KEMENTERIAN KESIHATAN MALAYSIA

MALAYSIA NATIONAL ACTION PLAN FOR HEALTH SECURITY (MyNAPHS) 2025-2030

HEALTH SECURITY FOR A SAFER AND RESILIENT MALAYSIA

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CONTENT

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CONTENT

ACKNOWLEDGMENTS

The Malaysia National Action Plan for Health Security (MyNAPHS) 2025–2030 is the result of extensive collaboration and the unwavering dedication of numerous individuals and organizations. It reflects a shared national commitment to safeguarding the health and security of our nation.

We extend our deepest appreciation to the **World Health Organization (WHO)** for its invaluable technical guidance and expertise, which were instrumental in ensuring that this plan is aligned with the highest global health security standards.

Our sincere gratitude is also conveyed to the members of the **Technical Working Groups (TWGs)** from all technical areas. Their commitment, expertise, and contributions were critical in shaping the strategies and initiatives presented in this document.

We gratefully acknowledge the vital input and cooperation of stakeholders from across **other ministries, government agencies, and various sectors**. Their multisectoral engagement has been essential in addressing the complex and interconnected challenges that impact the well-being of the nation.

Special recognition is given to representatives from **non-governmental organizations, academia, and the private sector**. Their diverse perspectives and valuable insights greatly enriched the development process.

Finally, we wish to commend the tremendous and tireless efforts of the **Disease Control Division, the Secretariat, and all supporting teams**. Their dedication and hard work have been instrumental in transforming this vision into reality.

The MyNAPHS 2025–2030 is truly a collective achievement, one that powerfully demonstrates the strength of partnership and shared responsibility, paving the way for a more resilient and secure health system for Malaysia.

FORWARD

The Malaysia National Action Plan for Health Security (MyNAPHS) 2025–2030 is a clear testament to our nation's unwavering commitment to building a robust, resilient, and well-prepared health security system for all Malaysians. This plan serves as a strategic roadmap, meticulously designed to address both current and emerging health security challenges, while aligning our efforts with international standards, such as the International Health Regulations (IHR 2005), the One Health approach, and other global health security frameworks.

The unprecedented challenges posed by the COVID-19 pandemic have underscored the critical importance of a proactive and unified approach to health security. Drawing upon the invaluable lessons learned, MyNAPHS 2025–2030 aims to fundamentally strengthen our national health systems, enhance our surveillance and early warning capacities, and foster an integrated, "whole-of-government" and "whole-of-society" approach to effectively managing health threats.

This plan is the culmination of a truly collective effort. We are deeply grateful for the invaluable contributions of a wide spectrum of stakeholders, including our colleagues across other ministries and government agencies, the World Health Organization (WHO), the dedicated members of our Technical Working Groups (TWGs), and our esteemed partners from non-governmental organizations, academia, and the private sector. Their collaboration and shared insights have been vital in shaping a plan that reflects our shared responsibility in safeguarding the nation's health.

As Malaysia advances in its journey of growth and development, we must remain vigilant against the growing risks of infectious diseases, antimicrobial resistance, chemical and radiation events, and other public health emergencies. Through the diligent implementation of MyNAPHS 2025–2030, we will not only be better prepared and more resilient but also more capable of mitigating the impact of these threats on our people and our economy.

I call upon all Malaysians to join us in this vital mission. Together, let us work in a spirit of unity and determination to achieve our vision of a safer, healthier, and more secure Malaysia for generations to come.

YB Datuk Seri Dr. Dzulkefly Ahmad
Minister of Health Malaysia
Ministry of Health Malaysia

Message from the Director-General of Health (DG)

The Malaysia National Action plan for Health Security (MyNAPHS) 2025–2030 is the product of extensive technical expertise and collaborative effort dedicated to strengthening Malaysia's health security capacities. Guided by the International Health Regulations (IHR 2005) and aligned with global health security frameworks, this plan addresses a broad spectrum of threats, including emerging and re-emerging diseases, antimicrobial resistance, potential pandemics, and chemical, radiological, and other public health emergencies.

The COVID-19 pandemic has reminded us that no health system is impervious to crisis. In response, MyNAPHS underscores the importance of integrated surveillance, resilient laboratory networks, rapid response mechanisms, and effective risk communication to ensure timely and coordinated action. The plan also reaffirms the One Health approach, recognizing the interconnectedness of human, animal, and environmental health.

In light of the **2024 amendments to the IHR**, Malaysia must continue to demonstrate full compliance with updated obligations and benchmarks. I strongly urge all national **focal points across the technical areas** to actively implement their respective **Plans of Action (POA)**, ensuring that the strategies outlined in MyNAPHS are translated into measurable outcomes. This collective effort will not only strengthen not only our national system but also contribute meaningfully to regional and global health security.

I wish to express my deepest appreciation to the technical teams, experts, and stakeholders whose dedication and expertise have been vital to the development of this plan. With continued commitment and shared responsibility, we will advance Malaysia's preparedness and ensure that our health system remains resilient in the face of any future threats.

YBhg. Datuk Dr. Mahathar bin Abd Wahab
Director General of Health
Ministry of Health, Malaysia

Message from the Deputy Director-General of Health – Public Health (DDG-PH)

The development of the Malaysia National Action Plan for Health Security (MyNAPHS) 2025–2030 marks a significant milestone in operationalizing our nation's health security priorities. This plan not only sets out clear strategic objectives but also provides practical pathways to translate policy into action at the national, state, and local levels.

