





**WATER, SANITATION, & HYGIENE  
AND WASTE MANAGEMENT  
AT PRIMARY HEALTHCARE  
CENTRES  
2021-2030  
ROAD MAP**

MINISTRY OF HEALTH OF THE REPUBLIC OF INDONESIA  
2021

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# Foreword

The availability of water, sanitation, and hygiene (WASH) is an important aspect to quality, equitable, and respectful healthcare for all.

Healthcare facilities (HCFs) including primary healthcare centres (PHCs) play an important role as a provider of promotive, preventive, curative, and rehabilitative healthcare for the public. However, HCFs inevitably also prove to be potential sources of infection and transmission of diseases in the community without appropriate WASH facilities. The lack of WASH facilities at HCFs are often associated with the spread of healthcare-associated infections (HAIs). Particularly in prevention and control of the COVID-19 pandemic, WASH services at HCFs assume an important position. Unavailable or limited WASH services regarding access to proper and safe water and sanitation, along with poor management of medical wastes, pose further challenges for the public or patients and healthcare workers in protecting themselves from exposure to COVID-19 or other infectious diseases.

WASH facilities at HCFs are also important for births and the health of children. Availability of WASH at birthing centres is a crucial component in qualified delivery services, both for mothers and personnel managing the delivery. WHO guidance on post-natal care recommends that mothers stay at an inpatient facility for 24 hours after birthing. Without functional WASH facilities, this service may not be deliverable in accordance with applicable standards.

This 2021-2030 budgeted road map for WASH at PHC has been developed in line with the Ministry of Health (MoH) strategic plan and Sustainable Development Goals 6 and 3 and with reference to the results of the 2019 Healthcare Facility Research, 2020-2024 Environmental Health National Action Plan, and World Health Assembly resolution no. 72.7 of 2019.

In various stages of the development of this budgeted road map, the MoH has engaged various sectors, development partners, universities, and organisations representing vulnerable groups. This budgeted road map is intended to be a reference in planning and implementation of WASH-strengthening programmes at PHCs for MoH and sub-national governments, PHCs, and other stakeholders.

## List of Abbreviations

CLTS	Community-led total sanitation
CSO	Civil society organisation
EHI	Environmental health inspection
HAI	Healthcare-associated infection
HCF	Healthcare facility
IPC	Infection prevention and control
JMP	Joint Monitoring Programme
KMK	<i>Keputusan Menteri Kesehatan</i> (Minister of Health Decree)
MoH	Ministry of Health
NGO	Non-governmental organisation
NIHRD	National Institute of Health Research and Development
OHS	Occupational health and safety
PHC	Primary healthcare centre
PMK	<i>Peraturan Menteri Kesehatan</i> (Minister of Health Regulation)
RPJMN	<i>Rencana Pembangunan Jangka Menengah Nasional</i> (National Medium Term Development Plan)
RPJPN	<i>Rencana Pembangunan Jangka Panjang Nasional</i> (National Long Term Development Plan)
SDG	Sustainable Development Goal
SOP	Standard operating procedures
WASH	Water, sanitation, and hygiene

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## Executive Summary

<b>VISION</b>	For Indonesia to provide standardised and quality primary healthcare
<b>GOAL</b>	Achieving 100% of comprehensive care minimum service standards by 2030

<b>STRATEGY AND INTERVENTION</b>	<b>PILLAR</b>	<b>OUTPUT</b>
Strategy 1. Strengthened regulation on provision of WASH and waste management at primary healthcare centres	Pillar 1: Supportive system and effective policies	Mutually-supporting and integrated regulation, legislation, and policies
Strategy 2. Utilisation of technological innovation through WASH research and development and waste management at primary healthcare centre level	Pillar 3: Information system and innovation set in motion by intensive research	Innovation supporting achievement of road map targets
Strategy 3. Service quality strengthening and human resource capacity building in WASH and waste management at primary healthcare centres	Pillar 2: Integrated and beneficiary-centred strengthening of health worker capacities at primary healthcare centres	Sufficiency of core and supporting human resources towards the success of programmes
Strategy 4. Inclusive and sustainable improvement in WASH facilities and infrastructure and waste management	Pillar 1: Supportive system and effective policies	Sufficiency of core and supporting facilities and infrastructures
Strategy 5. Engagement of communities in the improvement of WASH and waste management services at public health centres	Pillar 4: Raised public awareness on WASH and waste management services	Community empowerment in support of the achievement of road map targets
Strategy 6. Implementation of mitigation/contingency plans in the context of emergency/disaster situations	Pillar 1: Supportive system and effective policies	Plans of mitigation of unexpected events with potential of disrupting services
Strategy 7. Strengthening of WASH and wastemanagement monitoring and evaluation information system and recording and reporting at primary healthcare centres	Pillar 3: Information system and innovation set in motion by intensive research	Integrated and sustainable informaiton system as part of monitoring and evaluation

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# **Part 1. Purpose and Scope of the Primary Healthcare Centre WASH Road Map**

## **1.1 Purpose of the Primary Healthcare Centre WASH Road Map**

This water, sanitation, & hygiene (WASH) and waste management at road map is intended to set forth the concept of WASH and waste management services at primary healthcare centres (PHCs) to protect public health and eventually achieve sustainable development goals by 2030. This document will guide WASH and waste management strategies at primary level facilities, especially PHCs, to improve public health between 2021 and 2030. Further, this road map will also be a reference and guidance in prioritising national-level interventions by the Ministry of Health (MoH) and sub-national interventions by health offices (HOs), with PHCs as implementing units.

## **1.2 Scope of the Primary Healthcare Centre WASH Road Map**

Description of strategies and interventions herein will be referred to and implemented in the delivery of care at public primary healthcare facilities (HCFs), namely PHCs. However, there is also room for utilisation by private primary HCFs (e.g., private clinics) in order for them to improve WASH and waste management services to improve public health by 2030.

## **1.3 Intended Audience and Development**

This road map is intended for the Indonesian MoH, which are ultimately responsible for the WASH aspect to PHCs. It was developed and implemented by various directorates under MoH and other ministries such as the Ministry of National Development Planning and Ministry of Environment and Forestry. Development partners and organisations representing vulnerable groups including people with disability were also engaged to hear global-, national-, and local-level good practices and lessons. This development started with literature review and discussion with experts and national and sub-national policy-makers, including PHCs, to analyse issues and opportunities surrounding WASH at PHCs. Focussed discussion to understand the WASH needs of vulnerable groups was conducted along with representing organisations and provincial HOs (PHOs) and district HOs (DHOs), wherein issues related to gender equity, disability, and social inclusion were discussed. This road map

is budgeted, to facilitate calculation of the funding needs of PHC WASH programmes from 2022 to 2030.

## Part 2. Global and National Policies on Environment Health and Quality Care at HCFs

### 2.1 Relevance of Global Policies

**According to global data, many HCFs still have inadequate WASH facilities and infrastructure.** One out of four HCFs face challenges around access to safe water for basic needs, and one out of five lack sanitation facilities (toilets). Hand-washing facilities/infrastructures, especially at the point of care, are only available at 42% of HCFs, whereas 40% of HCFs has yet to have in place a waste management system. (WHO, 2019)

Countries have taken steps to improve this situation, but the progress has been variable and inadequate. **Around 85% of 47 countries that have conducted situational analysis, 65% has updated and applied relevant standards, and over 70% has established a national coordination mechanism.** These measures broadly are on the right track to meet global needs. More than half of countries has provided training and mentorship for health workers on WASH and hygiene practices, combined with infrastructure improvement. However, less than a third of countries has a budgeted national strategy and only over 10% has included WASH indicators in the national health system monitoring. These indications suggest that many countries are still significantly not on track to meet global targets for these elements. (UNICEF; JMP; WHO, 2019)

On the world stage, **Indonesia has committed to following up recommendations of the World Health Assembly 72.7 resolution on WASH strengthening at HCFs.** These include 1) comprehensive assessment; 2) development and implementation of a road map in the national context; 3) establishing and enforcing minimum standards for WASH in the national context; and 4) establishing targets in health policies and integrating indicators for safe water, sanitation, and hygiene as well as infection prevention and control into national monitoring mechanisms.

## 2.2. Relevance of National Policies

**Improvement of access to and quality of healthcare in Indonesia is set out synergetically in the National Medium Term Development Plan**, or Rencana Pembangunan Jangka Menengah Nasional (RPJMN). The 2020–2024 RPJMN is the fourth phase of the 2005–2025 National Long Term Development Plan (Rencana Pembangunan Jangka Panjang Nasional/RPJPN) established under Law no. 18 of 2020. In this law, one of the five strategy points in health is the **strategy to improve healthcare and drugs and food monitoring**. (RPJMN, 2020)

Under 2020–2024 RPJMN, one indicator is **improved performance of the health system and equitable access to quality healthcare**. Targets include an increase of the number of accredited primary HCFs from 40% in 2018 to 85% by 2024. Indirectly, this target requires increased facilities for and quality of safe water, sanitation, and hygiene at HCFs (PHCs). (RPJMN, 2020)

In reference to the 2020–2024 RPJMN, **the MoH issued the 2020–2024 strategic plan**, wherein focus activities of each strategy point is designated. Enhanced control of diseases is assigned special interests in HIV/AIDS, TB, malaria, heart disease, stroke, hypertension, diabetes, emerging diseases, outbreak-prone diseases, neglected tropical diseases (leprosy, filariasis, schistosomiasis), mental health disorders, injuries, vision impairment, and community-led total sanitation (CLTS).

**The MoH strategic plan** stipulates that improved primary and referral healthcares are to have as focus activities, among others, **improved accreditation system** to measure the extent to which HCF standards are met; development of a **national master plan for the delivery of healthcare**; utilisation of technological innovation in healthcare; and improved **medical waste** management at HCFs.

In 2015, the government issued **Minister of Health Regulation (Peraturan Menteri Kesehatan/PMK) 13 of 2015 on Delivery of Environmental Healthcare at Primary Healthcare Centres**. It affirms the need for direct assessment and monitoring of the environment for surveillance purposes based on applicable quality standards and norms to improve the quality of healthy environment through environmental health inspection (EHI) (Kesehatan, 2015)

In 2017, **PMK no. 27 of 2017 on Infection Prevention and Control (IPC) Guidelines at Healthcare Facilities** was established. This regulation describes measures to prevent and minimise infection in patients, health workers, visitors, and communities in and around HCFs due to delivery of health services, whether promotive, preventive, curative, and rehabilitative, by the government and/or the community. These guidelines cover hospitals, PHCs, clinics, and individual practices. (Kementrian Kesehatan Republik Indonesia, 2017)

The government also established **PMK no. 31 of 2018 on Facility, Infrastructure, and Medical Equipment App (ASPAK)**, which compiles data and present information on the same in HCFs in Indonesia. (Kementrian Kesehatan Republik Indonesia, 2018). Currently in this ASPAK app, many indicators on WASH are missing, and addition of these is necessary.

**Environmental health services at PHCs are also to be delivered in line with Minister of Health Decree (Keputusan Menteri Kesehatan/KMK) no. 1428 of 2006** on this subject, which also contains a questionnaire for monitoring and evaluation. (Kementrian Kesehatan Republik Indonesia, 2006)

**PMK no. 43 of 2019 also stipulates environmental healthcare requirements at PHCs, mandating WASH facilities including sanitation facilities accessible to people with mobility needs.**

**HCFs play an important role in providing promotive, preventive, curative, and rehabilitative health services for the public, but without appropriate WASH facilities, they also have the potential to transmit infections and diseases in the community.** The lack of WASH facilities at HCFs are often associated with the spread of healthcare-associated infections (HAIs) and, indirectly, high maternal and neonatal mortality at birthing centres. During the COVID-19 pandemic, appropriate hand hygiene and disinfection practices and safe water and sanitation management are critical for the containment of COVID-19 spread.

Provision of WASH facilities at HCFs is expected to support the achievement of Sustainable Development Goal (SDG) 6 by 2030. The Joint Monitoring Programme (JMP) published periodic reports monitoring WASH provision according to SDG 6.1, namely the universal and equitable access to safe and affordable drinking water for all by 2030, and 6.2, namely adequate and equitable access to sanitation and hygiene for all and ending open defecation, paying special attention to the needs of women and vulnerable groups by 2030. The terms

“universal” and “for all” in SDGs 6.1 and 6.2 imply focusing on the need to expand WASH monitoring from households to institutions, including HCFs. Further, WASH is critical for the achievement of SDG 3 – health and well-being – particularly provision of quality essential health services.

