

Climate Change Vulnerability on Health Sector in Indonesia

A Review Study for Asian Development Bank

Reported by Ryco Farysca Adi



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1 Introduction

Adapted from the ADB article (2017) entitled "Ignored Climate Change Can Reversal Results of Development Hard Work in Asia" it is said that Asia-Pacific is the centre of the vortex of the crisis of human civilization that will occur in the 21st. The centre of this crisis has climate problems as the main challenge. Mitigation and adaptation efforts that do not run optimally can plunge countries in Asia and Pacific countries into a higher climate change vulnerability, accompanied by the threat of poverty and disaster hazards. This problem has proven to have occurred in Indonesia, where climate change has significantly affected Indonesia's economic growth and development (Gol, 2020). Due to the basic needs sectors (i.e., food, water, energy, and health), the Roadmap NDC Indonesia showed that the climate change impacts would account for about 0.66% to 3.45% of the National GDP (MoEF, 2021a). These urged the program actions of adaptation pathways as articulated in the Indonesia Long Term Strategy of Low Carbon Development and Climate Resilient (LTS-LCCR) 2050 (MoEF, 2021b). The health sector is a major concern as the potential losses. Changes in the number of climate-related diseases will affect up to 1.86% or USD 21.6 Billion of the National GDP (MoEF, 2021a). The health impacts are likely to worsen due to the COVID-19 pandemic, so the burden on the health sector will increase.

Climate change indicators, namely increased air temperature, extreme rainfall events, sea-level rise, and increase in pollutant concentrations, have triggered the national health risks related to climate-related disasters and the projected increase in water- and vector-borne diseases (MoH, 2022). In 2021, at least 1,657 (77.1% of total) disaster events in Indonesia associated with climate hazards affected ~5.1 million people¹. At the same time, approximately 33% (104.9 million) of the total Indonesian population includes vulnerable groups living in climate-harm-prone areas². Indonesia is also particularly vulnerable to sea-level rise, ranked fifth highest in the world for the size of the population inhabiting lower elevation coastal zone. The total population likely to be exposed to permanent flooding by 2070–2100 could reach over 4.2 million people (World Bank, 2021). In 2020, there were 518 health crises, of which 81.47% occurred due to disasters (MoH, 2020b). By 2045, 11 cities in Indonesia are projected to be highly vulnerable to vector and water-borne diseases, such as dengue, malaria, and diarrhea (Mau and Mulatsih (2018), Istiqmah et al (2019))³. These climate-sensitive health risks disproportionately affect those most vulnerable and disadvantaged, such as women, children, ethnic minorities, low-income families, migrants or displaced persons, the elderly, as well as people with disability (MoH, 2021).

¹ Indonesian Data and Information for Disaster. Available at: <https://dibi.bnppb.go.id/> accessed at July 2022

² InaRISK: <http://inarisk.bnppb.go.id/> ~100 Million people at risk toward floods, landslides, and cyclone, that distributed at ~37,000 villages where ~4,9 Million inhabitants exposed by sea level rise, storm surge, tropical cyclone and abrasion that distributed in 12.800 villages. Jakarta Indonesia.

³ The National Development Planning Agency (Bappenas) publishes the Climate Resilient Development Policy Document in middle 2021, which contains priority locations for climate action including the health sector by considering dengue, malaria, and diarrhea. The priority locations were chosen also taking into account socio-economic vulnerability, the potential for temperature increases, and disaster risk. Available at https://lcdi-indonesia.id/wp-content/uploads/2021/04/Buku-0_Ringkasan-Eksekutif-Dokumen-Kebijakan-Pembangunan-Berketahanan-Iklim.pdf

If this is still left unhandled, climate change will affect the health profile of current and future generations. These will become a burden on an already overwhelmed health system and hinder the Sustainable Development Goals (SDGs) and Universal Health Coverage (UHC) programs (Kirton and Kickbusch, 2019). Especially the health sector, this sector has been a double burden for the government, both as a direct impact on health and an indirect impact which is strongly influenced by the social environment and public health determinants (MoH, 2020a). Therefore, it is very important to formulate policies related to climate change vulnerability in the health sector. As for following up on these problems, the Indonesian government has compiled a vulnerability and risk map for the impact of climate change which refers to the directives of the Minister of Environment and Forestry P.7/MENLHK/SETJEN/KUM.1/2/2018.

Recognizing that the preparation of this review study serves as a direction for ADB in developing a new era of climate resilience programs and projects, particularly for health security projects, the scope of planning is carried out only on a national scale. Analysis with a lower scale and level will be very useful and interesting to do more detail on planning the regional or sectoral basis programs and projects. This study review provides strategies and directions for forwarding policy reforms that ADB may undertake in cooperation with the Indonesian government regarding the Health National Adaptation Plan. The scope of these studies was used as a baseline for identifying and analysing the selection of key climate vulnerabilities in the health sector based on climate change threat. Due to the limitation of this review study and the unique diversity of sectoral characteristics in each region in Indonesia are expected to be considered for conducting a more in-depth follow-up study review.

2 Current Condition of Climate Change and Vulnerability on the Health Sector

2.1 Legal Basis in Indonesia

As a systematic step in tackling the impacts of climate change on the health sector and following up on the mandate of Law No.16 of 2016 concerning the Ratification of the Paris Agreement, Team Technical Adaptation to Climate Change Health is created by the Indonesian Ministry of Health through the coordination of the Secretariat of the Technical Team for Adapting to the Impact of Climate Change in the Health Sector (MoH, 2020a). This establishment was carried out on a legal basis of the Minister of Health's Decree Number HK.01.07/MENKES/523/2019. Technical Team plays the role of developing a National Health Action Plan (HNAP) document as a guide and reference for coordinating health adaptation actions at the national level and providing directions for implementing climate change adaptation actions in the health sector at the provincial and district/city levels.

Following up on the impacts of climate change in the future, climate change vulnerability and risk assessments are the main basis for developing climate change adaptation action plans in the health sector. Indonesia has two general guidelines for vulnerability study

related to climate change. These guidelines are contained in the Regulations of the Minister of the Environment (MoEF), namely No. 33 of 2016 concerning Guidelines for the Preparation of Climate Change Adaptation Action Plans and No. 7 of 2018 regarding guidelines for assessing vulnerability, risk, and impact of climate change. These approaches to assessing the vulnerability of the health sector referred to the IPCC climate risk assessment framework (2014), the risk analysis concept of the SIDIK instrument (which is strengthened based on PERMENLHK No.33/2016), and the disaster risk analysis method regulated in Regulation of the Head of BNPB No. 02/2012. The focus of the vulnerability and risk assessment is directed at being able to utilize climate information in assessing the risk of the occurrence of a type of disease in an area or compiling an indicative risk map of the incidence of illness or the level of environmental health for the incidence of diseases, namely: DHF, Diarrhea, Pneumonia, and Malaria (MoH, 2020a).

Three main legal bases oversee climate change action related to the health sector in Indonesia: Law No. 16 of 2016 concerning the Ratification of the Paris Agreement, Law No. 36 of 2009 concerning Health, and Government Regulation No. 66 of 2014 on Environmental Health (Figure 1). The analysis of vulnerability factors and health risks related to climate change is strengthened along with the mandate in Law No. 16 of 2016. This action is detailed in two interrelated policies of the Minister of Health, namely the Minister of Health Regulation No. 1018 of 2011 and the forwarded regulation, Regulation No.35 of 2012. This policy identifies the key factors of climate-related health vulnerabilities, including vector-borne water and food-borne diseases, airborne diseases, non-communicable diseases, disaster incidents, mental health disorders, and nutritional problems related to climate change.