As Deputy Director-General of Health (Public Health), I am greatly encouraged by the strong spirit of collaboration demonstrated throughout its formulation. The plan underscores the importance of strengthening capacities in surveillance, workforce development, emergency operations, and logistics management. Equally important is the active engagement of communities, whose participation is vital in building resilience from the ground up.

Looking ahead, it is imperative that we **fully commit to implementing the robust monitoring and evaluation (M&E) mechanisms** outlined in this plan. The **Key Performance Indicators (KPIs)**, particularly those tied to compliance with the IHR core capacities, will serve as critical benchmarks to measure the success of our objectives and activities. Strong performance against these indicators will not only reflect our national readiness but also reinforce Malaysia's credibility in fulfilling international commitments.

I call upon **all technical focal points for the technical areas** to **monitor implementation closely, persevere through to the challenges ahead, and provide timely feedback** to ensure continuous progress. Through commitment, accountability, and persistence, we can ensure that no area of health security is overlooked.

Let us therefore embrace this plan with dedication and determination. By working together across ministries, agencies, sectors, and communities in a **whole-of-nation effort**, we can ensure that MyNAPHS realises its vision of a safe, resilient, and health-secure Malaysia.

YBrs. Dr. Ismuni bin Bohari
Deputy Director General of Health (Public Health)
Ministry of Health, Malaysia

ABBREVIATIONS

AMR	Antimicrobial Resistance
CBRNe	Chemical, Biological, Radiological, Nuclear and Explosive
COVID-19	Coronavirus disease 2019
CE	Chemical Event
EOC	Emergency Operations Centre
FAO	Food and Agriculture Organization of the United Nations
IHR	International Health Regulations
IHR MEF	International Health Regulations Monitoring and Evaluation Framework
JEE	Joint External Evaluation
MOH	Ministry of Health
MyNAPHS	Malaysia National Action Plan for Health Security
PHEIC	Public Health Emergency of International Concern
PoE	Point of Entry
PPR	Prevention, Preparedness, and Response
RCCE	Risk Communication & Community Engagement
RE	Radiation Emergencies
SimEx	Simulation Exercise
SPAR	State Parties Self-Assessment Annual Report
TWG	Technical Working Group
WHO	World Health Organization
WOAH	World Organization for Animal Health

EXECUTIVE SUMMARY

The Malaysia National Action Plan for Health Security (MyNAPHS) 2025–2030 presents a comprehensive, multisectoral strategy to strengthen the nation ability to prevent, detect, and respond to public health threats. Anchored in global frameworks such as the International Health Regulations (IHR 2005), the Asia Pacific Health Security Framework (APHSF), and the One Health approach, the plan is designed to reinforce Malaysia health system, making it more resilient, adaptable, and responsive to evolving health security challenges. MyNAPHS builds upon the foundation laid by MYSED II and MYSED III, representing a strategic shift toward an more integrated, technology-driven, and action-oriented framework.

The plan draws extensively on lessons from the COVID-19 pandemic, which revealed exposed critical gaps in supply chain resilience, real-time surveillance, and multisectoral coordination. It also responds to findings from the 2019 Joint External Evaluation (JEE) and the 2023 State Party Self-Assessment Annual Reporting (SPAR), which highlighted weakness in Antimicrobial Resistance (AMR) surveillance, biosafety, and cross-border health security. MyNAPHS directly addresses these areas through focused and sustainable capacity-building initiatives.

Structured around four strategic key pillars: **Prevention, Detection, Response, and Recovery**, the plan outlines targeted actions across all core areas of health security. The **Prevention** pillar prioritises stronger legal frameworks, financing mechanisms, AMR management, and zoonotic disease surveillance. The **Detection** pillar emphasises enhancing early warning systems, laboratory capacity, and real-time surveillance by leveraging AI-driven tools for rapid outbreak identification. The **Response** pillar focuses on building robust emergency operations, multisectoral coordination, and effective risk communication, while supporting functions such as chemical, radiological and point of entry preparedness ensure an all-hazards approach.

Implementation of MyNAPHS is supported by a clear governance framework. The **MyNAPHS Secretariat**, hosted within the Ministry of Health (MoH), will oversee coordination, monitoring, and resource mobilization. **Technical Working Groups (TWGs),** composed of experts from diverse sectors, will guide technical areas and ensure alignment with both national priorities and international standards. A high-level **Steering Committee** will provide policy direction, oversight, and continuous evaluation to maintain adaptability against emerging health threats.

To ensure the plan's sustainability, a blended financing approach will be employed, which leverages existing domestic resources, secures new targeted allocations, and actively seeks external funding through partnerships with international organizations and regional initiatives. The multi-layered monitoring and evaluation (M&E) framework will involve quarterly updates from technical areas, biannual reviews, and annual

assessments based on JEE 2023 grading and SPAR indicators, ensuring data-driven decision-making and continuous improvement throughout the implementation period.

In essence, MyNAPHS 2025–2030 marks a pivotal milestone in Malaysia's commitment to safeguarding national and regional health security. By transforming strategic goals and objectives into measurable actions and fostering multisectoral collaboration, MyNAPHS ensures that Malaysia is well-prepared to address present and future public health challenges, thereby safeguarding the health, well-being, and prosperity of its people.

1.0 INTRODUCTION

1.1 STRENGTHENING INTERNATIONAL HEALTH REGULATIONS (IHR) CAPACITIES IN MALAYSIA: THE ROLE OF MyNAPHS

The International Health Regulations (IHR) were revised at the 58th World Health Assembly in May 2005 to strengthen global health security by preventing, detecting, and responding to the international spread of diseases, while minimizing disruptions to travel and trade. Under the IHR (2005), countries are mandated to develop, strengthen, and sustain their capacities to detect public health threats and take timely action to prevent outbreaks from escalating into Public Health Emergencies of International Concern (PHEICs).