Advanced analysis of the 2019 HCF research, described in the book WASH di Puskesmas, or WASH at PHCs, published by the National Institute of Health Research and Development (NIHRD), finds that 14.77% of PHCs do not have any appropriate water source and 25.67% has limited toilets (without separate toilets for patients and staff; unhygienic toilets with insufficient water supplies). 0.82% does not even have any access to toilet. To date, 46.14% of PHCs in Indonesia still has limited access to medical waste management which meets basic services criteria, namely waste segregation and safe processing of medical wastes).

This road map for WASH and waste management at PHCs will serve as a reference in improving WASH and waste management facilities and quality at HCFs. **This document will also facilitate measurement of HCF WASH and waste management target achievements, planning, and programme budgeting by policy-makers.** Therefore, this document may serve as a basis for programme development to achieve the current RPJMN in the coming five years by 2024, and it is hoped that by 2030 there will be provision of quality WASH and waste management services at primary HCFs.

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## Part 3. Challenges to and Achievements of WASH at PHCs in Indonesia

### 3.1. Why WASH strengthening at PHCs?

Water is a human right. Therefore, **water and sanitation needs must be met, for the continuity of life. Adequate, safe, and accessible water supplies must be available for all populations.** Improved access to safe water can improve population health.

Globally, large gaps in WASH are found in HCFs. A quarter of all HCFs has no basic water services, meaning 712 million people has no access to water when using HCF services. 10% of HCFs globally has no sanitation services, and one in three does not have adequate facilities for cleaning hands at points of care. One in three does not safely segregate wastes. WASH services are severely lacking in least developed countries.

WASH, waste management, and environmental hygiene are prerequisites to quality services and patient safety. WASH services, especially at birthing and primary facilities, often do not meet standards, failing to support aspects of quality, equitable, and dignified universal health services. Basic WASH services at HCFs are essential for the provision of quality services and for ensuring that health commitments are met. Strengthened regulation and commitment of HCFs, HOs, and sub-national government are necessary to place WASH programmes in priority positions, along with individual and population health services.

PHCs play an important role in the community as a hub for promotive, preventive, curative, and rehabilitative health services. Without adequate WASH facilities and services at HCFs, HCF conditions can also aggravate spread of infections and anti-microbial resistance in the community (WHO and UNICEF, 2019).

The 2018 HCF research and WASH profile published by NIHRD and UNICEF in 2020 recommends a proportion of PHCs with access to basic water services of 79.6%. Of these, only 24.6% has comprehensive drinkable water services. 73.5% of PHCs has basic sanitation services (clean, separate toilets for staff and patients with adequate water supplies). Some provinces have PHCs without access to hygiene services, including Papua (7.3% of PHCs), Maluku (6.5%), West Papua (3.8%), Jambi (1.6%), and Southeast Sulawesi (1.8%). Further, less



than half (46.1%) of PHCs in Indonesia has access to basic medical waste management (safe segregation, disposal, and management of medical wastes).

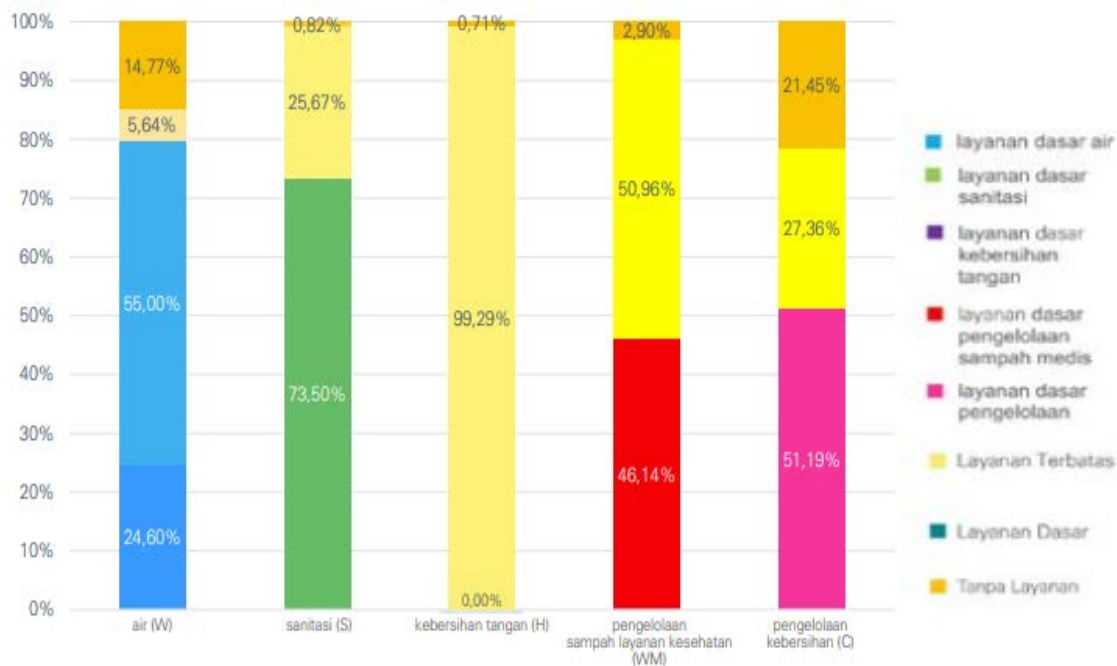
In improving WASH services and levelling inequities, the role of stakeholders and political commitment at every level are critical. Under the 72<sup>th</sup> session of the World Health Assembly in 2019, Indonesia is committed to developing a national action plan to monitor the progress of and to invest in WASH at HCFs. To fulfill this commitment, development of a budgeted national road map for WASH improvement at PHCs and guidelines on monitoring and improvement of WASH is required, along with related targets and indicators. The 2018 HCF research and 2020 WASH at PHCs profile serve as reference in the development of a road map, with a budget to calculate the needs for funding and other resources.

Measures to improve WASH at HCFs in Indonesia are mandated under existing policies and strategies: PMK on HCF facilities and infrastructure standards, PHC environmental standards, green HCFs, and PHC accreditation. Yet, some requirements still need to be adjusted with current global standards monitored periodically by WHO and UNICEF in the progress report on SDG indicator achievement and standards on resilient and sustainable HCFs. Guidelines developed for these measures are intended to update and recommend national standard improvements and inspection requirements for effective WASH implementation and management.

To measure progress in WASH improvement plans, MoH has developed an electronic monitoring system whereby data are compiled and reported by PHC-level sanitarians. Certain indicators in this system can also be adjusted to align with global indicators. The measures will also include reviews to provide feedback through the electronic monitoring system on important indicators which capture core conditions of WASH at PHCs.

### **3.2. Current PHC WASH Conditions and Strategic Issues in Indonesia**

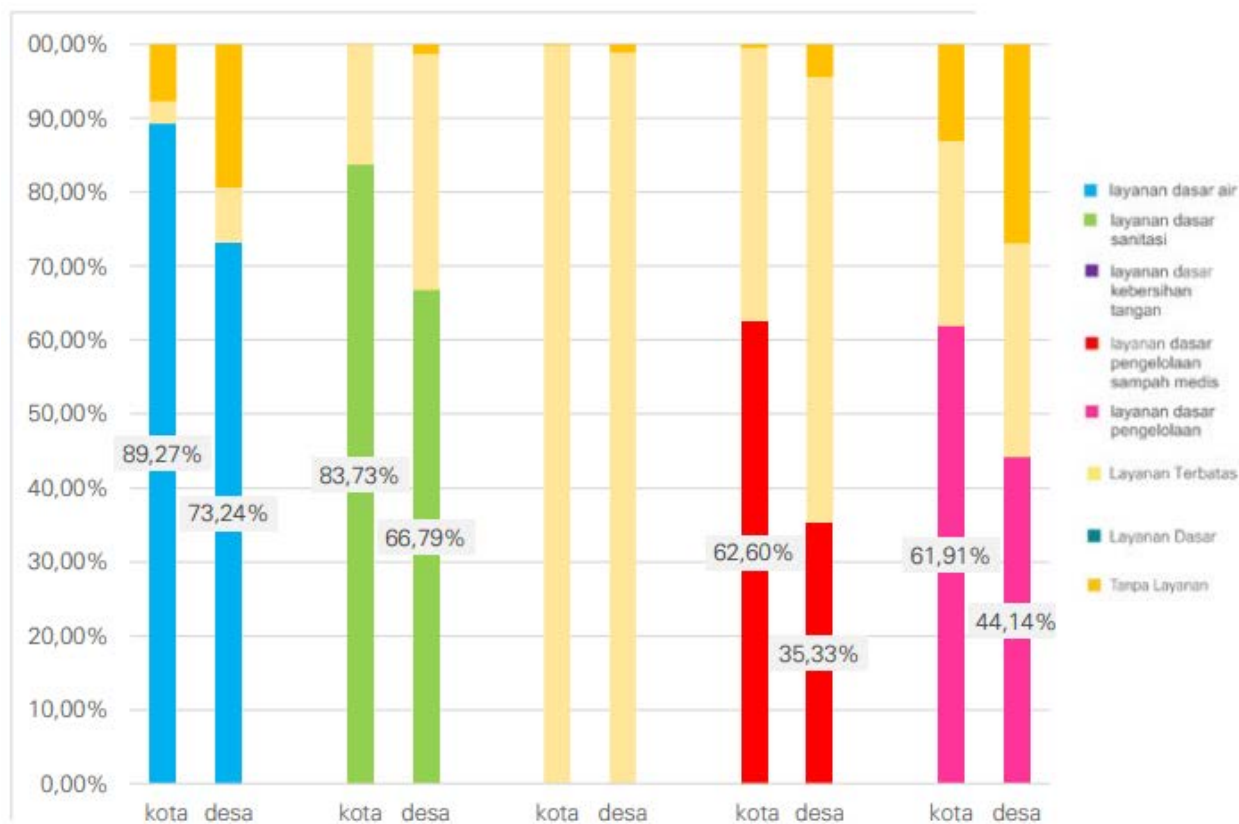
WASH and waste management services vary at HCFs in Indonesia due to multiple factors, including geography, human resource (health workers) capacities, local government support, funding, etc. According to the 2020 PHC WASH profile published by NIHRD and UNICEF, PHC WASH services in Indonesia is as described in figure 1. (UNICEF, 2020)



Data source: Profil Ketersediaan Sarana Air, Sanitasi dan Higiene di Puskesmas Tahun 2020

Figure 1: Percentage of WASH and waste management service achievements at PHCs in Indonesia according to SDG 6.

Figure 1 shows that 14.77% out of 10,203 (around 500) PHCs in Indonesia has yet to have safe water services or access, and 5.64% has limited access to safe water. In terms of sanitation, 0.82% does not have adequate toilets, and 25.67% has limited sanitaiton services. In terms of hygiene (hand hygiene), 0.71% does not have hand hygiene facilities with soap, and 99.29% has limited facilities. In terms of waste management, 2.9% has no waste management services, and 50.96% has limited services. In terms of environmental hygiene, 21.45% has no environmental hygiene services, and 27.36% has limited services. (UNICEF, 2020)



Data source: Profil Ketersediaan Sarana Air, Sanitasi dan Higiene di Puskesmas Tahun 2020

Figure 2: Percentage of WASH and waste management service achievements at PHCs in Indonesia according to SDG 6 by location

Figure 2 displays data on the percentage of PHCs in Indonesia with basic, limited, and no services by rural and urban locations. Below are the operational definitions for WASH and management services at PHCs.