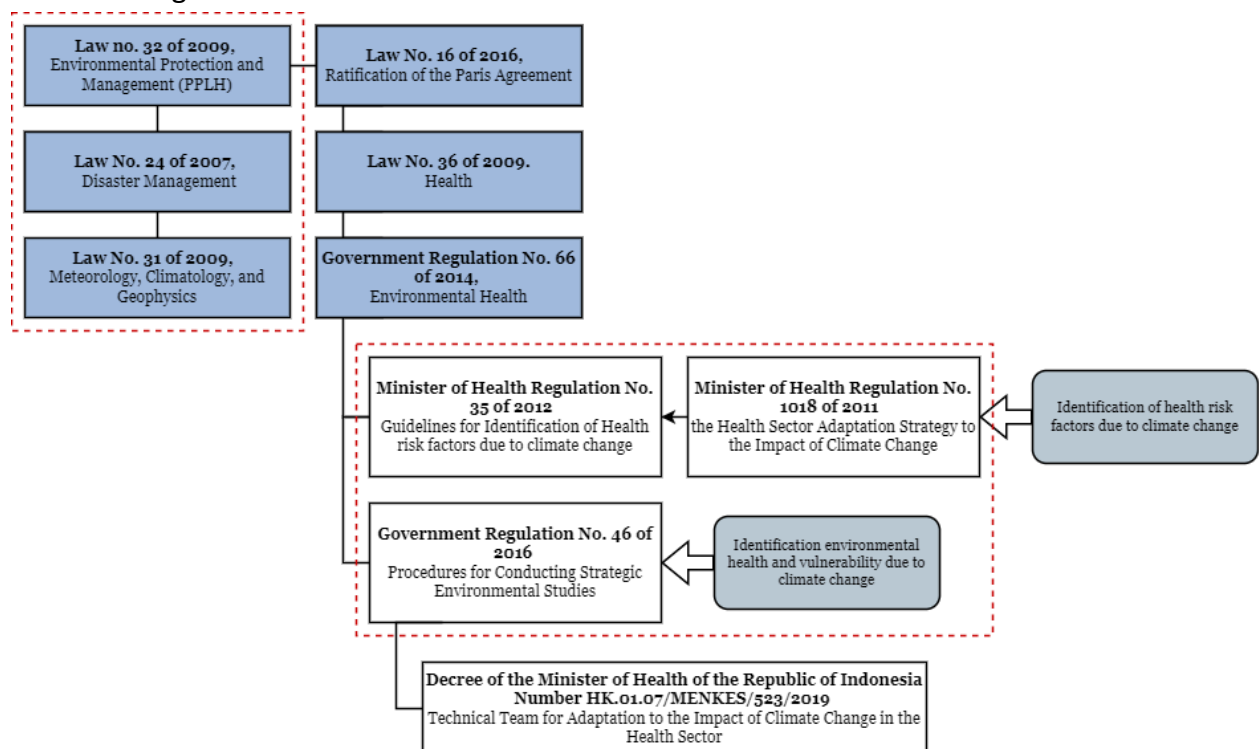


Figure 1 Regulations related to climate change and vulnerability on the health sector in Indonesia

Meanwhile, Government Regulation No. 46 of 2016 concerning Procedure for Conducting Strategic Environmental Assessment is used as a reference basis for vulnerability studies under MoEF command. However, as regulated by the law, the implementer actors on health vulnerability and climate change security do not only involve MoEF as 'the Vocal Point' and the Ministry of Health as the Technical Team of HNAP. Implementation of vulnerability and adaptation capacity in Indonesia guided by Article 16 of Law no. 32 of 2009 concerning Strategic Environmental Assessment (SEA/KLHS) letter e (Perdinan, 2014). The article states:

"SEA contains studies including... e. level of vulnerability and adaptive capacity to climate change"

Under Law No. 24 of 2007 concerning Disaster Management, and Law No. 31 of 2009 concerning Meteorology, Climatology, and Geophysics are revealing the need to build management coordination and potential synergies between the stakeholders in tackling climate change issues. The main points in each legal basis which shape the development of health vulnerability and climate change policies are listed in Table 1.

Table 1 Regulations and policies related climate change vulnerability on the health sectors in in Indonesia

No	Regulation	Health	Climate Change
1	Law No. 16 of 2016 concerning Ratification of the Paris Agreement	Not Mentioned	Based on this regulation, the related parties shall be involved in planning adaptation and implementation actions, including developing or enhancing relevant plans, policies and/or contributions to formulating identified national priority actions, taking into account vulnerable communities, places and ecosystems. The policies may include assessments of the impacts and vulnerabilities of climate change.
2	Law No. 31 of 2009 concerning Meteorology, Climatology, and Geophysics	Not Mentioned	The implementation of meteorology, climatology, and geophysics to produce data and information has a strategic role that can increase the added value of various activities in related sectors, including the health sector. The government, local governments, and other stakeholders must use this information to determine related sectors' policies.
3	Law No. 24 of 2007 concerning Disaster Management	Not Mentioned	Disaster prevention is a series of activities carried out to reduce or eliminate disaster risk, both through reducing the threat of disasters and the vulnerability of those who get threatened by the disasters. Determination of the status and level of national and regional disasters contains indicators that include: a. number of victims;

No	Regulation	Health	Climate Change
			b. property loss; c. damage to infrastructure and facilities; d. coverage of the area affected by the disaster; and e. the socio-economic impact.
4	Law no. 32 of 2009 concerning Environmental Protection and Management (PPLH)	Not Mentioned	Strategic Environmental Studies (KLHS), one of the studies, includes concerns on the level of vulnerability and adaptation capacity to climate change.
5	Government Regulation No. 46 of 2016 concerning Procedures for Conducting Strategic Environmental Studies	Not Mentioned	The results of identifying Sustainable Development issues must be related to vulnerability and adaptive capacity to climate change. The level of vulnerability to climate change means a measure of the vulnerability of society in facing the impacts of climate change.
6	Minister of Health Regulation No. 35 of 2012 concerning Guidelines for Identification of Health risk factors due to climate change	Identification of Health Risk Factors carried out on the following risk factors: a. vector-borne disease b. water and food-borne diseases c. airborne disease d. non-communicable disease e. disaster incident f. mental health disorder g. nutritional problems related to climate change	Identification of health risk factors due to climate change, analysis and control of risk factors must be carried out so as not to cause adverse effects on health by referring to the provisions of the relevant laws and regulations.
7	Minister of Health Regulation No. 1018 of 2011 concerning the Health Sector Adaptation Strategy to the Impact of Climate Change	The government is in charge of: a. develop norms, standards, guidelines, and criteria for adaptation of the health sector to the impacts of climate change; b. carry out advocacy and socialization of climate change adaptation in the health sector at the national level; c. conduct partnerships with stakeholders related to climate change adaptation; d. implement capacity building of human resources in the health sector;	Mapping of populations and areas vulnerable to climate change includes several main activities, namely: a. collecting data on the spread of disease, climate change/variables, environmental risk factors, social, economic, and geographic risk factors; b. disease spread analysis; c. analysis of climate change/variables; d. environmental risk factor analysis; e. analysis of social, economic, and demographic risk factors; f. correlation analysis of the above variables.

No	Regulation	Health	Climate Change
		e. develop appropriate technology; f. perform facilitation, technical guidance, monitoring, and evaluation; and g. Implement an early alert system according to the main tasks and functions.	
8	Decree of the Minister of Health Number HK.01.07/MENKES/523/2019 concerning Technical Team for Adaptation to the Impact of Climate Change in the Health Sector	The Research Team on APIK technical team is in charge of developing studies, analyses and research on hazards, vulnerabilities and risks, as well as the impact of climate change on health on a national scale.	Not Mentioned
9	Draft of Health National Adaptation Plan	Determination of vulnerability and health risk analysis to climate change further refers to the Minister of Environment and Forestry Regulation No. 7 of 2018 concerning Guidelines for Criteria for Assessment of Vulnerability, Risks, and Impacts of Climate Change. Meanwhile, the identification of vulnerability factors in Indonesia is supported by the use of: a. SIDIK (MoEF) b. Crisis Center (MoH) c. Inarisk - Arimbi (BNPB) d. Riskesdas (Riset Kesehatan Dasar - Basic Health Research) e. PODES (BPS - Potensi Desa - Village Potential) f. Indonesia Health Profile (MoH) g. Population Census (BPS)	

2.2 Existing Vulnerability Assessment

The level of vulnerability is generally determined by the indicators that affect the regions' exposure, sensitivity, and adaptive capacity. The diversity of these factors changes over time as development activities and adaptation efforts are carried out. The level of exposure, sensitivity, and adaptability is reflected in biophysical, environmental, and socio-economic conditions. Local governments have used SIDIK (<http://sidik.menlhk.go.id/>) in developing adaptive action plans. A national-level vulnerability assessment shows that about half of Indonesian villages fall into the medium to very high vulnerability category. High-risk to very high-risk villages are mainly in Papua (UNFCCC, 2017). This happens because SIDIK is an analytical instrument that utilizes socio-economic information to determine the level of vulnerability of an area. The eastern part of Indonesia (Papua and West Papua) is dominated by "High" and "Very High" vulnerability levels because these areas have a slower pace of economic development and social aspects than other regions in Indonesia. The climate

change vulnerability assessment category in SIDIK is divided into 5 categories namely "Very Low", "Low", "Medium", "High" and "Very High". The indicators used in the SIDIK for the sensitivity and exposure index are the number of heads of families living on the river banks, river bank buildings, drinking water sources, poverty, and income sources. While the indicators for the adaptation capacity index are electricity facilities, education, health facilities and road infrastructure. This national vulnerability data will be updated every 3 years based on the latest BPS Podes data. This vulnerability data is indicative as a material for consideration in determining the priority of plans, actions, and adaptation strategies for each sector.

