22 September. <https://www.fda.gov/medical-devices/digital-health-center-excellence/what-digital-health>.
119. Vanessa Valentino, Dhita Laserati. 2019. *PRISMA Gender Equality & Social Inclusion Strategy*. PRISMA. [https://aip-prisma.or.id/data/public/uploaded_file/2019-11-19_07-13-37am_GESI_Strategy_\(Version_1.6_-_October_28_2019\).pdf](https://aip-prisma.or.id/data/public/uploaded_file/2019-11-19_07-13-37am_GESI_Strategy_(Version_1.6_-_October_28_2019).pdf).
120. Vindrola-Padros, Cecilia. 2020. "Carrying Out Rapid Qualitative Research During a Pandemic: Emerging Lessons From COVID-19." *Qualitative Health Research* Vol. 30(14), pp 2192–2204. <https://journals.sagepub.com/doi/pdf/10.1177/1049732320951526>.
121. Voice of Indonesia. 2020. "Menkominfo: Development Of Indonesia's Digital Ecosystem Must Be Inclusive." *VOI*. 27 November. <https://voi.id/en/technology/21164/menkominfo-development-of-indonesias-digital-ecosystem-must-be-inclusive>.
122. Wicklund, Eric. 2016. "Is There a Difference between Telemedicine and Telehealth?" *mHealth Intelligence*. 3 June. <https://mhealthintelligence.com/features/is-there-a-difference-between-telemedicine-and-telehealth>.
123. Wong, Emily. 2019. "How Indonesians embrace the digital world." *The Jakarta Post*. 18 March. <https://www.thejakartapost.com/academia/2019/03/18/how-indonesians-embrace-the-digital-world.html>.
124. World Bank. 2020. "Closing the Digital Gender Gap: Why Now Should Have Been Yesterday." *World Bank*. 9 June. <https://www.worldbank.org/en/news/feature/2020/06/09/closing-the-digital-gender-gap-why-now-should-have-been-yesterday>.
125. World Bank. 2020. *Investing In People Social Protection For Indonesia's 2045 Vision*. Washington DC: World Bank. <https://documents1.worldbank.org/curated/en/384621587010378649/pdf/Main-Report.pdf>.

126. World Bank. 2020. *Spending Better to Reduce Stunting in Indonesia : Findings from a Public Expenditure Review*. Washington DC: World Bank.
<https://openknowledge.worldbank.org/handle/10986/34196>.
127. World Health Organisation. 2021. *Disability*. https://www.who.int/health-topics/disability#tab=tab_1.
128. World Health Organisation. 2020. *Global strategy on Digital Health 2020-2025*. Geneva: World Health Organisation. <https://www.who.int/docs/default-source/documents/gd4dhd2a9f352b0445bafbc79ca799dce4d.pdf>.
129. World Health Organisation. 2013. *Self care for health: a handbook for community health workers & volunteers*. Geneva: World Health Organisation.
<https://apps.who.int/iris/bitstream/handle/10665/205887/B5084.pdf?sequence=1&isAllowed=y>.
130. —. 2021. *Sustainable Development Goal 3: Health*. <https://www.who.int/topics/sustainable-development-goals/targets/en/>.
131. World Health Organisation. 2010. *Telemedicine: opportunities and developments in Member States: report on the second global survey on eHealth*. Geneva: World Health Organisation. https://www.who.int/goe/publications/goe_telemedicine_2010.pdf.
132. World Health Organisation. 2021. *World Health Statistics 2021*. Geneva: World Health Organisation. https://cdn.who.int/media/docs/default-source/gho-documents/world-health-statistic-reports/2021/whs-2021_20may.pdf?sfvrsn=55c7c6f2_8.
133. World Wide Web Foundation and Alliance for Affordable Internet. 2020. “COVID-19 Policy Brief: Internet Access and Affordability.”
<https://docs.google.com/document/d/1b4G6kBtK3saFNTSqkYnhhxWyeh17WN3b8jNlcBolrt4/edit>.