Building on the lessons learned from the COVID-19 pandemic, the World Health Assembly adopted critical amendments to the IHR in May 2024. These revisions introduce a new, higher-level alert termed a **"Pandemic Emergency,"** which is defined as a communicable disease with a high risk of widespread human transmission that may overwhelm health systems. The amendments also reinforce the principles of **equity and solidarity**, and mandate enhanced core capacities for preparedness and response.

In accordance to Article 54 of the IHR, countries are required to conduct self-assessments and report their progress to the World Health Organization (WHO). To strengthen accountability and facilitate external evaluation, WHO introduced the Joint External Evaluation (JEE) tool in 2015. This multisectoral tool, supported by the World Organization for Animal Health (WOAH, formerly OIE), the Food and Agriculture Organization (FAO), and other international partners, assesses a country's IHR implementation and overall health security preparedness through a structured and independent review.

IHR Implementation and Regional Cooperation

Malaysia has made significant progress in strengthening its IHR core capacities, particularly in surveillance, laboratory diagnostics, emergency preparedness, and risk communication. This progress has been reinforced through regular self-assessments and participation in Joint External Evaluations (JEEs).

Nonetheless, important gaps remain. These include ensuring a sustainable and well-trained public health workforce, strengthening cross-border collaboration at Points of Entry (PoE), and securing long-term, sustainable financing for health security. The COVID-19 pandemic highlighted the urgent need for stronger data integration, enhanced digital surveillance, and improved multi-agency coordination, all of which are now being embedded into Malaysia' health security frameworks.

To address these challenges, Malaysia's health security strategy is evolving in alignment with regional initiatives. The nation is transitioning from the foundational Asia Pacific Strategy for Emerging Diseases and Public Health Emergencies (APSED) to the more comprehensive Asia Pacific Health Security Framework (APHSF). While APSED provided a structured approach to strengthening surveillance and cross-border cooperation within ASEAN, APHSF builds upon this foundation by incorporating multi-sectoral partnerships, including those in security, trade, and finance. This new framework also enhances real-time information sharing and joint emergency response initiatives, enabling faster and more effective outbreak management.

Malaysia's alignment with the APHSF demonstrates its commitment to building a robust and future-ready health security system, one that integrates national, regional, and global efforts to safeguard the health and well-being of its people.

The Evolution of Malaysia's Health Security Framework: From MYSED II to MyNAPHS

Malaysia's health security framework has undergone significant evolution, progressing from MYSED II to MYSED III, and culminating in the development of the Malaysia National Action Plan for Health Security (MyNAPHS). This evolution reflects Malaysia's growing understanding of global and regional health security priorities, with each stage building on the achievements of the previous one.

MYSED II: Building the Foundation (Laying the Groundwork)

MYSED II laid the groundwork for Malaysia's health security by focusing on establishing core public health capacities, including:

- Surveillance: Strengthening systems for detecting and monitoring disease outbreaks.
- Laboratory Diagnostics: Expanding laboratory capabilities for rapid and accurate disease identification.
- Emergency Response Mechanisms: Developing and improving protocols for responding to public health emergencies.

This phase emphasized national-level preparedness in line with the International Health Regulations (IHR) (2005) requirements and WHO guidance. It also supported Malaysia's Joint External Evaluation (JEE) readiness through self-assessments and targeted capacity building.

MYSED III: Advancing and Aligning (Enhancing and Harmonizing)

MYSED III represented a significant advancement, building upon the foundation laid by MYSED II. It incorporated innovative approaches and aligned Malaysia's health security agenda with regional and global frameworks. Key improvements included:

- Technological Integration: Incorporating new technologies, such surveillance and real-time outbreak analytics, for improved decision-making, early detection, and rapid response.
- Multi-Sectoral Collaboration: Strengthening coordination across government agencies and fostering whole-of-society engagement in health security.
- Regional Alignment: Aligning Malaysia's health security agenda with the APSED III and the WHO's IHR Monitoring and Evaluation Framework (IHRMEF) to foster stronger regional cooperation.

While MYSED III provided the strategic direction, it became evident that concrete implementation plan was required.

MyNAPHS: From Strategy to Action (Operationalizing and Sustaining)

MyNAPHS addresses the critical gap by operationalising the strategic direction outline in MYSED III and translating high-level plans into actionable measures. Developed in response to the need for an implementation-driven framework, particularly after the adoption of the APHSAF, MyNAPHS ensures sustained, and long-term improvements in IHR core capacities.

Feature	MYSED III	MyNAPHS
Purpose	Strategic roadmap for national health security	Implementation framework that translates strategies into action
Scope	Strengthening preparedness and response capacities	Sustained operationalization of IHR priorities through targeted interventions
Key Features	Technology Innovation-driven in surveillance, strengthened inter-agency coordination, and enhanced health security integration.	Translating IHR assessments (JEE, SPAR, IHRMEF) into concrete actions
Sustainability	Policy development and high-level planning	Long-term implementation, monitoring, and evaluation of initiatives

The Role of MyNAPHS in strengthening IHR capacities

The transition from MYSED II to MYSED III and the development of MyNAPHS underscores Malaysia's deepening commitment to health security. While MYSED III provided an overarching strategic framework, MyNAPHS functions as the operational arm, converting those priorities into measurable, practical actions to ensure a resilient public health system.