Perdinan *et al.* 2016, have conducted a study on the Vulnerability, Risk, Impact and Climate Change Adaptation: Challenges and Opportunities. The study is based on an assessment of the progress of vulnerability studies in Indonesia based on the availability of information from 2010 to 2015. The desk review is based on a compilation of various publications (journals, reports, projects, articles) in both Indonesian and English. In the study it was reported that the focus of the new susceptibility study focused on dengue and malaria. The location of the vulnerability analysis carried out generally does not cover all areas in Indonesia (only Kalimantan and Sumatra - Figure 2). Furthermore, many agencies have also conducted sector-based vulnerability assessments, focusing on specific locations, including health security. Most studies have shown that most sectors are vulnerable to the effects of climate change due to adverse socio-economic and environmental conditions.

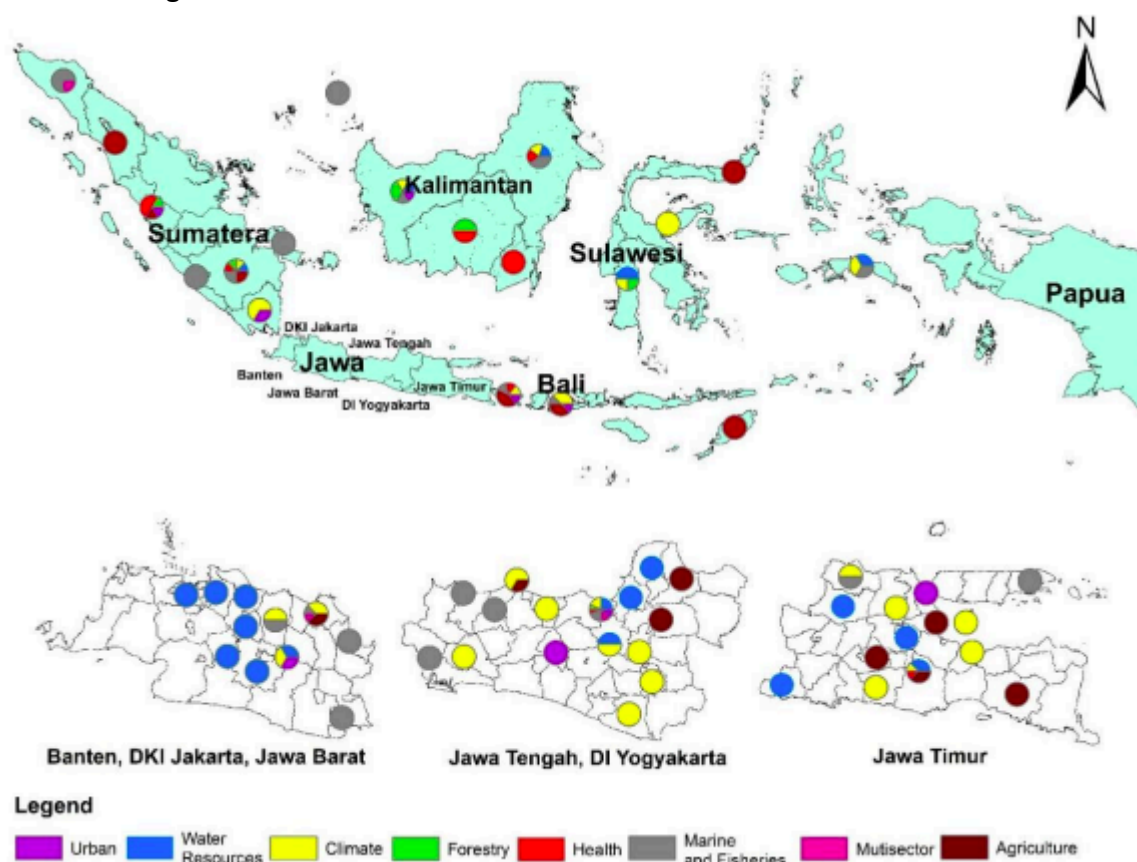


Figure 2 The location of the CCVIA study in Indonesia is sector focused (Perdinan *et al* 2016)

In general, the vulnerability and risk assessment approach carried out for the health sector refers to the IPCC climate risk assessment framework (2014), the concept of risk analysis of the SIDIK instrument which is strengthened based on PERMENLHK No.33/2016 and the disaster risk analysis method regulated in PERKA BNPB No. 02/2012. The focus of the vulnerability and risk assessment is directed at being able to utilize climate information in assessing the risk of the occurrence of a type of disease in an area or compiling an indicative risk map of the incidence of disease or the level of environmental health for the incidence of diseases, namely: DHF, Diarrhea, Pneumonia, and Malaria. The conceptual model of risk assessment is presented as shown in the following Figure 3. Categorization of vulnerability factors is carried out through the H.L Bloom theoretical approach where these factors consist of Genetics (20%), Environment (40%), Medical Service Facilities (10%), and Lifestyle Behavior (30%) (Figure 4).

Encouraging anticipatory measures against vulnerability and potential impacts of Climate change. The Indonesian government has also made climate change and disaster a development priority no.6. This is stated in presidential regulation No.18 of 2020 concerning the National Medium-Term Development Plan for 2020-2024. The Ministry of Health has also compiled a draft guideline for climate healthy villages to accelerate responses to potential impacts of changes at the site level on Draft HNAP pages 30-31 (MoH, 2020a).

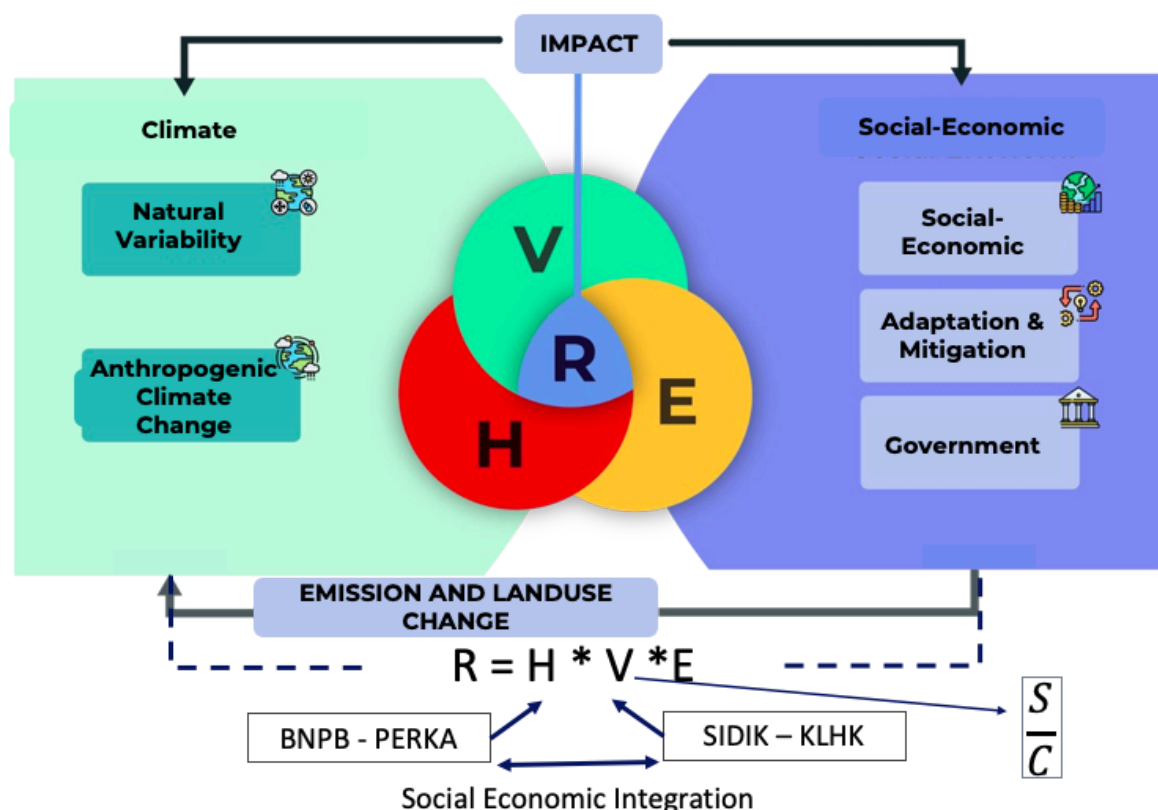


Figure 3 Vulnerability and Risk Approach for Health Sector in Indonesia (modified from IPCC 2014)