Annex 1 List of Stakeholders Consulted

* Stakeholders identified at the start of the Phase 2 Stakeholder Engagement phase.

Government

Kementerian Kesehatan*

1. Sri Wahyuni, MSc
2. Andreano Erwin
3. Rico Mardiansyah
4. Iin Dewi Astuti
5. Moh. Fiqri
6. Rudy Kurniawan

Kementerian Sosial*

7. Eva Rahmi Kasim
8. Dina Utari
9. Ema Widiati
10. Indra Gunawan

Kementerian Pemberdayaan Perempuan dan Perlindungan Anak*

11. Elvi Hendriani
12. Felice Keraf
13. Prima Dea Pangestu
14. Diana Lasmindar

Kementerian Komunikasi dan Informatika*

15. I Nyoman Adhiarna
16. Aris Kurniawan
17. Sonny Hendra Sudaryana
18. Bayu Aprilananda Sujatmoko

Baktikominfo*

19. Danny Januar Ismawan
20. Lulu Hanum
21. Anggayomi Amanda
22. Gemilangdewa
23. Hartasia Susan Panadea

Kementerian Desa, PDT dan Transmigrasi*

24. Anastutik Wiryaningsih
25. Sumarwoto

Bappenas and Desk Papua*

26. Oktoraldi
27. Pungkas Bahjuri Ali
28. Maulana Iqbal
29. Aruminingsih
30. Theresia Andayani
31. Faza Khairani Batubara

BPJS Kesehatan

32. Citra Jaya
33. Unting Patri Wicaksono
34. Timbang Pamekas Jati

Dinkes Provinsi Papua

35. Yoke Suebu

Associations

ATENSI

- 36. Purnawan Junadi
- 37. Revi Renita
- 38. Nico Azhari Hidayat
- 39. Suganda

IDI (Indonesian Medical Association)*

- 40. Slamet Budiarto
- 41. Fery Rahman

PERSI

- 42. Lia G. Partakusuma
- 43. Widyastuti Wibisana

Private Sector

HealthTech/ProSehat

- 44. Gregorius Bimantoro

Sehati TeleCTG*

- 45. Anda Sapardan
- 46. Ari Waluyo

Lapor Covid

- 47. Irma Hidayana
- 48. Cici Riesmasari
- 49. Sonny

Telkom Group (eHealth Telkom Group)

- 50. Sigit Hadi Prayoga
- 51. Nyoto

NGOs/Development Partners

Common Room*

- 52. Gustaff Harriman Iskandar
- 53. Ressa Icha
- 54. Reina

Kampoeng Cyber

- 55. Antonius Sasongko
- 56. Sri Marpinjun
- 57. Muhammad Nurdin Salam

Kapal Perempuan*

- 58. Indri

KOMPAK

- 59. Maria Aruan
- 60. Grace Palayukan
- 61. Ratna Fitriani
- 62. Sentot Pambudi
- 63. Slamet Archinius