MyNAPHS makes several key contributions to national health security:

- **Bridging Policy to Action:** Transforming strategic visions and capacity assessment findings (e.g., JEE, pandemic reviews) into targeted, tangible interventions to strengthen IHR core capacities.
- **Ensuring Long-Term Resilience:** Embedding proactive strategies for preparedness to ensure that health security efforts extend beyond immediate emergencies and build a future-ready system.
- **Operationalizing a Whole-of-Government Approach:** Enhancing coordination across sectors by integrating human, animal, and environmental health for a comprehensive approach to health security.
- **Enhancing Regional and Global Integration:** Aligning Malaysia's initiatives with international standards and regional frameworks to reinforce global health security and collaborative response.

1.2 MyNAPHS OBJECTIVES

1) Enhance the capacity and efficiency of key organizational functions to effectively and cohesively address public health security challenges.

2) Integrate health security strategies with Malaysia's national development goals to support sustainable growth and resilient health system.

3) Strengthen a responsive and adaptable health security system to address evolving needs and emerging health threats.

4) Establish sustainable financing mechanisms, including strategic resource allocation and workforce management, to ensure continuous public health preparedness and response.

5) Implement and monitor IHR core capacities through a structured mechanism under the National IHR Authority to reinforce national health emergency readiness and response.

2.0 DEVELOPMENT AND GOVERNANCE OF THE NATIONAL ACTION PLAN FOR HEALTH SECURITY

2.1 COUNTRY CONTEXT

2.1.1 Population and Distribution

Malaysia, with a population exceeding 34 million, is a highly urbanized nation, with 75% of its people residing in urban areas. While this demographic trend underpins an economy driven by manufacturing, services, and tourism, it also presents distinct public health challenges. The rapid urbanization and industrialization pose environmental health risks, and key economic sectors like agriculture present persistent concerns regarding zoonotic diseases. Despite high urbanization, the rural population, particularly in East Malaysia, faces unique health security challenges that require tailored and comprehensive solutions.

2.1.2 National Context and Health Threat Landscape

Malaysia, with over 34 million people, is highly urbanized (75% in urban areas), but rural areas, especially in East Malaysia, face unique health security challenges. An upper-middle-income country, Malaysia's economy relies on manufacturing, services, agriculture, and tourism. High urbanization and industrialization pose environmental health risks, and zoonotic diseases from agriculture present concerns.

Malaysia's health security landscape is defined by a dynamic interplay of communicable diseases, natural and man-made hazards, and the vulnerabilities exposed by recent global health crises. With a highly urbanized population, the nation faces persistent public health threats driven by urbanization, environmental factors, and increasing human-wildlife interaction.

Recent trends highlight the ongoing burden of diseases such as dengue, alongside the emergence of zoonotic infections like Mpox and a sharp increase in zoonotic malaria cases. Respiratory infections, including Human Metapneumovirus (hMPV), remain a concern, while post-flood events have led to thousands of waterborne disease cases. The profound lessons from the COVID-19 pandemic underscored the critical need for stronger multisectoral coordination, real-time surveillance, supply chain resilience, and effective risk communication.

Beyond infectious diseases, Malaysia faces a range of all-hazard incidents. The country is susceptible to severe monsoon-related floods, landslides, and forest fires, which collectively pose significant public health challenges. Additionally, industrial accidents and chemical spills, though a declining trend, highlight the continued need for robust hazard management and multi-agency coordination to protect public safety.

To address this complex threat environment, Malaysia has a well-integrated national health system that operates on a whole-of-government and One Health approach. Led by the Ministry of Health, the system incorporates comprehensive public, medical, and pharmaceutical programs, with strong support from the Department of Veterinary Services for animal health and the defense sector for supply chain resilience. Key operational pillars, such as robust Point of Entry (PoE) management and coordinated hazard response with agencies like the Fire and Rescue Department and the Malaysian Nuclear Agency, are essential to ensuring the nation's capacity for prevention, detection, and response against a wide spectrum of health threats.

2.1.3 National Health System and Capabilities

Malaysia's national health system, managed by the Ministry of Health (MoH), is an integrated and multifaceted structure that aligns with International Health Regulations (IHR) to address a full spectrum of public health risks. It is designed to operate seamlessly across public and private healthcare services while incorporating animal health, hazard management, and research.

Human Health System

The system's human health component is led by the MoH's Public and Medical Health divisions. Public health programs, coordinated by the Disease Control Division and supported by primary care services, focus on the surveillance, prevention, and management of communicable diseases. Concurrently, secondary and tertiary medical services play a crucial role in managing emerging diseases, health emergencies, and antimicrobial resistance (AMR). Specialists, including infectious disease physicians and emergency physicians, lead efforts in diagnosis, treatment, and outbreak response. This is complemented by a robust pharmaceutical sector that ensures access to safe and effective medicines and vaccines, including participation in global procurement initiatives for critical therapies.

Animal Health System

Under the stewardship of the Department of Veterinary Services (DVS), the national animal health system is a pivotal part of Malaysia's proactive defense. It ensures the safety of domestic and international livestock trade and serves as the first line of defense against zoonotic diseases. The DVS is tasked with real-time disease surveillance, risk analysis, and implementing strict biosecurity and quarantine protocols at entry points. This focus on prevention and rapid response forms a crucial backbone for both animal health and public health actions.

Points of Entry (PoE) Management
Malaysia's airports, seaports, and land crossings are key barriers against the international spread of diseases. A dedicated Health Quarantine Unit, in close collaboration with immigration and customs, implements screening, surveillance, and containment measures. This critical function ensures the early detection and prevention of cross-border health threats.