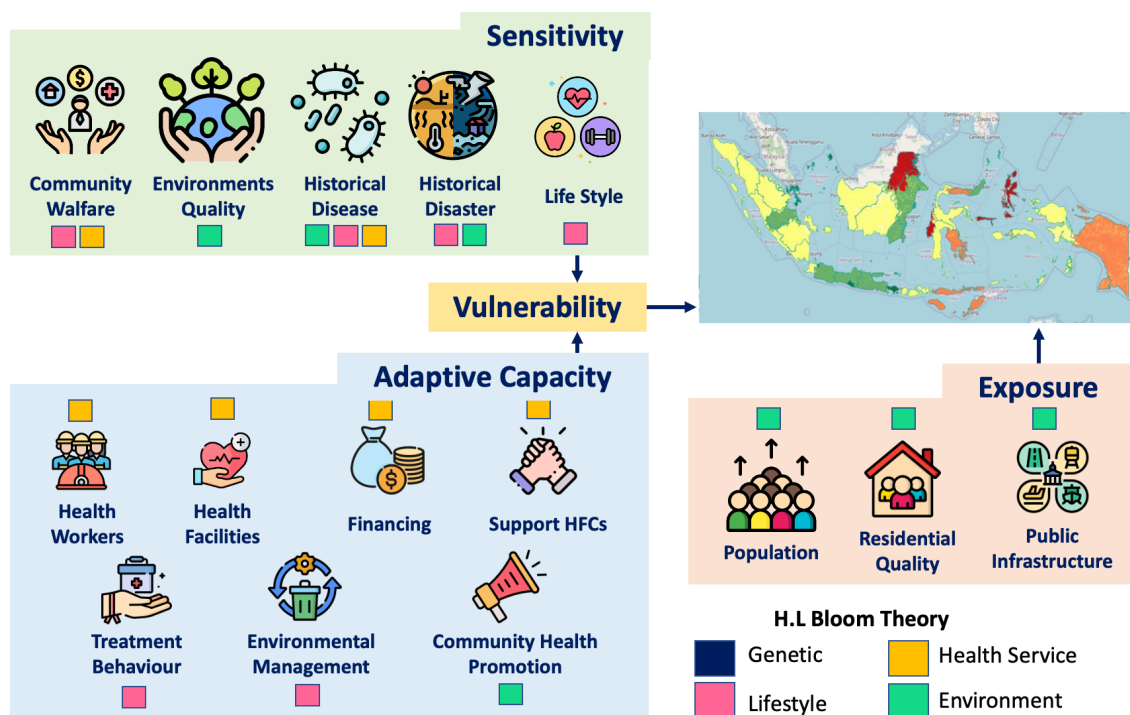


Figure 4 Indicator for Vulnerability Assessment for Climate Change

The susceptibility of an area to disease is directly proportional to sensitivity and exposure and inversely proportional to adaptive capacity. Increased adaptive capacity and decreased sensitivity and exposure reduce the level of vulnerability of the area concerned (e.g., West Java and Central Java) and vice versa (case example, Papua & West Papua) (MoH, 2020a). Reducing the level of vulnerability to climate-related diseases in Indonesia is carried out by increasing the adaptive capacity of indicators for environmental management movements, treatment behaviour, public health promotion, budgets, FASKES supporters, health facilities, and health workers for the majority of Indonesia, especially eastern Indonesia (Nusa Tenggara, Maluku, Papua), Kalimantan and Sulawesi. In addition to increasing adaptive capacity, it is necessary to reduce regional sensitivity by improving the quality of lifestyle behaviour, environmental quality, and community welfare, especially in Central Java, West Java, Aceh, North Sumatra, West Sumatra, and Nusa Tenggara. Improving the quality of settlements, public facilities, population quality, and capacity building for disaster management is important to reduce the level of exposure in Indonesia, especially in Central Java, West Java, most of Sumatra, and Nusa Tenggara.

As shown in Figure 5, most parts of Indonesia are susceptible to disease, except for West Java, Central Java, Riau, Jambi, and North Sulawesi (MoH, 2020a). Especially on the vulnerability of health sectors, UNFCCC (2017) reports that at least sixth adaptation actions have been implemented in Indonesia based on various studies, namely improving women's participation, capacity building, reconstruction of culture, promotion of health, relocation of population, and training health workers (UNFCCC 2017). Vulnerabilities and health risks related to climate are hot topics because they impact not only human health, which can lead to death, but also disrupt other areas of the pillars of a country. Health is the basis for

humans to carry out their activities which will affect human productivity, which of course has an impact on daily activities in supporting various aspects of life, including economics, politics, and development.

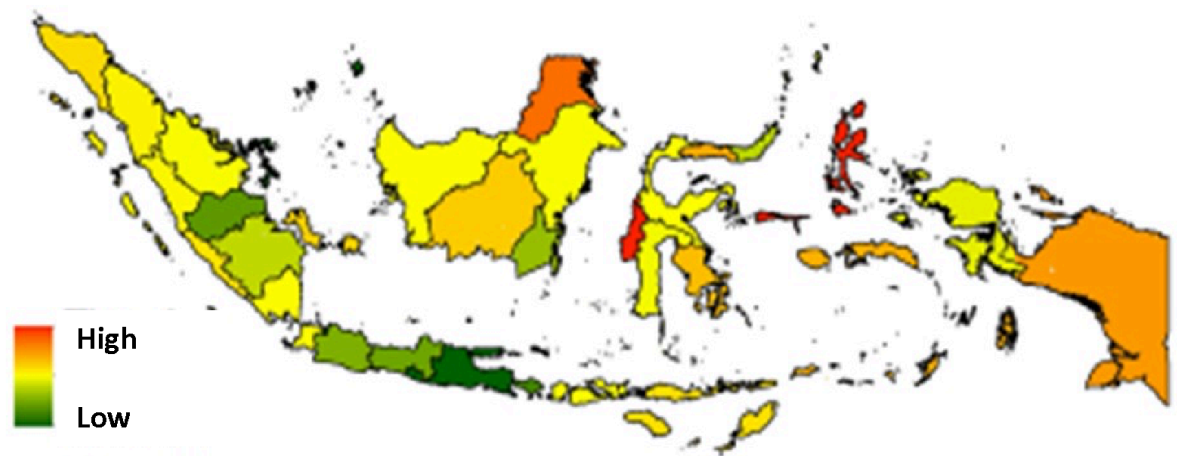


Figure 5 Region's Diseases Vulnerability Level (Modified from Darft HNAP Document 2020)

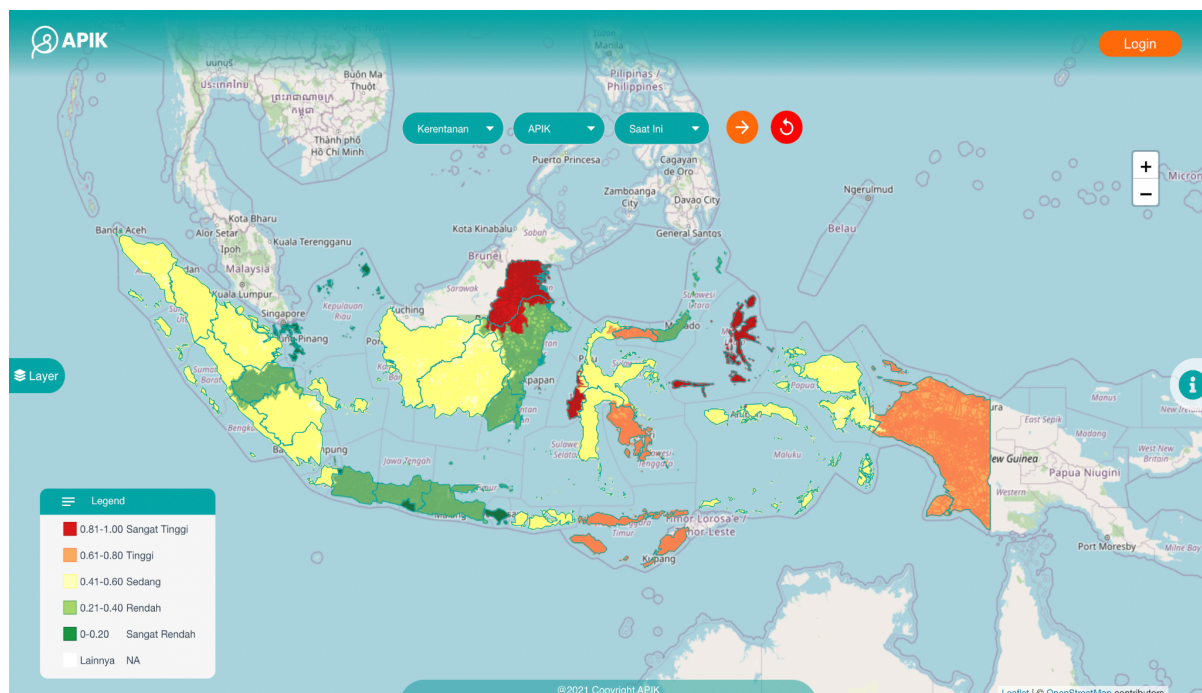


Figure 6 Vulnerability Map on Portal APIK (<https://apikkemkes.id/home>)

Health Vulnerability Information in Indonesia is presented in the form of maps at the provincial level and can be accessed on the health vulnerability application, namely APIK (<https://apikkemkes.id/home>). The application also contains information on Climate Change Vulnerability at the village level issued by the Ministry of Environment and Forestry. The vulnerability information source page can be accessed at <http://sidik.menlhk.go.id/>. From the Ministry of Health, information services are delivered by the Pusat Krisis website which can be accessed on the link of <https://pusatkrisis.kemkes.go.id/>. These three page play the role as the main data and information providers to identify the factors of vulnerability on

Health Sector. Figure 6 shows that the vulnerable area with the level “Very High” is in North Kalimantan and Sulawesi Island, then the Eastern Indonesia area is more vulnerable than others. This result match Figure 5, which has transformative into the online portal. It is such a brilliant initiative from the GoI through the Ministry of Health to develop a system for monitoring the vulnerability level of the health sector.