Table 1: Operational definitions for WASH and management services at PHCs in Indonesia

Water	Sanitation	Hygiene	Medical Waste	Environmental Hygiene
<p><b>Comprehensive Services</b></p> <p>Basic services provided along with water quality tests (physical, chemical, biological) at least per six months and quality standards satisfied</p>	<p><b>Comprehensive Services</b></p> <p>Basic services provided and sufficient number of toilets for patients</p>	<p><b>Comprehensive Services</b></p> <p>Basic services provided and adherence to hand hygiene monitored through direct observation of the five moments for hand hygiene</p>	<p><b>Comprehensive Services</b></p> <p>Basic services provided; reduction of medical wastes and prevention (no piling up), reduction, reuse, and recycle of domestic wastes conducted; and personal protective equipment for waste management workers</p>	<p><b>Comprehensive Services</b></p> <p>Basic services provided, hygiene person in charge appointed, cleaning services scheduled, and results monitored</p>

<b>Basic Services</b> Water available from appropriate sources at HCFs	<b>Basic Services</b> Adequate and functional toilets available, separated for male and female, with menstrual hygiene facilities and at least one toilet accessible to people with mobility difficulties	<b>Basic Services</b> Hand-washing facilities available (with flowing water and soap and/or alcohol-based hand rub) at HCFs within five meters from toilets	<b>Basic Services</b> Waste segregation into at least three categories, with sharp object and infectious wastes processed and disposed of safely	<b>Basic Services</b> Hygiene standard operating procedures (SOP) available and staff in charge of hygiene trained
<b>Limited Services</b> Adequate source of water within 500 metres from facility, with some criteria for basic services unmet	<b>Limited Services</b> At least one appropriate toilet, with some criteria for basic services unmet	<b>Limited Services</b> Hand-washing facilities available at point of care or near toilets but not at both	<b>Limited Services</b> Segregation and/or processing and disposal of sharp object and infectious wastes limited, with some criteria for basic services unmet	<b>Limited Services</b> Hygiene SOPs available and/or some staff trained on hygiene
<b>No Services</b> Water sourced from an unprotected well or fountain or surface water source (river/lake) or appropriate water source located more than 500 metres from facility or no water source	<b>No Services</b> Inadequate or no toilets	<b>No Services</b> No or malfunctioning hand hygiene facilities at point of care and near toilets	<b>No Services</b> No segregation of or processing and disposal of sharp object and infectious wastes limited	<b>No Services</b> No hygiene SOPs and no staff trained on hygiene

Strategic issues are expected to pose difficulties for and affect the country's efforts to achieve WASH strengthening targets at primary healthcare, especially PHCs. These require joint responses in achieving SDG indicator targets by 2030. These include:

1. regulation, legislation, and policies on provision of WASH and waste management at PHCs integrated across programmes, sectors, and administrative levels (from national to local);
2. utilisation of technological innovation through strengthening WASH and waste management research and development at the PHC level to accelerate achievement of WASH indicator targets at PHCs;
3. enhancement of human resources service and capacity qualities in WASH and waste management at PHCs to improve overall service quality to meet legally-mandated PHC service quality standards;
4. provision of inclusive and sustainable WASH and waste management facilities and infrastructure as part of creating standardised and adequate PHCs providing health services for the community;

5. engagement of communities in the improvement of WASH and waste management services at PHCs as part of integrated collaboration with service and benefit providers;
6. mitigation/contingency plans against emergencies/disasters and climate change; and
7. PHC WASH and waste management monitoring and evaluation information system and recording and reporting system.

Table 2: Summary of WASH challenges at PHCs in Indonesia

Aspect	Challenge	Focus intervention
<b>Human resources in WASH implementation at PHCs</b> (Source: Directorate of Healthcare Facilities, MoH)	<ul style="list-style-type: none"> <li>• Not all PHCs have sanitarians</li> <li>• Inequitable distribution of sanitarians</li> <li>• Not all sanitarians trained in HCF WASH</li> </ul>	<ul style="list-style-type: none"> <li>• Sufficient human resources (sanitarians)</li> </ul>
	<ul style="list-style-type: none"> <li>• PHC sanitarians prioritise community health services over HCF WASH</li> <li>• Gender, disability, and social inclusion issues not fully understood at operational level</li> </ul>	<ul style="list-style-type: none"> <li>• Human resources (sanitarians) with standardised capacities to manage WASH at PHCs</li> <li>• Guidelines on PHC WASH services including aforementioned issues</li> </ul>
<b>Recording and reporting as part of PHC WASH monitoring and evaluation</b> (Source: Directorate of Environmental Health & Directorate of Health Service Quality and Accreditation, MoH)	<ul style="list-style-type: none"> <li>• Urgent realisation of interoperability of facility applications with HCF WASH application</li> </ul>	<ul style="list-style-type: none"> <li>• Guidelines on integrated PHC WASH management</li> </ul>
	<ul style="list-style-type: none"> <li>• Explicit inclusion of WASH as an indicator in PHC accreditation assessment</li> </ul>	<ul style="list-style-type: none"> <li>• HCF WASH indicator as basis for integrated recording and reporting system (eMoven – IKL / SIKELIM)</li> <li>• Advocacy on explicit inclusion of WASH assessment for PHC accreditation</li> </ul>
<b>Stakeholders engagement, partnership, and community empowerment in WASH at PHCs</b> (Source: Directorate of Healthcare Facilities & Directorate of Environmental Health, MoH)	<ul style="list-style-type: none"> <li>• Low engagement of and knowledge of communities in utilisation and maintenance of WASH facilities at HCFs</li> <li>• Sub-optimal role of stakeholders in supporting WASH at HCFs (environment offices, NGOs/CSOs, etc.)</li> <li>• Lack of implementation of gender, social inclusion, and disability measures</li> </ul>	<ul style="list-style-type: none"> <li>• Enhanced participation/empowerment and education of HCF users especially representatives of vulnerable groups to participate in planning, implementing, monitoring, and supporting PHC WASH service sustainability through intensified PHC health promotion for education and participation in WASH</li> <li>• Cross-sectoral coordination to increase commitment to WASH at PHCs</li> </ul>
<b>WASH programme management at PHC</b>	<ul style="list-style-type: none"> <li>• Gaps in PHC management among urban, rural, remote, underdeveloped, and border</li> </ul>	<ul style="list-style-type: none"> <li>• Commitment from stakeholders to improve WASH quality at PHCs</li> </ul>

(Source: Directorate of Healthcare Facilities & Directorate of Environmental Health, MoH)	areas	
	<ul style="list-style-type: none"> <li>Limited provision of facilities and infrastructures (buildings, energy, and water source) especially in remote, underdeveloped, and border areas</li> </ul>	<ul style="list-style-type: none"> <li>Provision of WASH infrastructure and facilities as per WASH stratification</li> </ul>
	<ul style="list-style-type: none"> <li>Low participation of environmental health network in remote, underdeveloped, and border areas in water quality and waste management mentorship and supervision</li> </ul>	<ul style="list-style-type: none"> <li>Water quality and environmental sanitation inclusion as a WASH indicator</li> <li>Provision of minimum water quality and sanitation monitor</li> <li>Increased mentorship and supervision and prevention and control of environmental pollution with support from regional health laboratories for water quality and waste management</li> <li>Linkage of regional health laboratory network in observation and monitoring of water quality and waste management</li> <li>Utilisation of sanitarian test kits in monitoring environmental health indicators (drinking water, liquid wastes, air, food)</li> </ul>
	<ul style="list-style-type: none"> <li>Lack of medical and non-medical waste management plants in some regions</li> </ul>	<ul style="list-style-type: none"> <li>Management of medical and non-medical wastes</li> <li>Advocacy of waste management to environment offices</li> </ul>
	<ul style="list-style-type: none"> <li>Utilisation of allocated WASH (capital and operational) funding, utilisation of collaboration funds from various sources (government, private entities, and community)</li> </ul>	
<b>HCF WASH resilience against climate change and responsiveness to emergencies and disasters</b>	<ul style="list-style-type: none"> <li>Lack of integration of and focus on climate change and emergency issues in HCF WASH</li> </ul>	<ul style="list-style-type: none"> <li>Development of contingency and mitigation plans against disasters with regards to continuity of HCF WASH services</li> <li>Guidelines on climate change-, emergency-, and disaster-resilient HCFs, from vulnerability assessment to adaptation and mitigation options available to HCFs</li> </ul>

### 3.3. Human Resources in Implementation of WASH at PHCs

According to data from the MoH Directorate of Healthcare Facilities, the total number of health workers for WASH implementation at PHCs is 5,909 sanitarians. 1,023 graduated from a hygiene technician school, 4,658 have an associate degree in environmental health, 97 a bachelor-equivalent diploma in environmental health, 111 a bachelor degree in environmental engineering, and 20 master's degree in occupational health and safety (OHS). PMK 43 of 2019 stipulates the following health workforce components to be available at each PHC: (Kementrian Kesehatan, 2019)

Table 3: Stipulated health workforce components at PHCs

No	Professional area	Urban PHC	Rural PHC		Remote PHC	
		Non-inpatient	Non-inpatient	Inpatient	Non-inpatient	Inpatient
Health worker						
1	Physician and/or primary physician	1	1	2	1	2
2	Dentist	1	1	1	1	1
3	Nurse	5	5	8	5	8
4	Midwife	4	4	7	4	7
5	Health promotion and behaviour worker	2	1	1	1	1
6	Environmental sanitarian	1	1	1	1	1
7	Nutritionist	1	1	2	1	2

PMK 32 of 2013 defines a sanitarian as a person having completed an education programme in environmental health according to applicable provisions of the law. Their work scope covers management of risk factors of health hazards, including liquid wastes, solid wastes, gas wastes, wastes without processing that meets government-mandated requirements, animal vectors, hazardous chemicals, harmful noise, ionising and non-ionising radiation, polluted water, polluted air, and contaminated foods. (Kesehatan, 2013)

One challenge is uneven distribution of sanitarians, despite the yearly increase in the number of sanitarians. Quality sanitarians are defined as sanitarians qualified according to the above PMK, with the following ranking: sanitarian, technical sanitarian, junior technical sanitarian, assistant technical sanitarian, and junior assistant technical sanitarian. A

disproportionate number of Indonesian health workers are in Java and Bali, and there are disproportionately more in urban areas than in rural areas, with a total of PHC environmental health technicians of 11,713. By 2025, it is expected that there will be 20 environmental health technicians for every 100,000 population, with each PHC whether in urban, rural, or remote areas having at least one environmental health technician. (Profil Kesehatan Indonesia 2019; UNICEF, 2020)

### **3.4. Recording and Reporting as part of WASH Monitoring and Evaluation at PHCs**

The PHC WASH recording and reporting system, part of monitoring and evaluation activities, is implemented through several applications/websites managed by MoH. However, these applications still need to be adjusted to align with the WHO-UNICEF JMP indicators adopted in SDG target reporting. Available systems for PHC WASH assessment includes e-Satu or EHI, ASPAK, Sistem Informasi Kelola Limbah Medis (SIKELIM) or Medical Waste Management Information System, and healthcare quality interventions. EHI refers to testing and direct observation activities of elements of environment for surveillance based on standards, norms, and quality standards for healthier environment. EHI is conducted under the supervision of the Directorate of Environmental Health and has a scope that covers not only PHCs but also public spaces such as schools and marketplaces. ASPAK is an application released by the Directorate of Healthcare Facilities to help monitoring and evaluation of adequacy of physical facilities and infrastructure at HCFs, which include hospitals, PHCs, and clinics. SIKELIM is a system developed to assess HCF waste management (including COVID-19 wastes), HCF status in removal of mercury-containing medical devices and in environmental health indicators on WASH, waste, environment, energy, and management services at PHCs and hospitals.

Primary healthcare quality interventions include the measurement of quality indicators, reporting of patient safety incidents, and accreditation. Data by the Directorate of Quality and Accreditation as at 31 December 2020 show 45.7% primary HCFs (9,153 PHCs and 179 primary laboratories) has been accredited, out of the current 20,441 primary HCFs (10,203 PHCs and 10,238 primary clinics).



However, with the multiple recording and reporting applications as well as plurality of indicators included, an integrated and sustainable pooled reporting system is a necessity. Pooling and harmonising these systems will help effectiveness and efficiency of data input and compilation.

### 3.5. Stakeholders, Partnership, and Community Empowerment in PHC WASH

Stakeholder, partnership, and community empowerment issues revolve around the beneficiaries as regards gender equity, partiality to populations with disability, and resilience against climate change.