Hazard Management and Supply Chain Resilience
The national health system is closely integrated with hazard management frameworks, ensuring a coordinated response to all-hazard threats, including chemical, biological, radiological, and nuclear (CBRN) events. This multi-agency coordination involves key partners like the Fire and Rescue Department and the Malaysian Nuclear Agency. Furthermore, a resilient public health supply chain, managed by the MoH and supported by the Ministry of Defense, is vital for ensuring continuous access to medical supplies and for enabling the rapid mobilization of resources during emergencies and crises. This inter-agency collaboration is essential for ensuring timely and efficient resource deployment to safeguard public health.

2.2 NATIONAL HEALTH SECURITY FRAMEWORK

The National Health Security Framework provides a comprehensive strategy to safeguard Malaysia's public health from infectious diseases and other hazards. It establishes governance, operational, and strategic foundations to ensure coordinated, resilient, and effective health security measures.

Governance and Leadership
The Ministry of Health (MOH) leads the national health security agenda through a multisectoral approach that integrates health security within the broader context of national security. MyNAPHS aligns Malaysia's efforts with international standards, including the International Health Regulations (IHR 2005).

Prevention and Risk Reduction
Prevention efforts focus on strengthening surveillance, enhancing early detection, and expanding immunization coverage to reduce risk. The One Health approach is central to addressing zoonotic diseases by foster collaboration across human, animal, and environmental health sectors.

Preparedness
Preparedness is reinforced through contingency planning, simulation exercises, and the implementation of National Health Emergency Response Operational Plan (NHEROP). These measures equip Malaysia to respond rapidly to health emergencies.

Response
During emergencies, the Crisis Preparedness and Response Centre (CPRC) coordinates national responses, supported by Rapid Response and Assessment Teams (RRTs/RATs). The structure ensures swift, coordinated action and effective risk communication with the public.

Recovery and Resilience
Recovery efforts focus on restoring essential health services and providing mental health support, with leadership from the National Centre for Excellence in Mental Health (NCEMH). These efforts strengthen community resilience and promote long-term recovery.

Monitoring, Evaluation, and Continuous Improvement
Readiness and resilience are enhanced through ccontinuous learning mechanism, including After-Action Reviews (AARs), Joint External Evaluation (JEEs) and the Findings from these assessments inform ongoing improvements.

International Collaboration
Malaysia actively participates in regional and global health security initiatives, strengthening both national and regional health security while contributing to collective regional and international preparedness and response efforts.