In response to the potential climate vulnerability and risk in over Indonesia area, the health sector adaptation strategy planning was developed to provide direction for the parties, especially in responding to the current and future impacts of climate change in an effort to minimize the negative impacts. Referring to Law No. 16/2016, controlling climate change is a constitutional mandate that everyone has the right to live in prosperity, physically and mentally, to live, and to have a good and healthy living environment and the right to health services.

Table 2 The existing vulnerable tools assessment in Indonesia

Institutions and product	Methods	Vulnerability Information
Ministry of Environment and Forestry SIDIK (http://sidik.menlhk.go.id/)	The indicators used in the SIDIK for the sensitivity and exposure index are the number of heads of families living on the river banks, river bank buildings, drinking water sources, poverty, and income sources. While the indicators for the adaptation capacity index are electricity facilities, education, health facilities and road infrastructure. This national vulnerability data will be updated every 3 years based on the latest BPS Podes data.	The climate change vulnerability assessment category in SIDIK is divided into 5 categories namely "Very Low", "Low", "Medium", "High" and "Very High".
Ministry of Health APIK Portal https://apikkemkes.id/home	The APIK portal presents data on vulnerability, exposure, hazards, and risks in the health sector at the provincial level. The indicators developed in the APIK Portal refer to the approach of stating that there are four factors that affect the degree of health successively, namely lifestyle / behavior, environment, health services, and genetic factor	Displays vulnerabilities at the provincial level with the categories "Very Low", "Low", "Medium", "High" and "Very High". The APIK portal also provides a risk map of Dengue, Malaria, Diarrhea, and Pneumonia
Ministry of Health Pusat Krisis Portal (https://pusatkrisis.kemkes.go.id/)	Health Crisis Information Portal in Indonesia based on natural and non-natural disaster events. The portal integrates information from various sources, such as for early warning the information is obtained from the BMKG.	Displaying health crisis monitoring information, volunteers, early warning, emergency operation center, etc..
National Disaster Management Agency (BNPB)	InaRISK is a risk assessment portal that uses ArcGIS server as a data service that describes the scope of disaster threat	INARISK provides information on regional vulnerability consisting of social, physical,

Institutions and product	Methods	Vulnerability Information
INARISK https://inarisk.bnpb.go.id/	areas, affected populations, potential physical losses (Rp.), potential economic losses (Rp.) and potential environmental damage (ha) and is integrated with the realization of the implementation of disaster risk reduction activities as a monitoring tool for reducing the disaster risk index.	environmental, and economic components if flood hazards have the opportunity in an area with an information base at the sub-district level. In addition, INARISK also provides information on the dangers, capacities, and risks of natural and non-natural disasters, including information on COVID 19

2.3 Key Actors and Stakeholders

The Ministry of Environment and Forestry hosts the Directorate General of Climate Change, the official National Focal Point for climate change policy planning, but still has limited influence on climate action and sectoral plans as ministries often act independently (CAT, 2021). The governance of climate change vulnerability policies in the health sector by the Indonesian government at least needs to involve national key actors: Ministry of Health (Kemenkes), Ministry of Environment and Forestry (KemenLHK), Meteorology, Climatology and Geophysics Agency (BMKG), National Disaster Management Agency (BNPB) and the Ministry of Energy and Mineral Resources (KemenESDM). Meanwhile, according to the NDC Roadmap Document Directive, the role of Ministries/Agencies as parties to national policies is manifested in 6 major functions: Planners, Funding, Research, Data Providers, Implementers, and Supervisors (MoEF, 2021a). The M/A key actors in supporting vulnerability and national health resilience have the dominant function as planners, data providers, and implementers. On the other hand, each development partner (Non-Party Stakeholder) plays an important role as a provider of financial support and knowledge management.

The availability of data related to indicators of health facilities and services, obtained from health research (Rifaskes), is one of the data provided by the Ministry of Health (MoH, 2021). Furthermore, health services are one of the forming factors that affect health. This data delivers information about the problem of the availability of health facilities, supplies, distribution of health data sources, and the performance index of hospitals and health centers. On the other hand, Riskesdas is one of the kinds of data available every 3 or 5 years issued by the research and development agency of the ministry of health. The impact of climate change that affects health can be known by analyzing climate data related to disease occurrence. Data and information from the Ministry of Health are also facilitated on '*Pusat Krisis Kesehatan*' website, which presents the spatial and temporal distribution of disease incidence and is also useful in calculating regional vulnerability. Based on the Decree of the Minister of Health of the Republic of Indonesia, Number HK.01.07/MENKES/523/2019, the

Minister of Health is also assigned to be on the technical team of climate change in health sectors.

As data providers, MoEF has also supervisory function and is the provider of environmental quality data and information, summarized as IKLH or Environmental Quality Index (Ministry of Health Information Data). The BMKG and BNPB have similar main roles as data providers and developers of climate and regional disaster vulnerability models. Climate change analysis is carried out using historical data that has a fairly long period and covers the entire territory of Indonesia. The Meteorology, Climatology and Geophysics Agency (BMKG) provides daily data on climatic conditions at each station widely distributed in districts/cities in Indonesia to obtain climate change analysis with historical data that has a fairly long period and covers the entire region of Indonesia. The Ministry of Energy and Mineral Resources plays a major role in establishing energy synergies along with MoEF by synchronizing the implementation of NDC and RUEN (National Energy General Plan) to accelerate the energy transition and achieve Net Zero Emission (MoEF, 2021c). So that both the risk index and environmental vulnerability to health can decrease.

Indonesia's development partners in developing climate change vulnerability policies in the health sector include WHO, UNICEF, UNDP, and GIZ. In general, the preparation of the National Climate Change Plan for Health and other related fields of health studies is carried out by referring to the Standard Framework Guidelines for the preparation of the RAN-API document in the Health Sector (HNAP) issued by the World Health Organization (WHO), with the main author's Prats and Ebi (2014). Meanwhile, the form of partnership output from UNDP (United Nations Development Program) is in the form of supported action for the research of The Third National Communication (TNC) along with further funding from the Government of Indonesia. As the Clean Development Mechanism projects, UNDP also contributes to transferring technology activities. They also take place through multilateral and bilateral cooperation, for example, through the ASEAN-Germany cooperation program: "Promoting Innovation and Technology-ASEAN" (PIT ASEAN), aiming at promoting innovation and technology, especially for small-medium enterprises (SMEs) and NGOs work under SGP-GEF UNDP Program mostly in Java area and predominantly in energy and waste sectors (UNFCCC, 2017).

UNDP, GIZ, DANIDA, JICA, USAID, ADB, and World Bank are also active as development agencies to support Bappenas and MoEF in increasing capacity building activities. Meanwhile, UNICEF partners with the Ministry of PPPA to boost national climate-resilient development focused on children. In addition, government partnerships in financial and knowledge management support also involve international financial and investment financial institutions, such as the Green Climate Fund (GCF) and the Asian Development Bank (ADB). Another form of partnership between development partners and Indonesia in supporting climate resilience in the national health sector is one of ADB's commitments presented at the United Nations Climate Change Conference (COP26). One of these meetings announced the launch of a new partnership to initiate the Energy Transition

Mechanism (ETM) in Indonesia and the Philippines, aimed at helping accelerate the transition to clean energy in Southeast Asia (ADB, 2021).

3 Project or Program Design and Implementation

This section describes how the current condition in vulnerability can lead to the identification of modalities and gaps for designing recommendations for projects or programs designed for transformation of the Adaptation Development Bank.