Table 4: The role of MoH units in PHC WASH improvement

Unit	Role
Directorate-General of Public Health	<ul style="list-style-type: none"> <li>a. Developing and implementing environmental health improvement policies</li> <li>b. Developing environmental health improvement norms, standards, procedures, and criteria</li> <li>c. Providing technical guidance on, supervising, evaluating, and reporting environmental health improvement issues</li> </ul>
Directorate-General of Health Workforce	<ul style="list-style-type: none"> <li>a. Developing and implementing policies in needs planning, deployment, training, qualification, competence assessment, career development, protection, and well-being of sanitarians</li> <li>b. Developing norms, standards, procedures, and criteria in needs planning, deployment, training, qualification, competence assessment, career development, protection, and well-being of sanitarians</li> <li>c. Providing technical guidance on, supervising, evaluating, and reporting needs planning, deployment, training, qualification, competence assessment, career development, protection, and well-being of sanitarians</li> </ul>
Directorate of Environmental Health	<ul style="list-style-type: none"> <li>a. Developing and implementing policies, norms, standards, procedures, and criteria in</li> <li>b. Providing technical guidance on WASH and waste management services at PHCs</li> <li>c. Monitoring and evaluating WASH and waste management services at PHCs</li> <li>d. Developing and establishing SOPs in WASH and waste management services at PHCs</li> <li>e. Developing and guiding reference laboratories for testing PHC water quality indicators</li> <li>f. Establishing guidelines on WASH and waste management services at PHCs</li> </ul>

Directorate of Healthcare Facilities	<ul style="list-style-type: none"> <li>a. Facilitating HOs and PHCs in providing physical facilities for WASH and waste management services at PHCs</li> <li>b. Guiding PHCs in improving the quantity of WASH and waste management services at PHCs</li> <li>c. Encourage PHCs to conduct quality assurance in WASH and waste management at PHCs</li> <li>d. Mapping WASH and waste management service needs at PHCs</li> <li>e. Developing strategies on fulfilling facility and infrastructure needs of WASH and waste management services at PHCs</li> <li>f. Developing guidelines on technology to employ to meet quantity and quality of WASH and waste management services at PHCs</li> <li>g. Monitoring and evaluating fulfillment of WASH and waste management service quantity and quality at PHCs</li> </ul>
Directorate of Healthcare Quality and Accreditation	<ul style="list-style-type: none"> <li>a. Quality assurance of WASH and waste management at PHCs, including accreditation components</li> <li>b. Monitoring and evaluating PHC accreditation</li> </ul>
Directorate of Health Promotion and Community Empowerment	<ul style="list-style-type: none"> <li>a. Promotion of WASH and waste management programmes at PHCs</li> <li>b. Technical guidance on developing WASH and waste management service promotion at PHCs</li> <li>c. Developing information, education, and communication strategies on WASH and waste management services at PHCs</li> <li>d. Enhancing community empowerment in WASH and waste management services at PHCs</li> <li>e. Based on corporate social responsibility, engaging corporations cooperating with MoH</li> </ul>
Planning and Budget Bureau	<ul style="list-style-type: none"> <li>a. Developing strategic plans and programmes in WASH and waste management services at PHCs</li> <li>b. Developing and evaluating plans, programmes, and national budget</li> <li>c. Developing, monitoring, and evaluating accountability systems for WASH and waste management service performance management at PHCs</li> </ul>
Centre for Data and Information	<ul style="list-style-type: none"> <li>a. Integration of PHC WASH and waste management service information systems</li> </ul>
NIHRD	<ul style="list-style-type: none"> <li>a. Developing technical policies on research on and development of WASH and waste management services at PHCs</li> <li>b. Studying WASH and waste management service quality at PHCs</li> </ul>
Legal Affairs	<ul style="list-style-type: none"> <li>a. Legalisation of policies on the provision of WASH and waste management services at PHCs</li> </ul>

Centre for Public Communication and Services	<ul style="list-style-type: none"> <li>a. Dissemination of information on policies, standards, and efforts in improvement of WASH and waste management services at PHCs</li> <li>b. Engagement of the press and the media in activities undertaken by Sub-Directorate of Basic Water and Sanitation Management</li> </ul>
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To secure the commitment and support from all stakeholders, systematic and strategic planning is necessary. Advocacy is important to ensure commitment, leadership, investment, and better coordination of and among all levels of government. WASH improvement programmes require full involvement of MoH and other relevant ministries, such as Ministry of Finance, Ministry of Home Affairs, Ministry of Public Works and Housing, Ministry of Environment and Forestry, Ministry of Planning and Development, Ministry of Rural Development, etc. The roles of other ministries or institutions are described in Table 5.

Table 5: Roles of various sectors in improving WASH at PHCs

Ministry/Institution	Role
Ministry of Public Works and Housing	<ul style="list-style-type: none"> <li>a. Coordinating and streamlining planning and budgeting policies with other sectors in WASH and waste management services</li> <li>b. Developing thematic, holistic, integrative, and spatial development plans on WASH and waste management services</li> <li>c. Allocating resources for and actively solving extensive issues of WASH and waste management services</li> <li>d. Involving development actors and being focal point for coordination of extensive issues on WASH and waste management services</li> </ul>
Ministry of Rural Development	<ul style="list-style-type: none"> <li>a. Mobilisation of village funds (<i>dana desa</i>) resources</li> <li>b. Engaging and empowering communities</li> </ul>
Ministry of Home Affairs	<ul style="list-style-type: none"> <li>a. Encouraging sub-national governments to establish sub-national policies around WASH and waste management services at PHCs in their area of service</li> <li>b. Evaluation of minimum service standards implementation and achievement</li> <li>c. Mobilisation of resources for advocacy of WASH and waste management programmes at PHCs in their area of service</li> <li>d. Developing cooperation schemes with third parties or other agencies</li> </ul>
Ministry of Finance	<ul style="list-style-type: none"> <li>a. Establishing policies on ministry budgets</li> <li>b. Establishing national budget for priority development and improvement of WASH and waste management services</li> <li>c. Establishing schemes for funding infrastructure development involving businesses, state- and region-owned enterprises, and private entities (public-private partnership)</li> </ul>

Ministry of Environment and Forestry	<ul style="list-style-type: none"> <li>a. Developing and establishing entities on management of medical and non-medical wastes, particularly those from HCFs</li> <li>b. Involving HCFs especially PHCs as primary HCFs in developing programmes on resilience against climate change</li> <li>c. Licensing for hazardous and toxic waste and/or medical waste management</li> </ul>
Ministry of Planning and Development	<ul style="list-style-type: none"> <li>a. Developing strategies and policies to provide for the needs of primary and referral HCFs, including WASH needs</li> </ul>
Provincial governments	<ul style="list-style-type: none"> <li>a. Providing guidance and supervision</li> <li>b. Ensuring the implementation of WASH and waste management services at PHCs according to applicable standards</li> </ul>
District governments	<ul style="list-style-type: none"> <li>a. Implementing norms, standards, procedures, and criteria established by MoH</li> <li>b. Ensuring provision of WASH and waste management services according to applicable regulation</li> <li>c. Planning and budgeting WASH and waste management services for primary HCFs (PHCs)</li> <li>d. Developing preparedness against emergencies and resilience against climate change</li> </ul>
Major Environmental Health Research and Technology Laboratories (Balai Besar Penelitian dan Teknologi Kesehatan Lingkungan)	<ul style="list-style-type: none"> <li>a. Providing PHCs with referral laboratory services for (clean, drinking, waste) water quality testing</li> <li>b. Assess and screen WASH and waste management technologies</li> <li>c. Controlling qualities of WASH and waste management services</li> <li>d. In collaboration, providing education and training to improve sanitarian capacities</li> <li>e. Developing efficient models and technologies for WASH and waste management</li> <li>f. Responding to infectious disease and environmental health outbreaks and outbreaks in specific environments</li> </ul>
Indonesian Clinics Association	<ul style="list-style-type: none"> <li>a. Supporting the government in achieving national indicator targets</li> <li>b. Encouraging standardised provision of WASH and waste management services at primary HCFs, particularly primary clinics</li> <li>c. Informing policies on WASH and waste management services through advocacy to policy-makers</li> </ul>
Universities	<ul style="list-style-type: none"> <li>a. Researching indicators on WASH and waste management services at PHCs</li> <li>b. Making innovations of efficient technologies related to WASH and waste management services at PHCs</li> <li>c. Encouraging standardised provision of WASH and waste management services at PHCs</li> <li>d. Disseminating/Publishing WASH good practices, policy briefs, etc. for policy/budgetary advocacy</li> <li>e. Developing and mentoring capacity-building/training programmes for WASH managers at PHCs</li> <li>f. Strengthening/Providing mentorship in efforts to build</li> </ul>

	<p>WASH resilience against climate change and emergencies</p> <p>g. Conducting education and promotion activities on WASH</p>
NGOs, professional organisations, service providers, etc.	<p>a. Supporting the government in achieving national indicator targets</p> <p>b. Supporting innovations of effective and efficient technologies in WASH and waste management services at PHCs</p> <p>c. Encouraging synergy in WASH and waste management services at PHCs across sectors</p> <p>d. Encouraging standardised provision of WASH and waste management services at PHCs</p> <p>e. Proactively raising public awareness on WASH and waste management quality at PHCs</p> <p>f. Mobilising resource and service support from national and international stakeholders through partnership to improve WASH and waste management services at PHCs</p> <p>g. Informing policies on WASH and waste management services through advocacy to policy-makers</p> <p>h. Providing mentorship and support in emergencies and for climate change resilience</p>
Civil society organization	<p>a. Supporting provision of WASH and waste management services at PHCs</p> <p>b. Conducting education and promotion on WASH and waste management services at PHCs</p>
Disaster mitigation agencies	<p>a. Providing early warning on and mitigating climate change and emergencies</p> <p>b. Building human resource capacities in disaster and climate change mitigation</p>

### 3.6. PHC WASH Programme and Funding Management

Achieving WASH programme targets requires support in the form of good programme management. Support in the form of funding and identification of funding source should strengthen WASH programme target achievement by 2030. Literature review may help with identification of funding sources to date for WASH procurement, maintenance, and strengthening at PHCs. These are identified through situational analysis and compilation of secondary data at national and sub-national levels. Of these, early estimates may be produced for WASH cost set-up in a location, to be then extrapolated as the overall needs for ideal WASH services.

Other relevant methods include benchmarking to estimated global-level unit costs and contextualising such estimates in the national or regional level. This may result in different

cost projections. Currently, there are insufficient data to fully present WASH funding needs at PHC level. Expert consultation will be needed to detail budget lines for procurement, maintenance, and strengthening of new and existing WASH services. These estimated PHC WASH and waste management funding needs can be seen in Part 7 herein.

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## Part 4. PHC WASH Road Map in Indonesia: *Strategies and Interventions*

### 4.1. Definition of Road Map

A road map is defined as a map determining and indicating direction or path towards a destination. A road map is a detailed work plan integrating all programme plans and documents as well as activities within a specified time range. In strengthening WASH at PHCs, a road map is the reference for various activities including policy preparation; legality surrounding strengthening of regulation, policies, procedures, and institutions; capacity-building; core and support activities; measurement of performance; and monitoring and evaluation of target achievements.

This Road Map being such reference, the 2019 PHC WASH profile serves as the basis for the development of this Road Map. In support of this process, weaknesses, obstacles, and threats have been studied, and in the next strategic measures these will be managed as strengths and opportunities in strengthening good WASH and waste management at PHCs, incorporating many other strength factors.

The development process, therefore, has been systematic, with the starting point described in the background, the road map and its scope defined along with description of its legal bases and rationale, WASH strengthening activities and achievements as of 2015, 2019 targets, activity options and priority activity plans, funding support, and Internet-based monitoring system with database application for strengthening of WASH at PHCs.

The development of this Road Map employs the following guiding principles:

- a. Systematic development, whereby content and each step should be accessible and feasible;
- b. Clarity and measurability of programmes, activities, targets, timelines, and output and outcome indicators;
- c. Adjustability, whereby the Road Map should accommodate and make adjustments to conditions and situations as possible, without neglecting targets and results;
- d. Commitment, whereby the Road Map should be able to encourage binding consensus on

agreement on targets, achievements, and funding contribution according to the position and role of each implementer, which should reflect the duties and responsibilities under their authority;

- e. Authority, whereby this Road Map will be referred to by parties in developing operational plans of PHC WASH strengthening at all levels as per their functions; and
- f. Progression, whereby this Road Map targets and achievements are scheduled in progressive stages, in keeping with circumstances on the ground.