Humanity & Inclusion

- 64. Indah Sari Kencono Putri

Pusat Rehabilitasi YAKKUM

- 65. Chatarina Sari
- 66. Rita

UNDP

67. Arry Lesmana Putra

68. Eko Cipako Sinamo

UNICEF

69. Suci Wulandari

70. Rooswanti Soeharno

World Bank

71. Anna C. O'Donnell

Workshop participants

Workshop on Telehealth and Digital Inclusion: the Puskesmas Perspective

1. Mustakim (Puskesmas Karang Baru, Aceh Tamiang)
2. Florida Siregar (Puskesmas Sekayam)
3. Wahyuning Hendarsari (Puskemas Kalikotes, Klaten)
4. Sumono Nurhadi (Puskesmas, Tegalrejo)
5. Cica Marlia (Puskesmas Tonjong, Brebes)
6. Aulia Agustin (Puskesmas Hamparan Perak, Deli Serdang)
7. Nurman Abdillah (Puskesmas Kec. Cilandak)
8. Evita Setyaningrum (Puskesmas Mlati 2, Sleman)
9. Femi Widiastuti (Puskesmas Mlati 2, Sleman)
10. Zulia Refeni (Puskesmas Muara Siberut, Kepulauan Mentawai)
11. Gabriella Suarez (ThisAble)
12. Maria Un (HWDI)
13. Rico Mardiansyah (Kemenkes)
14. Moh. Fiqri (Kemenkes)
15. Monika (Kemenkes)
16. Ahmad (Kemenkes)

Workshop on Telehealth and Digital Inclusion: the Community Perspective

1. Gustaff Harriman Iskandar (Kasepuhan Ciptagelar)
2. Sigit Pujiono (Desa Bulakan)
3. Agustinus Sasongko (Kampoeng Cyber)
4. Fitri Indah (Dinkes DI Yogyakarta)
5. Esti (Dinkes DI Yogyakarta)
6. Yuliani (Dinkes Aceh)
7. Lisa Ubai (DKI Jakarta District Health Office)
8. Heni Jumiati (West Kalimantan District Health Office)
9. Dian Karinawati Imron (Kemendesa)
10. Syarah Siti Supriyanti (Kemendesa)
11. Febriana Elia Nababan (Kemendesa)
12. Emma Rahmawati (Kemendesa)
13. Arif Purbantara (Kemendesa)
14. Masthella (Kemendesa)
15. Maria Un (HWDI)
16. Rico Mardiansyah (SehatPedia – Kemenkes)
17. Dini Iswari Putri (SehatPedia – Kemenkes)
18. M. Fiqri (Temenin – Kemenkes)

Annex 2 Topics to guide discussions

The following are the seven major topics covered, together with some exemplar issues:

1. For the digital health **solution** of concern, what is it that they are doing?
 - a. Telemedicine
 - b. Broader telehealth services
 - c. Hospital based services
 - d. Community-based solutions, e.g., radio, telecentre, Health Centre,
 - e. Infrastructure provision
 - f. Digital literacy and skills
2. What are the features of **Digital Inclusion** that are addressed (if any)?
 - a. Are the services/solutions (from 1) tailored for the use by women, and girls? Are there examples to be shared?
 - b. What services/solutions (e.g., interfaces) are offered to assist PwDs? Are there examples to be shared?
 - c. What capacity building is being provided in terms of digital literacy, and for whom, and how. Are there examples to be shared?
 - d. Is the stakeholder currently engaging with communities? Where are they? How long have they been using the solution/service? Are there examples to be shared?
3. Concerning **benefits**:
 - a. What benefits does the stakeholder perceive as being delivered now?
 - b. What benefits may be delivered in the future?
4. What **practical issues** need addressing to enable the benefits to be delivered?
 - a. What are the barriers that are of most concern e.g., investment, maintenance?
 - b. Are there staffing issues to be addressed, e.g., quantity, capabilities?
 - c. What training, or improvements to training, are needed?
 - d. Are the standards clear for stakeholders, e.g., for:
 - i. Patient engagement
 - ii. Community engagement
 - iii. Ensuring inclusion
 - iv. Handling confidentiality, privacy, and governance issues
 - v. Technical standards, e.g., for communication requirements
 - e. How will the project be sustained in the future?
 - i. What are the funding sources?
 - ii. Are they likely to be sustainable?
5. Are there any **policy and regulatory issues** to be addressed?
 - a. Matters of local policy and governance
 - b. Matters of Regional and/or National governance

6. Are there any **opportunities for collaboration** that the stakeholder can suggest?
 - a. Community engagements that leverage existing projects?
 - b. Inter-ministry programme collaboration?
 - c. NGO/Development Partner/Civil Society Organisation engagement?
7. What **reports/evaluations** etc can be shared?

Annex 3 Key Stages and Activities of the Project