3.1 Modalities

The GoI has developed several modalities to reduce vulnerability and health risks to climate change. Current health systems and security are supported by enhancing Universal Health Coverage (UHC), Health Security and Disease Monitoring, Primary Health Care (PHC), Digital Health, and Non-communicable Diseases. Most countries initially adopted UHC to focus on people living in poverty and expand to ensure that all people have access to health care without financial difficulties (Cotlear *et al.*, 2015). Governments often use UHC for significant social, economic, or political change (Reich *et al.*, 2016). Health security is defined by the World Health Organization (WHO) as the series of preventative and reactive activities to minimize the impact of acute public health events that threaten people's health across geographic regions and national borders (WHO, 2016). The results are shown in four sections depending on the capabilities of the Global Health Security Agenda, namely epidemiological monitoring (detection capabilities); laboratory diagnostic tests (responsiveness); data management and analysis (enable capacity); and the role of local government (Aisyah *et al.*, 2022).

“PHC is committed to ensuring the highest possible level of health and welfare and its equitable distribution by responding to people's needs and acting along a continuum of health promotion and disease prevention to treatment and rehabilitation. It is a society-wide approach to health aimed at Palliative care that will provide as soon as possible to bring it as close as possible to people's daily environment”

It is defined by WHO and UNICEF from the 21st Century Primary Health Care Vision Document: Towards the UHC and SDGs (WHO, 2021a). PHC consists of three interrelated and synergistic components: A comprehensive, integrated healthcare service that covers primary care and public health assets and acts as a core part; cross-sectoral policies and actions to address upstream and broader determinants of health; engage and empower individuals, families, and communities to promote social participation and improve self-care and independence in health care.

Digital health, more often referred to as telehealth, is the use of telecommunications to provide information and health services with a broad scope to improve public health efforts. The potential of technology in the health sector is enormous, for it was adopted at the 58.28th WHA meeting (Sunjaya, 2019). The WHO resolution states that member countries start planning the development of e-Health in their respective countries. WHO also launched the Global Observatory for eHealth (GOe), a WHO initiative to help study the evolution of e-Health and its impact in individual countries. Noncommunicable diseases (NCDs), also known as chronic diseases, are of long duration and result from a combination of genetic,

physiological, environmental, and behavioral factors (WHO, 2021b). The main types of NCD are cardiovascular diseases (such as heart attacks and stroke), preventable cancers, chronic respiratory diseases (such as chronic obstructive pulmonary disease and asthma), diabetes, mental health conditions, and injuries (UNICEF, 2021). Two major contributors to the growing NCD health problems in Indonesia are high levels of tobacco consumption and obesity, which are risk factors for various health conditions, including hypertension, heart disease, cancer, and diabetes (Brouwer & Nugent, 2015).

Table 2 Indonesian Modalities to health systems and security

Aspect	Modalities
Universal Health Coverage	Indonesia's health care system is transitioning to universal health coverage (UHC) to provide access to health for the entire population. This system was first introduced and adopted into the national system in 2014 (Agustina <i>et al.</i> 2018). In Indonesia, the road to UHC was a combination of political opportunism, local experimentation, compromises, and utter opportunities. This initiative was politically influenced by the increasing access to health care by different groups as it became more socially important (Pisani <i>et al.</i>, 2017). Indonesian UHC services are evaluated based on the registration of all citizens in the National Health Insurance (JKN) program (MoH, 2021c). JKN's advances include achieving target on population coverage, improving equitable access to medical services, provider networks, cost of use and eligibility, provider payment systems, hospitals, medicines, and medical payments. JKN has helped 143 million people achieve universal health insurance in 2019.
Health Security and Disease Surveillance	Responsibility for disease control in (human) public health lies with the Directorate-General Of Disease Prevention and Control in the MoH, and the provincial and district health offices. The Directorate-General of Disease Prevention and Control has been appointed as the IHR National Focal Point for Indonesia (DFAT, 2018). In 2016, the MoH established an EID sub-directorate and a Public Health Emergency Operations Centre (PHEOC), under the Directorate of Surveillance and Health Quarantine (a part of the Directorate-General of Disease Prevention and Control). Responsibility for animal health lies with the MoA, Directorate-General of Livestock and Animal Health Services. Since November 2016, the Coordinating Ministry for Human Development and Cultural Affairs (Kemenko PMK) took over the national coordination function in relation to zoonoses (previously managed by the now-disbanded National Commission for Zoonotic Disease Control, KOMNAS Zoonosis). Kemenko PMK's role includes preparation of a health security action plan), continued development of an integrated zoonosis and EID information system, SIZE, which draws information from both animal and human health information systems (iSIKHNAS and EWARS respectively), and development of joint protocols with BNPB.

Primary Health Care	Based on National Plan of Primary Health Directorate of 2020-2024⁴: 1) The availability of policies and NSPK related to primary services, such as: • Kepmenkes Number HK.02.02/MENKES/514/2015 concerning Guidelines for Clinical Practice for Doctors in First Level Health Service Facilities • Minister of Health Regulation No. 9 20 Action Plan for the Directorate of Primary Health Services 2020-2024 2014 concerning Clinics • Permenkes No. 43 of 2019 concerning Community Health Centers, etc. 2) There is already a Primary Health Service Strategic Map 3) High motivation and work commitment of staff and leaders 4) Possess a post-graduate graduate HRK (master of health) 5) Availability of the operational budget of the Directorate of Primary Health Services 6) Networks with key stakeholders have been established (professional organizations, associations in the health sector, universities, BPJS health, etc.) 7) Most of the technical staff have work experience in Puskesmas/Health Office 8) There is already a health center roadmap that provides services according to standards 9) There have been efforts to supply personnel for Puskesmas in remote, very remote areas, borders and islands with a team-based approach through the placement of the Nusantara Sehat team
Digital Health	Digital website to access climate change and disaster information related to health databases. There are two main websites which are under development by MoH and other related parties (MoH, 2020): Portal APIK https://apikkemkes.id/home Pusat Krisis https://pusatkrisis.kemkes.go.id/
Non Communicable Disease	A. Hypertension Management and Obesity (Brouwer and Nugent, 2015) Stroke is the number one cause of death in Indonesia, and heart disease is number five. Both are due to smoking, high blood pressure, and poor diet, which are the three top health risks in Indonesia (Global Burden of Disease 2010.) High blood pressure and obesity are precursors to non-communicable diseases that are harder to fight than tobacco. B. Tobacco Taxation The most immediate and effective way to reduce cigarette consumption is to increase the price. This causes three separate effects: 1) current smokers reduce the intensity of their tobacco consumption, 2) current smokers quit altogether, and 3) non-smokers are deterred from picking up the habit. Experts estimate that doubling inflation-adjusted tobacco prices will eventually reduce consumption by about one third (Jha & Peto, 2014), averting population-level sickness and premature death.

⁴ Available at: <https://e-renggar.kemkes.go.id/file2018/e-performance/1-466071-4tahunan-160.pdf>

3.2 Gaps and Challenges

Although Indonesia already has many modalities to strengthen the health system and health security, there are still many gaps that pose challenges and need to be addressed by the Government of Indonesia. We identified gaps in each modality (Annex 1). The overall gaps and challenges are below:

- Needs for financial sustainability and budget allocation strategies for JKN Program (low-self enrolment caused not covered access).
- Data and information discrepancies between national and sub-national governments
- Monitoring and evaluation system's measurement
- Limited number and uneven distribution of laboratory-trained and surveillance human resources across provinces
- Insufficient political interest and policy formation problems
- Measurement of monitoring and evaluation systems related to health risks, especially those related to the impact of climate change
- Need of enhancing the role of sub-national governments in utilizing and disseminating information
- There is not yet a tools to integrated all climate-related disease data, including leveling of data assessment
- Knowledge gaps in the evidence for NCD risk factor control

3.3 Way Forward Strategies and Recommendation

The strategies and recommendations in this section are developed based on the identification of modalities and gaps. The program's future strategy is important to considering the different needs of each region in Indonesia. This section also provides spatial based recommendations.

General Recommendation

1) Compatibility with climate change health assessment

- a. Program/project assessment needs to be in line with the six pillars of digital health transformation;
- b. Efforts to reduce health inequality by better developing basic health infrastructure and facilities in states with narrow coverage of health services.

2) Leveling of Climate Change Health Assessment (Impact Analysis)

- a. Need to consider enabling condition or environmental health;
- b. Need to distinguish differences in economic loss & benefit (i.e. Urban, Coastal, Age Group, Gender) to facilitate more targeted policy planning;
- c. Government needs to conduct a more comprehensive survey to determine which factors of out-of-pocket health care contribute to such high disaster rates.