## 4.2. Strategies in the PHC WASH Strengthening Road Map

**The purpose of this Road Map** is to strengthen WASH and waste management services at PHCs in Indonesia.

Strategy 1. Strengthening of regulation surrounding provision of WASH and waste management services at PHCs

Strategy 2. Strengthening of service quality and human resource capacities in WASH and waste management services at PHCs

Strategy 3. Inclusive and sustainable improvement of WASH and waste management facilities and infrastructures

Strategy 4. Utilisation of technological innovations through WASH and waste management research and development at the PHC level

Strategy 5. Engagement of communities in improving WASH and waste management services at PHCs

Strategy 6. Implementation of mitigation/contingency plans against emergencies/disasters

Strategy 7. Strengthening of monitoring and evaluation information and recording and reporting systems for WASH and waste management services at PHCs



#### **4.2.1. Strategy 1. Strengthened regulation on provision of WASH and waste management at primary healthcare centres**

This strategy focuses on priority activities in strengthening regulation and commitment of all stakeholders, from policy-makers at the national to district level, and HCFs to other relevant offices and institutions, including village administration, to prioritising WASH alongside individual and public health services.

Interventions under this strategy include:

1. development and/or amendment to laws and regulations in alignment with and non-contradictory to current policies issued by different levels of administration (national, provincial, district, and village) in various programmes and sectors;
2. development of road maps, national strategies, and sub-national action plans; and
3. development of technical guidelines, norms, standards, procedures, and criteria on/of PHC WASH.

#### **4.2.2. Strategy 2. Service quality strengthening and human resource capacity building in WASH and waste management at primary healthcare centres**

As a public service facility, PHCs must maintain and improve healthy water and environmental sanitation facilities and infrastructure as per standards as per quality standards and classification requirements of adequate PHCs and ensure the safety and health of patients, staf, and local community at risk of feeling the impact of PHC environmental pollution.

Quality strengthening interventions under this strategy include:

- a. establishment and enforcement of quality standards for WASH services at PHCs (WASH, waste management, and management of the cleanliness of these facilities at PHC) as obligatory indicators in PHC accreditation; and
- b. assessment of PHC WASH quality standards.

Spearheading healthcare in the community, PHCs have a mission to provide quality, equitable, and affordable essential health services needed by the community in their service area to improve the community health.

Interventions to support human resource adequacy to provide WASH and waste management services at PHCs are necessary to improve and enhance the capacities of sanitarians. These interventions also aim to provide supporting equipment which includes water quality testing kits, environmental hygiene testing kits, and waste management equipment.

Interventions under this capacity-building strategy in PHC WASH include:

1. assigning sanitarians at PHCs as needed;
2. capacity-building for PHC sanitarians through tiered training to close PHC WASH management implementation gaps among urban, rural, remote, underdeveloped, and border areas; and
3. training and sensitisation for policy-makers and PHCs on the importance of investment in gender-equitable, disability-friendly, and socially-inclusive WASH.

### **4.2.3. Strategy 3. Inclusive and sustainable improvement in WASH facilities and infrastructure and waste management**

It is critical to consider improvement in WASH facilities and infrastructure as a strategy to include in planning and budgeting for health promotion, especially because it educates the public on hygienic and healthy lifestyle, particularly in terms of hygiene and sanitation. Reinforcement of hygienic and healthy lifestyle will be a strong predictor of the success of this programme and requires effective planning and substantial funding, such that it warrants attention in this Road Map.

Inclusion, referring to populations with special needs and gender orientations, is also a main focus in this strategy. Gender-based planning, for example for WASH facilities and infrastructure, should equitably prioritise between human needs of men and women. Women are among the most frequent users of PHC services and primary caretakers of ill family members. Further, a majority of health workers are women. Women have special WASH needs during menstrual periods, pregnancy, and labour. Therefore, inequitable WASH services at PHCs disproportionately affect women.

At PHCs, women need clean and safe environments providing sufficient privacy to reduce the risk of infection in a PHC, including maternal and neonatal sepsis. These are prerequisite for quality and respectful care. Further, clean and drinking water must be available for women after delivery. Toilets must be segregated by gender and protect and provide privacy for users, with women toilets providing menstrual hygiene equipment. Female health workers also need sufficient protection especially during the COVID-19 pandemic, for example with personal protective equipment of appropriate sizes for women which also accommodate their needs during menstrual periods.

In addition to gender considerations, facilities and infrastructure must also pay heed to vulnerable and disabled groups. Vulnerable groups, people

with disability, older people, children, patients with injury or severe illness, and minority groups, who access care may be faced with WASH physical and social obstacles in PHCs and so have specific needs, such as toilets and hand-washing facilities that do not accommodate their mobility needs or are difficult to use by children.

If not addressed, these obstacles can increase the risk of infection and accidents at PHCs. Women and other vulnerable groups can also be discouraged from accessing care, which may negatively impact health. WASH service design and management at PHCs should consider the various needs of users, namely accessibility, privacy, acceptability, and convenience.

Interventions for inclusive HCF WASH include:

- a. encouraging government contribution in promoting active engagement of women and other vulnerable groups in developing policies and guidelines on HCF WASH;
- b. implementing inclusive WASH
- c. integrating gender equity and social inclusion in HCF WASH training for all relevant actors: policy makers, HOs, HCF staff, related organisations, and community representatives;
- d. studying specific WASH needs of vulnerable groups and innovative ways to fulfill these needs;
- e. meaningfully engaging representatives of vulnerable groups in improving WASH, throughout planning, implementation, monitoring, and evaluation; and
- f. advocating for inclusion of gender equity- and social inclusion-related indicators in PHC accreditation, CLTS assessment, and PHC OHS curricula.

This strategy should be grounded in planning current issues of concerns, including climate change. Drought-induced climate change in an area can disrupt access to safe water at local HCFs for extended periods of time. Floods can also disturb sanitation systems and cause excess waste water.

To overcome climate change-related challenges, interventions are needed in developing primary HCF resilience, including

1. utilising up-to-date technology for early warning on, adaptation to, and mitigation of the impacts of climate change that affect WASH and waste management at PHCs, which technology should be linked to information pool on water, sanitation, and waste management with emphases on climate resilience and environmental sustainability of adaptation and mitigation actions;
2. developing environmentally-friendly facilities and infrastructure, using environmentally-friendly materials;
3. strengthening routine monitoring and evaluation on water, sanitation, and waste management which take into consideration climate resilience and environmental sustainability of adaptation and mitigation actions; and
4. enhancing human resources capacity at HCFs in identifying and controlling risks on health and the environment (water, sanitation, and waste management) due to climate change.

#### **4.2.4. Strategy 4. Utilisation of technological innovations through WASH and waste management research and development at the PHC level**

Water and sanitation are vital for human life. Therefore, inadequacy of water supplies and sanitation may severely impact health and social life. Problems often occur from inadequate, and occasionally in some areas even unsafe, water source quality used by communities and HCFs. Water is drinkable when it meets physical, chemical, bacteriological, and radiological requirements. The provision of drinking water should therefore include reduction of risks on public health. The same applies to sanitation and waste management, with respective applicable requirements.

Development and application of water technologies for and at PHCs with difficult access to clean water have been made in multiple HCFs, for example use of dispensers with water filter or water processing units to provide drinking water, provision of clean water without pumps (with gravitation), use of portable chlorine generators with simple materials, and use of chlorine diffuser to disinfect water in infection prevention and control or drinking water processing, use of hidropanel (solar panels for producing drinking water from the air with solar energy).

Environmentally-friendly sanitation management and inclusive access also constitute priority components of facility and infrastructure design. Application of sanitation technology in this area includes toilets with volume-adjusted flushing.

Reuse of reprocessable waste water with HCF waste water processing units for gardening purposes has been practiced by multiple PHCs in Indonesia. Other efficient waste-related technologies include organic waste composting. These technologies can also be utilised for vector control purposes (mosquitoes, cockroaches, and rats).

Interventions under this strategy include:

1. provision of supporting infrastructure in the form of energy and water access in remote, underdeveloped, and border areas with up-

- to-date innovative technologies; and
2. expansion of coverage of, strengthening, and developing environmental health laboratories in rural, remote, underdeveloped, and border areas.

#### **4.2.5. Strategy 5. Engagement of communities in improving WASH and waste management services at PHCs**

Communities have an important role in maintaining and enhancing their own and environmental health. Health is a right, obligation, and responsibility of each person. The community is obliged to and responsible for maintaining health, enabling them to influence and contribute to health development. Their participation is significant, with roots in attitude behaviours.

Community participation benefits a specific scope and level, depending on the prevalent view and expectation on such role, whether surface, partial, or comprehensive. Surface roles are temporary in nature, far from ideal, and do not involve real willingness. A role is said to be partial if only some expected behaviours are displayed, but it can be a comprehensive one when it matches or approximates expectations. The more complex a set of behaviours is, the more difficult a comprehensive role is to be achieved since more are factored into the equation.

Community engagement in PHC WASH services is therefore important, especially regarding special target groups, women, and people with disability. Inclusion reflects importantly community empowerment, as engagement of these groups is an assessment point in PHC WASH provision and maintenance standards. This strategy aims at the following activities:

1. Engagement of communities to ensure their role and commitment in maintaining WASH facilities and infrastructure at PHCs as per the Road Map targets; and
2. Development of policies which strengthen aspects of inclusion and empowerment of specific groups as enabler in assuring PHC WASH service standards.



#### **4.2.6. Strategy 6. Implementation of mitigation/contingency plans against emergencies/disasters**

According to WHO, environmental health is a science and discipline focussing on controlling factors in the physical environment expected to cause hazards for the environment, health, or human life. This implies that environmental health includes universal management of safe water, sanitation, and waste management, in the sense that national health programme resilience and other aspects beyond human environment should also be taken into account. A most important aspect is currently changes to the natural environment, frequently linked to climate change.

Indonesia's natural conditions are quite susceptible to the risks of climate change. Impacts of climate change, natural disasters, and non-natural disasters necessitate responsive plans against climate change and potential emergencies.

Mitigation strategies are important as regards to these. Mitigation interventions of PHC WASH programmes against emergencies include:

1. utilising of up-to-date technologies for early detection of climate change impacts on the continuity of quality and environmentally-friendly WASH;
2. making national and local collaborations for WASH strengthening at PHCs according to global issues related to climate change and eco-friendly technologies;
3. developing materials and guidelines on emergency-resilient HCFs, including climate change-resilience, emergencies-resilience, and eco-friendliness;
4. assessing HCF susceptibility and adaptability; and
5. sensitisation on climate change and disaster mitigation issues at PHCs through capacity-building.

#### **4.2.7. Strategy 7. Strengthening of monitoring and evaluation information and recording and reporting systems for WASH and waste management services at PHCs**

MoH has in place the ASPAK information system, the SIKELIM information system, and inspection activities on HCF environmental health to improve healthcare at HCFs, including PHCs. To date, the performance of these systems has been satisfactory, and they facilitate collection and presentation of information on health facilities and infrastructure, monitoring and evaluation, and timely reporting on medical wastes at PHCs. Yet there are other environmental health programmes and inspection activities at HCFs in place that are capable of providing excellent information on environmental health. Multiplicity of programmes and activities along with parameters on HCFs, with limited human, financial, facility, and time resources in mind, requires integration of their components and elements for optimum output.

To this end, validity and reliability of data need to be strengthened, through provision of appropriate, reliable, and accurate instruments (measurement tools, forms, questionnaires, etc.). Laboratory equipment, measurement tools, forms, documentation/recording and reporting equipment, and other facilities and infrastructure are also required in HCF environmental health inspection activities and medical waste monitoring. Results or reports from these programmes can then indicate WASH facility and infrastructure needs. Such information can then be fed into the ASPAK system.