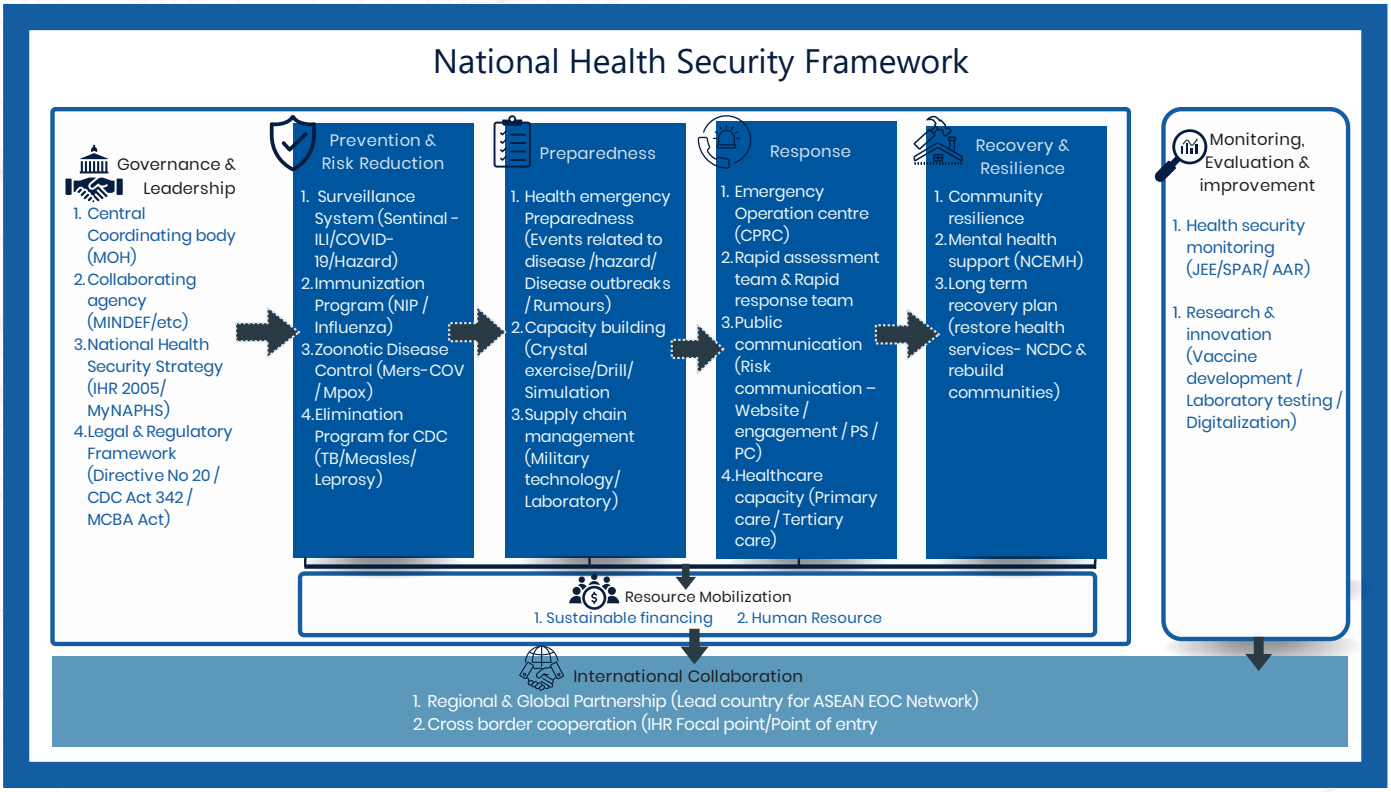

Figure 2: National Health Security Framework

Table 1: Strategic Objectives and the Technical Areas as well as indicator

No	Strategic Objective	Technical Areas		Key Indicators	
1.	Strengthening National Capacities to Prevent Public Health Threats	P1	Legal Instrument	P1.1	Legal instruments for IHR implementation
		P2	Financing	P2.1	Financial resources for IHR implementation
		P3	IHR Coordination	P3.1	National IHR focal point
				P3.2	Multisectoral coordination for IHR
				P3.3	Strategic planning for IHR, preparedness, or health security
		P4	Antimicrobial Resistance	P4.1	Multisectoral coordination on AMR
				P4.2	Surveillance of AMR
				P4.3	Prevention of MDRO
				P4.4	Optimal use of antimicrobial medicines in human health
				P4.5	Optimal use of antimicrobial medicines in animal health and agriculture
		P5	Zoonotic Diseases	P5.1	Surveillance of zoonotic diseases
				P5.2	Response to zoonotic disease
				P5.3	Sanitary animal production practices

		P6	Food Safety	P6.1	National systems for surveillance and reporting of foodborne diseases
				P6.2	Response and management of food safety emergencies
		P7	Biosafety & Biosecurity	P7.1	Biosafety and biosecurity systems in place
				P7.2	Biosafety and biosecurity training and practices in all relevant sectors
		P8	Immunization	P8.1	Vaccine's Coverage (measles) as part of national programme
				P8.2	National vaccine access and delivery
				P8.3	Mass vaccination for epidemics of VPDs
2.	Enhancing Surveillance and Laboratory Capacities for early detection of Public Health Threats	D1	National Laboratory system	D1.1	Specimen Referral and transport system
				D1.2	Laboratory quality system
				D1.3	Laboratory testing capacity modalities
				D1.4	Effective national diagnostic network
		D2	Surveillance	D2.1	Early warning surveillance function
				D2.2	Event verification and Investigation
				D2.3	Analysis and information sharing
		D3	Human Resources	D3.1	Multisectoral workforce strategy
				D3.2	Human resources for implementation IHR
				D3.3	Workforce training
				D3.4	Workforce surge during a public health event
3.	Building National Capacity to Respond Effectively to Public Health Emergencies	R1	Health Emergency Management	R1.1	Emergency risk assessment and readiness
				R1.2	Public health emergency operations centre (PHEOC)
				R1.3	Management of health emergency response
				R1.4	Activation and coordination of health personnel and teams in a public health emergency
		R2	Public Health and Security coordination	R2.1	Public health and security authorities
		R3	Health Services Provision	R3.1	Case management
				R3.2	Utilization of health services
				R3.3	Continuity of essential health services
		R4	Infection Prevention and Control	R4.1	Infection prevention and control programs
				R4.2	Health Care Acquired Infection surveillance

				R4.3	Safe environment in health facilities
		R5	Risk Communication and community Engagement	R5.1	RCCE system for emergencies
				R5.2	Risk communication
				R5.3	Community engagement
4.	Strengthening System for Points of Entry, Chemical event, Radiological and nuclear Preparedness and Response	PoE	Point of Entry	PoE.1	Core capacity requirements at all times for PoEs
				PoE.2	Public health response at PoEs
				PoE.3	Risk-based approach to international travel-related measures
		CE	Chemical Events	CE.1	Mechanisms for detecting and responding to chemical emergencies
				CE.2	Enabling environment in place for management of chemical events
		RE	Radiation Emergencies	RE.1	Mechanisms for detecting and responding to radiological and nuclear emergencies
				RE.2	Enabling environment in place for management of radiological and nuclear emergencies

The following table 2 aligns the key findings and recommendations from Health Security Evaluations and Initiatives in Malaysia.

Table 2: Key Findings and Recommendations from Health Security Evaluations and Initiatives in Malaysia

Initiative	Year	Key Strengths	Areas for Improvement	Recommendations
Joint External Evaluation (JEE)	2019	a) Strong multisectoral collaboration under MySED II. b) Established command and control mechanisms for emergency response (CPRC, NADMA). c) Robust surveillance and real-time data entry at district, state, and national levels. d) Strong immunization coverage.	a) Strengthen AMR surveillance in private and animal health sectors. b) Improve biosafety and biosecurity monitoring in private labs. c) Enhance capacity at Points of Entry (PoE). d) Improve coordination of zoonotic disease surveillance.	a) Expand AMR surveillance to private sectors. b) Conduct national surveillance evaluation systems. c) Conduct a holistic assessment of national legislation. d) Strengthen laboratory capacities for zoonotic diseases and biosafety measures. e) Improve financial investment into health security.