3) Tools of the Assessment

- a. To support leveling assessment, it is necessary to identify Data Readiness for indicators, particularly Socio-Economic Determinants differentiated by gender and age-group
- b. Tools need to be designed to be easily understood by all level of society
- 4) Capacity Building Program for Climate Change Assessment in Health Sector**
 - a. Standard Criteria for Capacity Building Programs (i.e participatory and non-participatory approach)
 - b. Health promotion efforts need to be revised and expanded to promote better health outcomes and reduce the burden on the healthcare system.
- 5) Proposed Prototype for Climate Project**
 - a. Piloting Desa-Desi initiatives for capturing local action, this is also a means to validate health vulnerabilities and risks at the community level
 - b. Development of APIK Portal to be able to provide disease risk information to a more detailed level (i.e. village-based, providing health early warning information, action recommendations)

Spatial Basis Recommendation

1) At Country level

- a. Revise existing health plans to include a robust situation analysis of the climate landscape and health implications, designing primary health care-based approaches to address the gaps;
- b. Ensure the health sector is actively engaged in climate crisis decision-making;
- c. Include primary health care-based approaches across the life course and analysis of interventions for the climate crisis in national plans, commitments and budget allocations;
- d. Lead by example, ensuring that health systems are not only net zero (that is, that they do not contribute to the climate crisis) but are green leaders across government sectors and within communities;
- e. Empower key stakeholders across sectors to work at the local (subnational) levels to engage communities to design primary health care-based solutions aimed at tackling the climate related impacts.

2) At the global/regional levels

- a. Provide normative guidance on primary health care that directly addresses threats to populations, communities and systems posed by the climate crisis;
- b. Ensure that primary health care dialogues, declarations and resolutions do not overlook key climate-related issues, but rather explicitly work to accelerate decarbonization and the move away from fossil fuels;
- c. Collate and disseminate best practices from countries that have successfully integrated climate adaptation and mitigation policies into their primary health-care systems and services, keeping updated, centralized, easily accessible global

databases on climate plans, health plans and primary health care strategies to profile and highlight best practices;

- d. Continue to build a focus on primary health care and climate-related issues through the Global action plan for healthy lives and well-being for all, particularly the accelerator on primary health care, ensuring their linkage and integration;
- e. Support countries in holistically applying global guidance on primary health care and climate related issues.

4 References

- ADB. (2017). Unabated Climate Change Would Reverse Hard Earned Development Gains Asia. Available at: <https://www.adb.org/en/news/unabated-climate-change-would-reverse-hard-earned-development-gains-asia-new-report>
- ADB. (2021). ADB, Indonesia, Filipina Luncurkan Kemitraan untuk Siapkan Mekanisme Transisi Energi. Available at: <https://www.adb.org/id/news/adb-indonesia-philippines-launch-partnership-set-energy-transition-mechanism>
- Agustina R, Dartanto T, Sitompul R, Susiloretni KA, Suparmi, Achadi EL, Taher A, Wirawan F, Sungkar S, Sudamono P, Shankar AH, Thabrany H. (2018). Universal health coverage in Indonesia: concept, progress, and challenges. *The Lancet*. doi:10.1016/s0140-6736(18)31647-7.
- Aisyah DN, Mayadewi CA, Budiharsana M, Solikha DA, Ali PB, Kozlakidis Z, Manikam L. (2022). Building on health security capacities in Indonesia: Lesson learned from the COVID-19 pandemic responses and challenge. *Zoonoses Public Health*. doi: 10.1111/zph.12976.
- Bappenas. (2021). Climate Resilient Development Policy. https://lcdi-indonesia.id/wp-content/uploads/2021/04/Buku-0_Ringkasan-Eksekutif-Dokumen-Kebijakan-Pembangunan-Berketahanan-Iklim.pdf
- Brouwer E, Nugent R. (2015). Indonesia Perspective: Non-communicable Disease. Post-2015 Development Agenda. Available at: https://www.copenhagenconsensus.com/sites/default/files/ncd_packet_indonesia.pdf.
- CAT. (2021). Climate Action Tracker (CAT) of Indonesia Climate Governance Series. Available at: <http://climateactiontracker.org/publications/climate-governance>
- Climate Risk Profile: Indonesia (2021): The World Bank Group and Asian Development Bank. <https://openknowledge.worldbank.org/bitstream/handle/10986/36379/Indonesia-Climate-Risk-Country-Profile>
- Cotlear D, Nagpal S, Smith O, Tandon A, Cortez R. (2015). Going Universal: How 24 Developing Countries are Implementing Universal Health Coverage Reforms from the Bottom Up. Washington DC (US): The World Bank.
- DFAT. (2018). The Australia Indonesia Health Security Partnership (AIHSP). Available at: <https://www.dfat.gov.au/sites/default/files/aihsp-design-document.pdf>
- Direktorat Pelayanan Kesehatan Primer. (2020). Rencana Aksi Kegiatan Direktorat Pelayanan Kesehatan Primer Tahun 2020-2024. Jakarta Indonesia. Available at: <https://e-renggar.kemkes.go.id/file2018/e-performance/1-466071-4tahunan-160.pdf>
- Government of Indonesia (Gol). (2020). National Mid-Term Development Plan (RPJMN) 2021 – 2024.
- Istiqamah et al (2019) Average rainfall effect on dengue haemorrhagic fever in Kendari City, Indonesia in 2014-2018. <https://doi.org/10.36349/EASJPID.2019.v01i05.003>.

- Jha P, Peto R. (2014). Global effects of smoking, of quitting, and of taxing tobacco. *New England Journal of Medicine*. 370(1): 60-68.
- Kirton J dan Kickbusch I. (2019). Health: A Political Choice. GT Media. Toronto University.
- Mau and Mulatsih (2018) Correlations between rainfall and temperature towards malaria in Southwest Sumba District, NTT. <https://doi.org/10.22435/bpk.v46i2.309>
- MoEF. (2021a). Roadmap Nationally Determined Contribution (NDC) on Adaptation Aspect, available at: http://ditjenppi.menlhk.go.id/reddplus/images/adminppi/adaptasi/dokumen/Roadmap_NDC_API_opt.pdf
- MoEF. (2021b). Indonesia Long-Term Strategy on Low Carbon Strategy and Climate Resilience 2050, available at https://unfccc.int/sites/default/files/resource/Indonesia_LTS-LCCR_2021.pdf
- MoEF. (2021c). Sinergi Energi dan Perubahan Iklim. Jakarta Indonesia. Available at: https://www.menlhk.go.id/site/single_post/4172/sinergi-energi-dan-perubahan-iklim
- MoH. (2020a). Draft Document of Health National Adaptation Plan. A report submitted to Ministry of Health supported by WHO. Jakarta Indonesia.
- MoH. (2021). Evidence-Based Data and Information on the Impact of Climate Change in Indonesia's Health Sector (2021). Jakarta Indonesia.
- MoH. (2021b). Pemerintah upayakan Universal Health Coverage bagi Masyarakat Indonesia. [Accessed on: 21 July 2021]. Available at: <https://sehatnegeriku.kemkes.go.id/baca/umum/20201212/0135971/pemerintah-upayakan-universal-health-coverage-bagi-masyarakat-indonesia/>
- Perdinan. (2014). Climate change and democracy: availability and access of climate information, role of government, and community participation in supporting the implementation of climate change adaptation in indonesia. *Journal of Environmental Law*. 1(1): 109-132.
- Perdinan *et al.* (2016). Development of the Study of Vulnerability, Risk, Impact and Climate Change Adaptation: Challenges and Opportunitie.
- Pisani E, Olivier Kok M, Nugroho K. (2017). Indonesia's road to universal health coverage: a political journey. *Health Policy Plan*. 32: 267-276.
- Pusat Krisis Kesehatan Ministry of Health in Indonesian Health Profile Book 2020. <https://www.kemkes.go.id/downloads/resources/download/pusdatin/profil-kesehatan-indonesia/Profil-Kesehatan-Indonesia-Tahun-2020.pdf>
- Reich MR, Harris J, Ikegami N, et al. (2016). Moving towards universal health coverage: lessons from 11 country studies. *Lancet*. 387: 811-816.
- Sunjaya AP. (2019). Potential, application and development of digital health in indonesia. *Journal Indon Med Assoc*. 69(4): 167-169.
- WHO. (2020). Health security. Available at: <https://www.who.int/health-topics/health-security/#tab=tab>