Based on this body of synchronised data, valid, timely, and comprehensive information will be acquired for monitoring and actionable decision-/policy-making as regards HCF WASH facilities and infrastructure, conditions, and targets. It can further be utilised in analysis, planning, and budgeting on the abovementioned aspects at the HCF level. Advances in information technology have enabled development of HCF models for artificial intelligence- or Internet of things-based measurement, inspection, monitoring, recording, and reporting with applications or the like.

In effect, limitations in terms of human resource, facilities and infrastructure, funding, and time can be overcome in more simple, effective, and efficient ways. Mapping, monitoring, planning, and budget allocation on health facilities and infrastructure, including WASH facilities and infrastructure at PHCs are also facilitated, including in terms of transparency and accountability.

In addition to reliable, comprehensive, and integrative tools, instruments, information systems, and technologies for data and information collection and provision, competent and adaptable health workforce are also crucial for utilisation of information technology advances, for which structured and continued capacity-building is needed. Limitations in resources make it urgent to conduct regular training for health workforce in utilisation of tools to collect data, conduct monitoring, process and analyse data, present reports or information, utilise the data adaptively amid information technology and system advancements.

This strategy aims at strengthening systems to record and report analysis results on HCF WASH. Such systems should be interoperable to enable users to not only view the number of WASH facilities but also assess the functionality and performance of these facilities against applicable standards and procedures. Interventions in monitoring and evaluation information system for HCF WASH include:

1. ensuring HCF applications interoperability with environmental health monitoring and evaluation systems;
2. strengthening capacities and capabilities of human resources in management of environmental health data;
3. utilising environmental health monitoring and evaluation systems (e-satu and SIKELIM); and
4. utilising efficiently monitoring and evaluation results for decision-/policy-making, planning, and budgeting.

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## Part 5: Indicators and Targets

As global organisations, WHO and UNICEF actively monitors and develops WASH strengthening at communities and HCFs. Through their JMP, they establish HCF WASH criteria (Table 6) for monitoring WASH indicators under SDG targets.

Table 6: PHC WASH indicators and targets in Indonesia until 2030

Indicator	Ladder	Achievement 2019 (% - baseline)	Data source	Target (%)									
				2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Proper safe water and drinking water services		79,60	2019 HCF research	80%	90%	95%	100%	100%	100%	100%	100%	100%	100%
	Comprehensive Services	24.60	Information systems	25%	26%	28%	30%	32%	35%	50%	60%	70%	80%
	Basic Services	55.00	Information systems	55%	64%	67%	70%	68%	65%	50%	40%	30%	20%
	Limited Services	20.40	Information systems	10%	8%	4%	0%						
Proper sanitation services		73,50	2019 HCF research	74%	75%	80%	100%	100%	100%	100%	100%	100%	100%
	Comprehensive Services	0.00	Information systems	0%	1%	5%	10%	20%	25%	50%	60%	70%	80%
	Basic Services	73.50	Information systems	74%	74%	75%	90%	80%	75%	50%	40%	30%	20%
	Limited Services	26.50	Information systems	26%	25%	20%	0%						
Proper (hand) hygiene services		0,00	2019 HCF research	30%	35%	50%	100%	100%	100%	100%	100%	100%	100%
	Comprehensive Services	0.00	Information systems	10%	12%	15%	20%	25%	30%	40%	50%	60%	80%
	Basic Services	0.00	Information systems	20%	23%	35%	80%	75%	70%	60%	50%	40%	20%
	Limited Services	100.00	Information systems	70%	65%	50%	0%						
Proper environmental cleaning services		46,14	2019 HCF research	60%	70%	80%	100%	100%	100%	100%	100%	100%	100%
	Comprehensive Services	0.00	Information systems	10%	20%	30%	40%	45%	50%	55%	60%	70%	80%
	Basic Services	46.14	Information systems	50%	50%	50%	60%	55%	50%	45%	40%	30%	20%
	Limited Services	53.86	Information systems	40%	30%	20%	0%						
Proper waste management services		51,19	2019 HCF research	52%	60%	75%	100%	100%	100%	100%	100%	100%	100%
	Comprehensive Services	0.00	Information systems	10%	10%	15%	20%	25%	30%	35%	40%	45%	50%
	Basic Services	51.19	Information systems	42%	50%	60%	80%	75%	70%	65%	60%	55%	50%
	Limited Services	48.81	Information systems	48%	40%	25%	0%						
Districts with HCF WASH mentorship (WASH FIT approach)		0,00		50%	60%	80%	100%	100%	100%	100%	100%	100%	100%

## Part 6: PHC WASH Timeline and Milestones

PHC WASH indicator targets are to be achieved in two periods: 2021–2025 and 2026–2030.

Milestones expected in these periods are as follows:

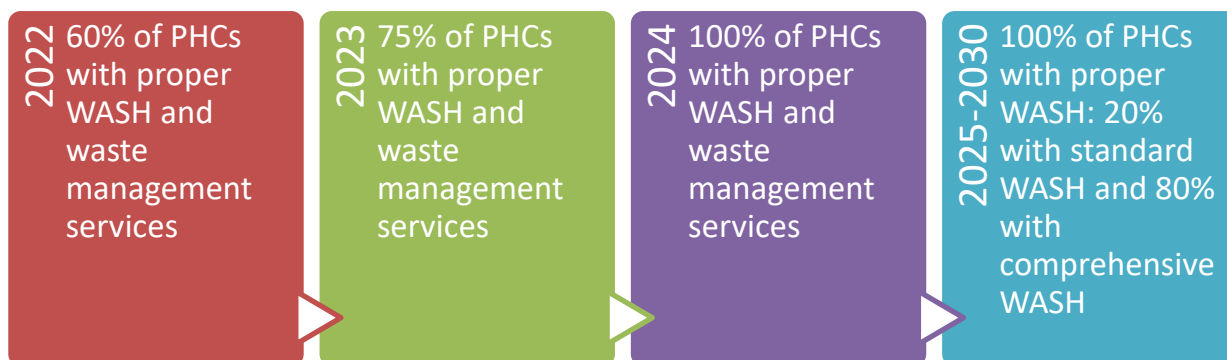


Figure 3: Milestones

Table 7: Timeline for achievement of PHC WASH and waste management indicator targets

WASH criterion	Target Achievement Year					
	2021	2022	2023	2024	2025	2030
Proper safe water and drinking water services	80%	90%	95%	100%	100%	100%
Proper sanitation services	74%	75%	80%	100%	100%	100%
Proper hand hygiene services	30%	35%	50%	100%	100%	100%
Proper environmental hygiene services	30%	35%	50%	100%	100%	100%
Proper waste management services	52%	60%	75%	100%	100%	100%
Districts with HCF WASH mentorship (WASH FIT approach)	53%	60%	75%	100%	100%	100%

These indicators are determined with the assumption of effective and efficient costs for accelerating indicator target achievements based on ladder classification of availability of WASH and waste management facilities at PHCs.

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## Part 7. Financing: *Funding and Budgeting*

### 7.1 Financing Needs

To achieve the 2030 targets of quality WASH at PHCs, financing needs are calculated based on strategy, programme, and activity implementation, taking into account development and improvement while maintaining programme quality and success rate. Funding source proportion is then identified for this implementation, in accordance with applicable regulation, proportionate funding between national and sub-national governments, financing assumptions, and prospects of grants from donors that support strategy and programme implementations.

In total, 8.33 tn rupiah is needed for targets set out in this Road Map. For this purpose, financing for this programme is divided into two periods: 2022–2025 and 2026–2030 periods, with 4.36 tn rupiah and 3.98 rupiah respectively (Table 8).

Table 8: Financing needs for 2022–2030 PHC WASH (in millions)

<b>Strategy</b>	<b>2022</b>	<b>2023</b>	<b>2024</b>	<b>2025</b>	<b>2026</b>	<b>2027</b>	<b>2028</b>	<b>2029</b>	<b>2030</b>
Strategy 1. Strengthening of regulation and policies	Rp1,090	Rp4,050	Rp14,950	Rp14,600	Rp5,005	Rp23,210	Rp19,360	Rp20,240	Rp23,221
Strategy 2. Strengthening of service quality and human resource capacities	Rp2,235	Rp9,200	Rp9,650	Rp5,330	Rp18,105	Rp8,700	Rp13,353	Rp7,710	Rp10,247
Strategy 3. Improvement of facilities and infrastructures	Rp726,699	Rp1,069,836	Rp1,165,383	Rp1,262,863	Rp851,773	Rp710,928	Rp710,928	Rp710,928	Rp710,928
Strategy 4. Innovation and research	Rp1,850	Rp2,030	Rp1,980	Rp5,480	Rp2,618	Rp3,773	Rp2,563	Rp3,718	Rp253
Strategy 5. Engagement of communities	Rp1,040	Rp1,040	Rp1,040	Rp2,820	Rp3,102	Rp3,102	Rp3,102	Rp3,102	Rp3,102
Strategy 6. Resilience and responsiveness	Rp675	Rp4,825	Rp7,650	Rp7,150	Rp4,125	Rp8,415	Rp8,415	Rp13,228	Rp14,328
Strategy 7. Monitoring, information, recording, and reporting	Rp16,946	Rp8,658	Rp7,723	Rp7,813	Rp11,341	Rp12,150	Rp10,186	Rp8,663	Rp11,341
<b>Total per year</b>	<b>Rp750,535</b>	<b>Rp1,099,639</b>	<b>Rp1,208,376</b>	<b>Rp1,306,055</b>	<b>Rp896,070</b>	<b>Rp770,278</b>	<b>Rp767,908</b>	<b>Rp767,589</b>	<b>Rp773,419</b>
<b>Total per period</b>	<b>Rp4,364,605</b>				<b>Rp3,975,264</b>				
<b>Grand total</b>	<b>Rp8,339,869</b>								



Period 1 financing needs are larger than those of period 2 due to components such as procurement of facilities and infrastructure and implementation of new interventions, such as development of modules on mitigation of emergencies, utilisation of solar panels, and utilisation new technologies for intensive management of waste water initiated by the government to accelerate achievement of quality WASH targets by 2030.

Period 2 focuses on maintenance, with financing allocation for maintenance of PHC WASH and waste management service quality. The role of workers and operationalisation and integration of monitoring and evaluation services are key to continued provision of standardised WASH services.

This financing scheme is described in the graph below:

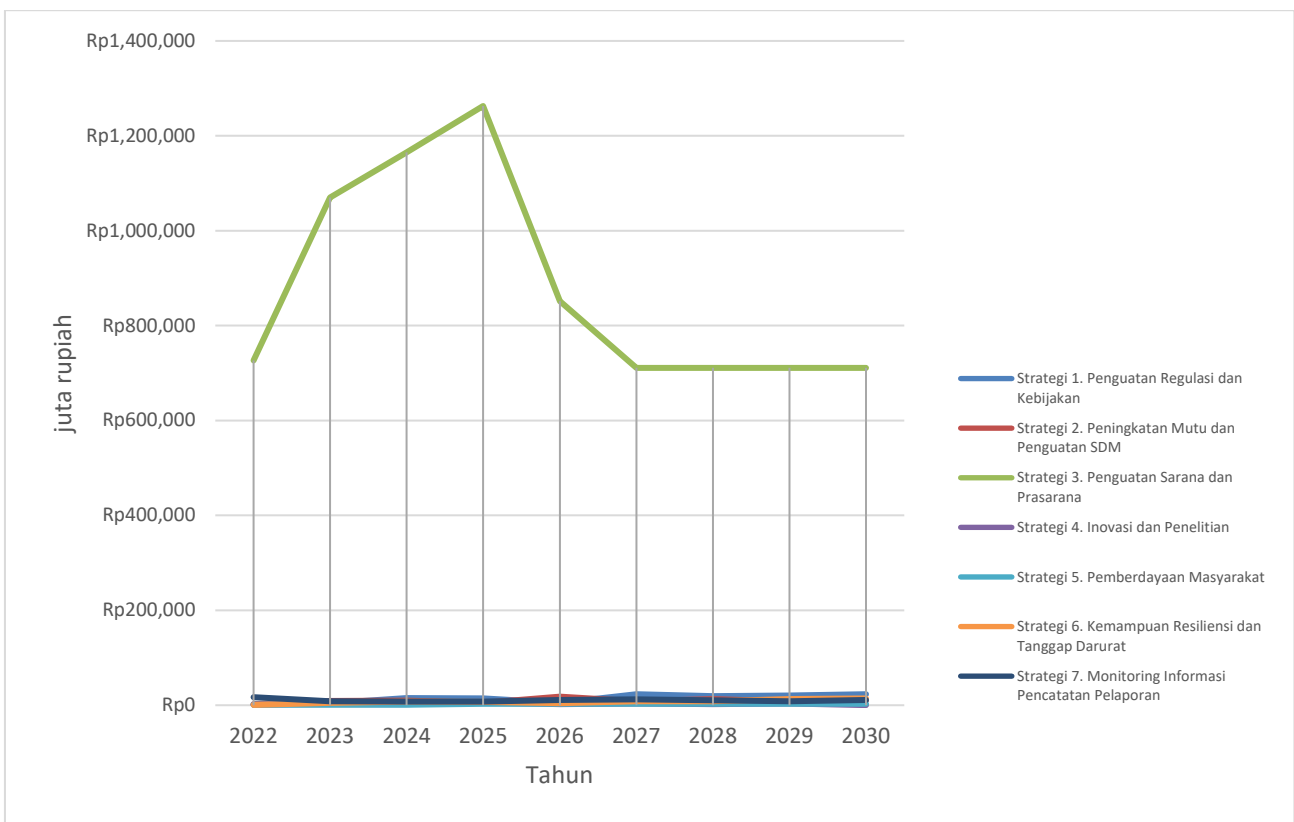


Figure 4: Financing needs of PHC WASH and waste management strengthening

## 7.2 Financing Sources

Health financing, according to article 170 of Law no. 36 of 2009, aims at providing continuous and sufficient health services with equitable allocation and effective and efficient utilisation to ensure health development to the highest levels of public health.