Malaysia Risk Profile	2023	a) Comprehensive risk analysis for natural disasters and public health emergencies (floods, haze, etc.) b) Strong disaster management response, especially for floods	a) Gaps in chemical and radiological hazard management. b) Weak cross-border surveillance for emerging diseases	a) Strengthen chemical hazard management and HazMat capabilities. b) Improve PoE screening and quarantine protocols. c) Enhance disaster preparedness and healthcare infrastructure resilience
5th Regional Collaboration Drill (RCD)	2023	a) Advances in health screening technologies at PoE. b) Improved coordination on cross-border disease management	a) Limited real-time data sharing across countries	a) Strengthen cross-border collaboration and data sharing mechanisms b) Increase laboratory diagnostic capacity and response capabilities
Emergency Preparedness and Response (EPR) Evaluation	2022	a) Well-established national policies and programs for emergency response b) Strong veterinary public health systems	a) Staffing shortages in veterinary services. b) Outdated guidelines in veterinary and contingency planning	a) Develop consistent policy review mechanisms. b) Enhance coordination between veterinary and human health services. c) Address differences between state and federal regulations
OIE PVS Gap Analysis	2017	a) Effective animal disease control measures b) Strong veterinary public health system	a) Staffing gaps in veterinary services, particularly in rural areas. b) Non-uniform animal identification systems across regions	a) Strengthen animal identification and traceability systems. b) Improve coordination between federal and state veterinary services. c) Address gaps in veterinary staffing, especially in rural areas

*These assessments form the foundation for ongoing improvements in Malaysia's **health security infrastructure** and provide a roadmap for future actions under the **MyNAPHS** framework

2.4 MYNAPHS DEVELOPMENT AND GOVERNANCE

The Malaysia National Action Plan for Health Security (MyNAPHS) was developed through a structured, data-driven, and multisectoral process led by the Ministry of Health. This approach was designed to create a comprehensive and robust framework tailored to Malaysia's specific health security challenges.

The development process was anchored on the expertise of **19 Technical Working Groups (TWGs)**, each focusing on a specific area of health security. These groups, along with extensive stakeholder consultations and workshops, ensured a truly multidisciplinary and inclusive approach. The plan was meticulously informed by insights from past evaluations, including the 2019 Joint External Evaluation (JEE) and the State Party Self-Assessment Annual Reporting (SPAR), providing a clear and data-driven foundation. The draft was then subjected to a rigorous review by a Steering Committee and international partners to ensure its alignment with both national priorities and global health security standards.

The governance framework for MyNAPHS is a collaborative structure designed to ensure accountability, efficiency, and continuous improvement. It is built around three key bodies that work in tandem:

- The **MyNAPHS Secretariat**, based within the Ministry of Health, serves as the central coordinating body. It is responsible for facilitating communication, monitoring progress, mobilizing resources, and leading periodic evaluations.
- **The Technical Working Groups (TWGs)** manage specific health security areas throughout the plan's lifecycle. They provide expert guidance, assist in action plan development, and ensure capacity-building efforts, such as training and skills updates, are effectively carried out.
- A high-level **Steering Committee** serves as the strategic governance body. It provides policy direction, offers oversight of the plan's implementation, and advises on resource mobilization. This committee also plays a crucial role in managing systemic risks and ensuring broad engagement across government sectors.

This comprehensive framework supports the plan's robust implementation, continuous evaluation, and adaptability to emerging and future health threats.

2.5 STRATEGIC AND PLAN OF ACTION

The plan outlines a six-year strategy to strengthen Malaysia's health security, ensuring alignment with the nation's broader health goals and its international commitments under the International Health Regulations (IHR) (2005), as amended in 2024.

2.5.1 VISSION AND MISSION

Vision:

Health Security for a safer and resilient Malaysia

Mission:

1 - Strengthen Legal and Policy Frameworks
2 - Expand Core Capacities for Preparedness and Response
3 - Strengthen Prevention, Detection, and Control of All Public Health Threats
4 - Advance Epidemic Potential Prevention, Including Immunization
5 - Strengthen Health Security at Points of Entry for preventing cross-border threats.
6 - Strengthen Preparedness and Response for Chemical and Radiological Events
7 - Integrate technology and data systems as a cross-cutting enabler for all health security missions.
8 - Strengthen National Health Security Literacy and Community Engagement

3.0 STRENGTHEN LEGAL AND POLICY FRAMEWORK

3.1 BACKGROUND AND CONTEXT

A robust and comprehensive legal framework forms the backbone of Malaysia's health security architecture, ensuring that p**reparedness, detection, and response mechanisms** operate within a clear mandate aligned with **the International Health Regulations (IHR 2005, revised 2024)**.

Within the **Ministry of Health (MOH)** domain, the **Prevention and Control of Infectious Diseases Act 1988 (Act 342)**, amended in 2025 has strengthened provisions for outbreak control, expanded enforcement powers, and introduced new measures to address emerging **health threats**, including zoonoses, antimicrobial resistance (AMR), and novel pathogens. Other MOH-administered laws, such as the **Food Act 1983** and the **Medicines (Advertisement and Sale) Act 1956**, provide legal basis for food safety, pharmaceutical regulation, and consumer protection.

Beyond the MOH, **laws and regulations** under **non-health ministry** play a critical role in supporting the One Health and multi-hazard approach, reinforcing Malaysia's collective health security system:

- **Animal Act 1953** and **Veterinary Public Health Ordinances** (Department of Veterinary Services, DVS) for zoonotic disease prevention, livestock health, and veterinary public health.
- **Fisheries Act 1985** (Department of Fisheries) for aquatic animal disease control.
- **Environmental Quality Act 1974** (Department of Environment) for pollution control and hazardous waste management relevant to environmental health risks.
- **Occupational Safety and Health Act 1994** and **Factories and Machinery Act 1967** (Department of Occupational Safety and Health) for workplace health protection and biosafety.
- **Customs Act 1967 and Quarantine** and **Inspection Services Act 2011** for cross-border control of goods, plants, and animals.
- **Private Healthcare Facilities and Services Act 1998** for regulating private health facilities, which play a critical role in surveillance and response.
- **Proposed Pathology Laboratory Act** (pending implementation) to regulate laboratory quality standards and mandatory reporting across public and private sectors.