- WHO. (2021a). Primary Health. [Latest Update: 1 April 2021]. [Access on: 21 Juli 2022]. Available at:
<https://www.who.int/news-room/fact-sheets/detail/primary-health-care>
- WHO. (2021b). Non-communicable Disease. Available at:
<https://www.who.int/news-room/fact-sheets/detail/noncommunicable-diseases>
- UNICEF. (2021). Non-communicable Diseases. Available at:
<https://www.unicef.org/health/non-communicable-diseases>
- UNFCCC. (2017). Indonesia Third National Communication. Jakarta Indonesia. Available at:
https://unfccc.int/sites/default/files/resource/8360571_Indonesia-NC3-2-Third%20National%20Communication%20-%20Indonesia%20-%20editorial%20refinement%2013022018.pdf

Annex 1: Identification modalities, gaps, and recommendation for program/project design

Aspect	Modalities	Gaps	Recommendation
Universal Health Coverage	Indonesia's health care system is transitioning to universal health coverage (UHC) to provide access to health for the entire population. This system was first introduced and adopted into the national system in 2014. In Indonesia, the road to UHC was a combination of political opportunism, local experimentation, compromises, and utter opportunities. This initiative was politically influenced by the increasing access to health care by different groups as it became more socially important. Indonesian UHC services are evaluated based on the registration of all citizens in the National Health Insurance (JKN) program. JKN's advances include achieving target on population coverage, improving equitable access to medical services, provider networks, cost of use and eligibility, provider payment systems, hospitals, medicines, and medical payments. JKN has helped 143 million people achieve universal health insurance in 2019.	- Financial sustainability - Challenges of the NHIS (low-self enrolment caused not covered access) - Equity gap in insurance coverage - Challenges in services preparedness	- Develop the private sector's engagement to provide financial issues and stability. - Commit to reducing health inequality with better development of basic health infrastructure and facilities in provinces that demonstrate poor health service coverage - Health promotion efforts need to be revised and expanded to encourage better health outcomes and reduce the burdens placed on health service systems - The government needs to conduct further research into potential excise taxes that could curb the growing burden of noncommunicable diseases attributed to healthy lifestyle in Indonesia - The government needs to conduct more comprehensive surveys to identify what components of out-of-pocket health spending are contributing to such high rates of catastrophic incidenceq. - Despite the increase of enrolled PCPs, only 42% of private clinics and 14% of private practitioners have joined the NHIS.

Aspect	Modalities	Gaps	Recommendation
Health Security and Disease Surveillance	Responsibility for disease control in (human) public health lies with the Directorate-General Of Disease Prevention and Control in the MoH, and the provincial and district health offices. The Directorate-General of Disease Prevention and Control has been appointed as the IHR National Focal Point for Indonesia. In 2016, the MoH established an EID sub-directorate and a Public Health Emergency Operations Centre (PHEOC), under the Directorate of Surveillance and Health Quarantine (a part of the Directorate-General of Disease Prevention and Control). Responsibility for animal health lies with the MoA, Directorate-General of Livestock and Animal Health Services. Since November 2016, the Coordinating Ministry for Human Development and Cultural Affairs (Kemenko PMK) took over the national coordination function in relation to zoonoses (previously managed by the now-disbanded National Commission for Zoonotic Disease Control, KOMNAS Zoonosis). Kemenko PMK's role includes preparation of a health security action plan), continued development of an integrated zoonosis and EID information system, SIZE, which draws information from both animal and human health information systems (ISIKHNAS and EWARS respectively), and development of joint protocols with Indonesia's National Disaster Management Agency (BNPB). The Global Health Security Agenda capacities concern about: Detect Capacity Respond Capacity Enabling Capacity	Detect Capacity - Data discrepancies between national and sub-national governments - Officers' capacity to collect and report real-time data through surveillance systems - Capacity of national tracing (surveilans) reporting system to keep up with sudden surge of cases Respond Capacity - Uneven distribution of laboratories across provinces - A limited number of qualified, laboratory-trained human resources - Oversight alignment and standardization across national and sub-national government structures Enabling Capacity - Systems integration of many different data sources and data warehouses - The lack of trained human resources for data input - Systems interoperability due to both the institutional and geographical fragmentation - Shifting the view from time-bound project into a long-term commitment towards digital transformation - Enhancing the role of sub-national governments in utilizing and	Detect Capacity - A balance coordination between centralized national approach and accommodating sub-national dynamics Respond Capacity: - Horizontal collaboration across laboratories, owned by different governmental agencies - Enhance sub-national government's contribution to mobilize human resources as volunteers Enabling Capacity: - Shifting the view from time-bound project into a long-term commitment towards digital transformation - Enhancing the role of sub-national governments in utilizing and disseminating information General Scope: - This paper offers several recommendations on surveillance, laboratory capacity and data management, which might be useful for Indonesia and other countries with similar characteristics beyond the COVID-19 response, such as achieving long-term health security, zoonoses and pandemic prevention, as well as a digital transformation of

Aspect	Modalities	Gaps	Recommendation
		disseminating information	their governmental capacities - Enhance information sharing between human and animal health stakeholders at all levels - Strengthen event-based surveillance and risk assessment - Improving capacity building through training including for surveillance, laboratories, case management, infection control, and risk communication.
Primary Health Care	Based on National Plan of Primary Health Directorate of 2020-2024: A. The availability of policies and NSPK related to primary services, such as: - Kepmenkes Number HK.02.02/MENKES/514/2015 concerning Guidelines for Clinical Practice for Doctors in First Level Health Service Facilities - Minister of Health Regulation No. 9 20 Action Plan for the Directorate of Primary Health Services 2020-2024 2014 concerning Clinics - Permenkes No. 43 of 2019 concerning Community Health Centers, etc. B. There is already a Primary Health Service Strategic Map C. High motivation and work commitment of staff and leaders D. Possess a post-graduate graduate HRK (master of health) E. Availability of the operational budget of the Directorate of Primary Health Services F. Networks with key stakeholders have been established (professional organizations, associations in the health sector, universities, BPJS health, etc.) G. Most of the technical staff have work experience in Puskesmas/Health Office H. There is already a health center roadmap that provides services according to standards	- Data and information systems are not yet integrated - Planning is not all data-based - The monitoring and evaluation system has not yet been measured - Technical guidance and evaluation of staff performance is not optimal - The reward and punishment system is not optimal yet - Uneven workload of subdirectories - There are tasks that are not in accordance with the main tasks - There are still personnel who are placed not in accordance with educational qualifications	- Increase investment in the components of health human resources, infrastructure, as well as the provision of drugs and medical devices to deal with health problems in primary services - Increasing the quantity and quality of health workers - Adjustment of the health care system from conventional to managed care, which is a system of providing health services that: · comprehensive and balance between service quality and health financing, · includes promotive and preventive, curative and rehabilitative efforts, · implementing management of utilization and cost control as well as programs to maintain the

Aspect	Modalities	Gaps	Recommendation
	I. There have been efforts to supply personnel for Puskesmas in remote, very remote areas, borders and islands with a team-based approach through the placement of the Nusantara Sehat team		quality of health services.
Digital Health	Digital website to access climate change and disaster information related to health databases. There are two main websites which are under development by MoH and other related parties: Portal APIK https://apikkemkes.id/home Pusat Krisis https://pusatkrisis.kemkes.go.id/	There is not yet a tools to integrated all climate-related disease data, including leveling of data assessment	Development of APIK Portal to be able to provide disease risk information to a more detailed level (i.e. village-based, providing health early warning information, action recommendations), by integrating with the existing knowledge management portal owned by MoH.
Non Communicable Disease	A.Hypertension Management and Obesity Stroke is the number one cause of death in Indonesia, and heart disease is number five. Both are due to smoking, high blood pressure, and poor diet, which are the three top health risks in Indonesia (Global Burden of Disease 2010.) High blood pressure and obesity are precursors to non-communicable diseases that are harder to fight than tobacco. B.Tobacco Taxation The most immediate and effective way to reduce cigarette consumption is to increase the price. This causes three separate effects: 1) current smokers reduce the intensity of their tobacco consumption, 2) current smokers quit altogether, and 3) non-smokers are deterred from picking up the habit. Experts estimate that doubling inflation-adjusted tobacco prices will eventually reduce consumption by about one third, averting population-level sickness and premature death.	- Has not comprehensive yet to can cover all the NCDs problem, especially mental health and injuries - Problems in NCD policy formation - Insufficient political interest in NCD control - Governmental structure and implementation issues - Inadequate collaboration - Policy prioritisation - Budget allocation - Knowledge gaps in the evidence for NCD risk factor control - Potential for improving NCD control policies	Collate and disseminate best practices from countries that have successfully integrated climate adaptation and mitigation policies into their primary health-care systems and services, keeping updated, centralized, easily accessible global databases on climate plans, health plans and primary health care strategies to profile and highlight best practices; Continue to build a focus on primary health care and climate-related issues through the Global action plan for healthy lives and well-being for all, particularly the accelerator on primary health care, ensuring their linkage and integration;



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