Decentralisation and universal health coverage importantly orient health financing policies. The former emphasises fair distribution of authority in health, where WASH programmes are no exception, between national, sub-national, and local administrations. Sub-national and local administrations have an important role in achieving quality HCF WASH. Law no. 9 of 2006 on health mandates a minimum 10% of sub-national indirect expenditure budget for health.

Financing sources for the PHC WASH and waste management programme are categorised into two large groups as follows:

Table 9: Financing sources and allocation

SOURCE	ALLOCATION
<b>1. Government</b>	
a. National (deconcentrated) budget including National Health Insurance managed by BPJS Kesehatan through capitation funds	Development of national-level regulation, legislation, norms, standards, procedures, criteria, quality standards, and management standards; support, mentorship, and supervision for/on core infrastructure providers; WASH activities at PHCs
b. National-to-sub-national transfers	Programme and activity operations/implementation, procurement of facilities and infrastructure, capacity-building, and sub-national programme management; support for monitoring and evaluation; programme awareness-raising, communication, information, and education
c. Sub-national budget (other than national-to-sub-national transfer)	Development of sub-national regulation and policies, activity operations and implementation, capacity-building, maintenance
d. Village budget other than <i>Dana Desa</i> village funds and grants	Programme and activity operations and implementation related to community empowerment, procurement of facilities and infrastructure, village cadre capacity-building, village-level programme management; support for community information, education, and communication
<b>2. Non-government</b>	
a. NGOs	
i. Foreign NGO grants	Research and development on innovation; support for funding for national programmes at remote and border areas and distant islands

ii. Domestic NGO grants	Health promotion and community empowerment; local innovation
b. Public	
i. Out-of-pocket fees	Health promotion and awareness-raising at community level
ii. Philanthropy or charity	Technology innovation and facilities and infrastructure

Not all aspects to these sources may be well-mapped. Efforts and advocacy are needed to ensure commitment from each source to fill in their respective posts. Therefore, this Road Map emphasises ensuring and avocating for sub-national and village government commitment to allocate 10% of their budgets, excluding salaries, for health, prioritising WASH programmes. The projected proportion of financing sources for this 2020–2030 PHC WASH programme is visualised as follows:

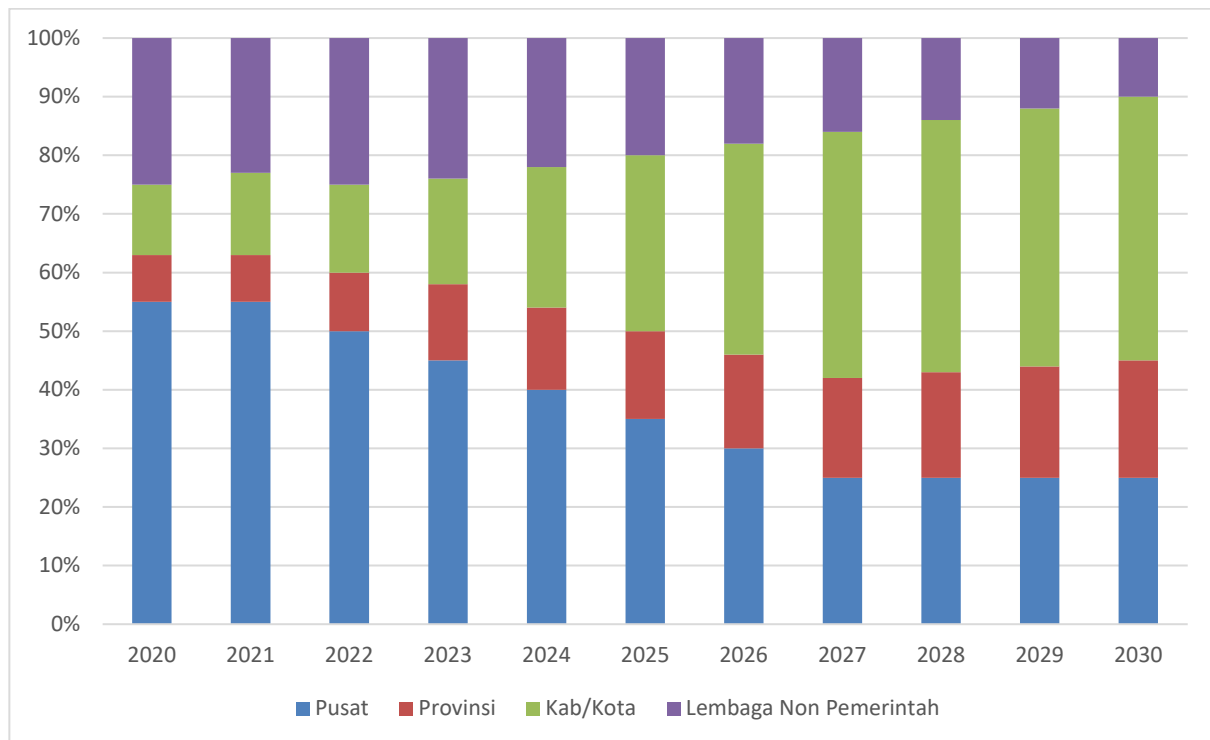


Figure 5: Potensi Sumber Pendanaan Program WASH di Puskesmas 2022 – 2030

### 7.3 Budgeting Mechanism

Financing for PHC WASH improvement follows the following mechanisms:

1. National government sources through national budget mechanism;

2. Sub-national government sources through provincial budget and district budget mechanisms with sector-specific activity budgets for the upcoming budgetary year to be proposed according to sector-specific mechanisms. PMK 736 of 2010 mandates district governments to provide PHC WASH. Therefore, district budgets have to allocate funds for PHC WASH activities under the health sector budget;
3. Village government sources through village budget mechanisms;
4. Non-government sources by way of activity and collaboration proposal submission to non-government financial institutions through institution-specific mechanisms, which should follow agreed planning towards achieving this Road Map targets and in line with applicable provisions of the law; synergetic budgeting and financing will be desired;
5. Independent efforts by community or drinking water companies, in which case financing mechanisms and accountability are at the source's discretion.

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## **Appendix 1.**

### **Calculation of WASH financing needs**

In this Road Map, costs are calculated by reviewing documents on resources needs in achieving the targets herein. This calculation takes a national strategic programme perspective, wherein all resources requirements are calculated at the national level.

Assumptions in this calculation include national-level analyses; 2021 baseline with 5% yearly increases in costs extrapolated for subsequent years; estimated unit costs or price information obtained from the Directorate of Environmental Health and NIHRD especially on costs investment in PHC WASH facilities and infrastructure (Appendix 2); and yearly targets agreed through intensive discussions with stakeholders.

As common with cost estimation in general, estimated costs are obtained by multiplying unit costs with the volume or target outputs. The baseline year for unit prices is 2021, of which unit costs are standardised with the present value method based on reports and expenditure analyses on PHC WASH services.

## Appendix 2. Investment in PHC WASH (NIHRD, 2021)

### Recapitulated expenditure in PHC WASH by Province

Province	PHC without access to					2020 construction cost index	Investment per unit (construction and rehabilitation)					Total investment (in million rupiah)					
	Water	Sanitation	Hygiene	Medical waste management	Environmental hygiene		Water	Sanitation	Hygiene	Medical waste management	Environmental hygiene	Water	Sanitation	Hygiene	Medical waste management	Environmental hygiene	Total
Aceh	70	126	347	164	209	0.9638	366,244,000	559,004,000	75,176,400	294,922,800	-	25,637.08	70,434.50	26,086.21	48,367.34	-	170,525.13
Sumatera Utara	147	149	571	355	375	0.9984	379,392,000	579,072,000	77,875,200	305,510,400	-	55,770.62	86,281.73	44,466.74	108,456.19	-	294,975.28
Sumatera Barat	61	66	271	106	102	0.9296	353,248,000	539,168,000	72,508,800	284,457,600	-	21,548.13	35,585.09	19,649.88	30,152.51	-	106,935.61
Riau	59	62	216	150	111	0.9572	363,736,000	555,176,000	74,661,600	292,903,200	-	21,460.42	34,420.91	16,126.91	43,935.48	-	115,943.72
Jambi	36	53	193	114	101	0.9035	343,330,000	524,030,000	70,473,000	276,471,000	-	12,359.88	27,773.59	13,601.29	31,517.69	-	85,252.45
Sumatera Selatan	57	66	328	191	151	0.9299	353,362,000	539,342,000	72,532,200	284,549,400	-	20,141.63	35,596.57	23,790.56	54,348.94	-	133,877.70
Bengkulu	39	57	179	122	96	0.9178	348,764,000	532,324,000	71,588,400	280,846,800	-	13,601.80	30,342.47	12,814.32	34,263.31	-	91,021.90
Lampung	45	59	299	136	144	0.8867	336,946,000	514,286,000	69,162,600	271,330,200	-	15,162.57	30,342.87	20,679.62	36,900.91	-	103,085.97
Kep.Bangka Belitung	12	14	63	22	19	1.019	387,220,000	591,020,000	79,482,000	311,814,000	-	4,646.64	8,274.28	5,007.37	6,859.91	-	24,788.19
Kepulauan Riau	19	25	80	32	43	1.215	461,700,000	704,700,000	94,770,000	371,790,000	-	8,772.30	17,617.50	7,581.60	11,897.28	-	45,868.68
DKI Jakarta	35	34	313	58	206	1.1684	443,992,000	677,672,000	91,135,200	357,530,400	-	15,539.72	23,040.85	28,525.32	20,736.76	-	87,842.65
Jawa Barat	155	177	1069	406	420	1.0393	394,934,000	602,794,000	81,065,400	318,025,800	-	61,214.77	106,694.54	86,658.91	129,118.47	-	383,686.70
Jawa Tengah	115	108	876	280	331	0.9731	369,778,000	564,398,000	75,901,800	297,768,600	-	42,524.47	60,954.98	66,489.98	83,375.21	-	253,344.64
DI Yogyakarta	11	4	121	24	22	1.0229	388,702,000	593,282,000	79,786,200	313,007,400	-	4,275.72	2,373.13	9,654.13	7,512.18	-	23,815.16
Jawa Timur	127	128	964	393	211	1.0244	389,272,000	594,152,000	79,903,200	313,466,400	-	49,437.54	76,051.46	77,026.68	123,192.30	-	325,707.98
Banten	28	37	233	100	98	0.9705	368,790,000	562,890,000	75,699,000	296,973,000	-	10,326.12	20,826.93	17,637.87	29,697.30	-	78,488.22
Bali	12	18	120	23	35	1.1504	437,152,000	667,232,000	89,731,200	352,022,400	-	5,245.82	12,010.18	10,767.74	8,096.52	-	36,120.26
Nusa Tenggara Barat	15	41	161	86	60	0.9913	376,694,000	574,954,000	77,321,400	303,337,800	-	5,650.41	23,573.11	12,448.75	26,087.05	-	67,759.32
Nusa Tenggara Timur	139	142	374	327	250	0.9795	372,210,000	568,110,000	76,401,000	299,727,000	-	51,737.19	80,671.62	28,573.97	98,010.73	-	258,993.51
Kalimantan Barat	74	70	241	176	142	1.1092	421,496,000	643,336,000	86,517,600	339,415,200	-	31,190.70	45,033.52	20,850.74	59,737.08	-	156,812.04
Kalimantan Tengah	51	62	197	155	130	0.9955	378,290,000	577,390,000	77,649,000	304,623,000	-	19,292.79	35,798.18	15,296.85	47,216.57	-	117,604.39
Kalimantan Selatan	34	62	232	103	91	1.0032	381,216,000	581,856,000	78,249,600	306,979,200	-	12,961.34	36,075.07	18,153.91	31,618.86	-	98,809.18
Kalimantan Timur	29	50	178	66	118	1.0969	416,822,000	636,202,000	85,558,200	335,651,400	-	12,087.84	31,810.10	15,229.36	22,152.99	-	81,280.29

Province	PHC without access to					2020 construction cost index	Investment per unit (construction and rehabilitation)					Total investment (in million rupiah)					
	Water	Sanitation	Hygiene	Medical waste management	Environmental hygiene		Water	Sanitation	Hygiene	Medical waste management	Environmental hygiene	Water	Sanitation	Hygiene	Medical waste management	Environmental hygiene	Total
Kalimantan Utara	21	19	55	45	25	1.099	417,620,000	637,420,000	85,722,000	336,294,000	-	8,770.02	12,110.98	4,714.71	15,133.23	-	40,728.94
Sulawesi Utara	44	53	193	143	135	1.0411	395,618,000	603,838,000	81,205,800	318,576,600	-	17,407.19	32,003.41	15,672.72	45,556.45	-	110,639.78
Sulawesi Tengah	57	76	196	177	93	0.9074	344,812,000	526,292,000	70,777,200	277,664,400	-	19,654.28	39,998.19	13,872.33	49,146.60	-	122,671.41
Sulawesi Selatan	76	186	452	231	140	0.9511	361,418,000	551,638,000	74,185,800	291,036,600	-	27,467.77	102,604.67	33,531.98	67,229.45	-	230,833.87
Sulawesi Tenggara	65	103	281	225	179	1.0109	384,142,000	586,322,000	78,850,200	309,335,400	-	24,969.23	60,391.17	22,156.91	69,600.47	-	177,117.77
Gorontalo	18	19	93	56	30	0.9412	357,656,000	545,896,000	73,413,600	288,007,200	-	6,437.81	10,372.02	6,827.46	16,128.40	-	39,765.70
Sulawesi Barat	22	45	94	73	55	0.8948	340,024,000	518,984,000	69,794,400	273,808,800	-	7,480.53	23,354.28	6,560.67	19,988.04	-	57,383.52
Maluku	61	100	199	176	142	1.2438	472,644,000	721,404,000	97,016,400	380,602,800	-	28,831.28	72,140.40	19,306.26	66,986.09	-	187,264.04
Maluku Utara	26	48	129	100	84	1.2052	457,976,000	699,016,000	94,005,600	368,791,200	-	11,907.38	33,552.77	12,126.72	36,879.12	-	94,465.99
Papua Barat	62	106	157	143	142	1.2966	492,708,000	752,028,000	101,134,800	396,759,600	-	30,547.90	79,714.97	15,878.16	56,736.62	-	182,877.65
Papua	184	240	356	337	309	2.089	793,820,000	1,211,620,000	162,942,000	639,234,000	-	146,062.88	290,788.80	58,007.35	215,421.86	-	710,280.89



## Operational expenditure for PHC WASH services by province

Province	Number of PHC					2020 construction cost index	Unit cost (operation, maintenance, activity)					Total investment					
	Water	Sanitation	Hygiene	Medical waste management	Environmental hygiene		Water	Sanitation	Hygiene	Medical waste management	Environmental hygiene	Water	Sanitation	Hygiene	Medical waste management	Environmental hygiene	Total
Aceh	347	347	347	347	347	0.9638	57,249,720	70,742,920	19,661,520	61,972,340	55,418,500	19,865.65	24,547.79	6,822.55	21,504.40	19,230.22	91,970.62
Sumatera Utara	571	571	571	571	571	0.9984	59,304,960	73,262,560	20,367,360	64,197,120	57,408,000	33,863.13	41,844.34	11,629.76	36,656.56	32,779.97	156,773.76
Sumatera Barat	271	271	271	271	271	0.9296	55,218,240	68,232,640	18,963,840	59,773,280	53,452,000	14,964.14	18,491.05	5,139.20	16,198.56	14,485.49	69,278.44
Riau	216	216	216	216	216	0.9572	56,857,680	70,258,480	19,526,880	61,547,960	55,039,000	12,281.26	15,175.83	4,217.81	13,294.36	11,888.42	56,857.68
Jambi	193	193	193	193	193	0.9035	53,667,900	66,316,900	18,431,400	58,095,050	51,951,250	10,357.90	12,799.16	3,557.26	11,212.34	10,026.59	47,953.26
Sumatera Selatan	328	328	328	328	328	0.9299	55,236,060	68,254,660	18,969,960	59,792,570	53,469,250	18,117.43	22,387.53	6,222.15	19,611.96	17,537.91	83,876.98
Bengkulu	179	179	179	179	179	0.9178	54,517,320	67,366,520	18,723,120	59,014,540	52,773,500	9,758.60	12,058.61	3,351.44	10,563.60	9,446.46	45,178.71
Lampung	299	299	299	299	299	0.8867	52,669,980	65,083,780	18,088,680	57,014,810	50,985,250	15,748.32	19,460.05	5,408.52	17,047.43	15,244.59	72,908.91
Kep. Bangka Belitung	63	63	63	63	63	1.019	60,528,600	74,794,600	20,787,600	65,521,700	58,592,500	3,813.30	4,712.06	1,309.62	4,127.87	3,691.33	17,654.18
Kepulauan Riau	80	80	80	80	80	1.215	72,171,000	89,181,000	24,786,000	78,124,500	69,862,500	5,773.68	7,134.48	1,982.88	6,249.96	5,589.00	26,730.00
DKI Jakarta	313	313	313	313	313	1.1684	69,402,960	85,760,560	23,835,360	75,128,120	67,183,000	21,723.13	26,843.06	7,460.47	23,515.10	21,028.28	100,570.03
Jawa Barat	1069	1069	1069	1069	1069	1.0393	61,734,420	76,264,620	21,201,720	66,826,990	59,759,750	65,994.09	81,548.26	22,664.64	71,438.05	63,883.17	305,528.22
Jawa Tengah	876	876	876	876	876	0.9731	57,802,140	71,425,540	19,851,240	62,570,330	55,953,250	50,634.67	62,568.77	17,389.69	54,811.61	49,015.05	234,419.79
DI Yogyakarta	121	121	121	121	121	1.0229	60,760,260	75,080,860	20,867,160	65,772,470	58,816,750	7,351.99	9,084.78	2,524.93	7,958.47	7,116.83	34,037.00
Jawa Timur	964	964	964	964	964	1.0244	60,849,360	75,190,960	20,897,760	65,868,920	58,903,000	58,658.78	72,484.09	20,145.44	63,497.64	56,782.49	271,568.44
Banten	233	233	233	233	233	0.9705	57,647,700	71,234,700	19,798,200	62,403,150	55,803,750	13,431.91	16,597.69	4,612.98	14,539.93	13,002.27	62,184.79
Bali	120	120	120	120	120	1.1504	68,333,760	84,439,360	23,468,160	73,970,720	66,148,000	8,200.05	10,132.72	2,816.18	8,876.49	7,937.76	37,963.20
Nusa Tenggara Barat	161	161	161	161	161	0.9913	58,883,220	72,761,420	20,222,520	63,740,590	56,999,750	9,480.20	11,714.59	3,255.83	10,262.23	9,176.96	43,889.81
Nusa Tenggara Timur	374	374	374	374	374	0.9795	58,182,300	71,895,300	19,981,800	62,981,850	56,321,250	21,760.18	26,888.84	7,473.19	23,555.21	21,064.15	100,741.58
Kalimantan Barat	241	241	241	241	241	1.1092	65,886,480	81,415,280	22,627,680	71,321,560	63,779,000	15,878.64	19,621.08	5,453.27	17,188.50	15,370.74	73,512.23
Kalimantan Tengah	197	197	197	197	197	0.9955	59,132,700	73,069,700	20,308,200	64,010,650	57,241,250	11,649.14	14,394.73	4,000.72	12,610.10	11,276.53	53,931.21
Kalimantan Selatan	232	232	232	232	232	1.0032	59,590,080	73,634,880	20,465,280	64,505,760	57,684,000	13,824.90	17,083.29	4,747.94	14,965.34	13,382.69	64,004.16
Kalimantan Timur	178	178	178	178	178	1.0969	65,155,860	80,512,460	22,376,760	70,530,670	63,071,750	11,597.74	14,331.22	3,983.06	12,554.46	11,226.77	53,693.26
Kalimantan Utara	55	55	55	55	55	1.099	65,280,600	80,666,600	22,419,600	70,665,700	63,192,500	3,590.43	4,436.66	1,233.08	3,886.61	3,475.59	16,622.38
Sulawesi Utara	193	193	193	193	193	1.0411	61,841,340	76,416,740	21,238,440	66,942,730	59,863,250	11,935.38	14,748.43	4,099.02	12,919.95	11,553.61	55,256.38
Sulawesi Tengah	196	196	196	196	196	0.9074	53,899,560	66,603,160	18,510,960	58,345,820	52,175,500	10,564.31	13,054.22	3,628.15	11,435.78	10,226.40	48,908.86

Province	Number of PHC					2020 construction cost index	Unit cost (operation, maintenance, activity)					Total investment					
	Water	Sanitation	Hygiene	Medical waste management	Environmental hygiene		Water	Sanitation	Hygiene	Medical waste management	Environmental hygiene	Water	Sanitation	Hygiene	Medical waste management	Environmental hygiene	Total
Sulawesi Selatan	452	452	452	452	452	0.9511	56,495,340	69,810,740	19,402,440	61,155,730	54,688,250	25,535,89	31,554.45	8,769.90	27,642.39	24,719.09	118,221.73
Sulawesi Tenggara	281	281	281	281	281	1.0109	60,047,460	74,200,060	20,622,360	65,000,870	58,126,750	16,873.34	20,850.22	5,794.88	18,265.24	16,333.62	78,117.30
Gorontalo	93	93	93	93	93	0.9412	55,907,280	69,084,080	19,200,480	60,519,160	54,119,000	5,199.38	6,424.82	1,785.64	5,628.28	5,033.07	24,071.19
Sulawesi Barat	94	94	94	94	94	0.8948	53,151,120	65,678,320	18,253,920	57,535,640	51,451,000	4,996.21	6,173.76	1,715.87	5,408.35	4,836.39	23,130.58
Maluku	199	199	199	199	199	1.2438	73,881,720	91,294,920	25,373,520	79,976,340	71,518,500	14,702.46	18,167.69	5,049.33	15,915.29	14,232.18	68,066.96
Maluku Utara	129	129	129	129	129	1.2052	71,588,880	88,461,680	24,586,080	77,494,360	69,299,000	9,234.97	11,411.56	3,171.60	9,996.77	8,939.57	42,754.47
Papua Barat	165	157	157	157	157	1.2966	77,018,040	95,170,440	26,450,640	83,371,380	74,554,500	12,707.98	14,941.76	4,152.75	13,089.31	11,705.06	56,596.85
Papua	348	356	356	356	356	2.089	124,086,600	153,332,600	42,615,600	134,322,700	120,117,500	43,182.14	54,586.41	15,171.15	47,818.88	42,761.83	203,520.41