Priority at DVS is to modernise and **strengthen animal health legislation**, particularly the **Animal Act 1953**, to address:

- Transboundary animal diseases and emerging zoonoses with pandemic potential.
- Mandatory integration of veterinary laboratory and field surveillance data into national One Health platforms.
- Stronger biosecurity and animal movement control regulations.
- Enhanced enforcement powers for disease outbreak investigation and cross-border collaboration.

The **private sector** is bound by both statutory obligations and contractual/public health directives during emergencies, but **formal mechanisms** for mandatory reporting, surge capacity mobilisation, and interoperability with public systems are still limited.

Despite these multiple legal instruments, **cross-sectoral legal harmonisation remains incomplete**. Overlapping mandates, jurisdictional fragmentation between federal and state authorities, and lack of formalised inter-agency protocols sometimes delay decisive action, particularly in **cross-border health emergencies** or events involving both human and animal health.

The COVID-19 pandemic underscored the need for **legal agility** which is the ability to introduce **rapid emergency measures** while safeguarding **human rights, transparency, and proportionality**. It also highlighted that subnational enforcement mechanisms, private–public collaboration clauses, and **data interoperability mandates** are critical to ensure uniform and timely action across Malaysia.

Malaysia must modernise its legal frameworks to establish clear and enforceable mandates for integrated surveillance and cross-sectoral data sharing, including with private laboratories, veterinary services, and environmental agencies. Strengthening the legal basis for joint cross-border health emergency responses through binding bilateral and regional instruments will help ensure timely and coordinated action.

Routine One Health legal coordination platforms should be institutionalised to align human, animal, and environmental health sectors under a cohesive regulatory framework. The implementation of the Pathology Laboratory Act, aligned with other laboratory quality and reporting standards, is critical to mandate the integration of diagnostic data into national surveillance systems. In parallel, the Animal Act 1953 should be amended and strengthened to reflect modern biosecurity risks, integrate with pandemic preparedness frameworks, and harmonise with international veterinary health standards, ensuring that animal health protection is effectively embedded within the broader national health security system.

3.2 KEY ISSUES AND CHALLENGES

Malaysia's legal framework for health security is broad but fragmented, with outdated provisions in key areas such as the Animal Act 1953 and an absence of a fully implemented Pathology Laboratory Act. While federal laws cover most One Health domains, cross-sectoral harmonisation is incomplete, and private sector obligations remain loosely defined. Overlapping mandates, jurisdictional fragmentation, and inconsistent subnational enforcement reduce the speed and uniformity of response. Closing these gaps will require targeted legislative reform, the institutionalisation of mandatory data sharing across human, animal, and environmental sectors, and formal legal mechanisms for cross-border cooperation to address threats with pandemic and epidemic potential.

Key Factors Influencing Performance

Category	Details
Strengths	• Comprehensive set of federal laws under MOH and non-MOH agencies supporting One Health (e.g., Act 342, Food Act 1983, Animal Act 1953, Environmental Quality Act 1974). • Recent amendment to Act 342 (2025) strengthening outbreak control provisions and enforcement powers. • Established legal provisions for cross-sectoral hazard management (human, animal, environmental). • Existing veterinary laboratory and animal health legislation enabling DVS-led zoonotic disease detection and control. • Quarantine and inspection laws providing a basis for cross-border health risk management.
Weaknesses / Gaps	• Animal Act 1953 outdated in addressing modern biosecurity risks, emerging zoonoses, and mandatory inte gration of veterinary data into One Health surveillance. • Absence of an implemented Pathology Laboratory Act, resulting in inconsistent laboratory quality regulation and non-mandatory private/veterinary lab data reporting. • Overlapping mandates and jurisdictional fragmentation between federal and state agencies slowing emer gency responses.

Category	Details
	• Limited formal mechanisms for private sector engagement in surveillance, data sharing, and surge capacity mobilisation. • Inconsistent enforcement and legal interpretation at subnational levels.
Opportunities	• Legislative reform to modernise animal health laws and integrate veterinary surveillance into national One Health platforms. • Implementation of the Pathology Laboratory Act to standardise laboratory quality, biosafety, and reporting requirements. • Strengthening regional and bilateral legal instruments for cross-border emergency cooperation. • Institutionalising One Health legal coordination platforms for routine joint review and preparedness planning. • Leveraging ASEAN and OIE frameworks for harmonisation of veterinary and human health legislation.
Threats	• Delays in legislative reform due to multi-agency and multi-level governance complexity. • Divergence in legal interpretations across sectors and states, causing inconsistent enforcement. • Rapidly evolving pandemic threats outpacing the speed of legislative updates. • Trade, travel, and cross-border animal movement increasing the risk of high-consequence zoonotic introductions.

3.3 SUPPORTING ACTION

Presents a strategic action and operational plan designed to strengthen Malaysia's legal and policy frameworks for national health security. It serves as a comprehensive roadmap detailing key activities, time frames, and technical areas to ensure a robust and coordinated response to public health emergencies. The plan is organized into three main goals, each with specific objectives and a detailed list of supporting actions.

Mission 1: Strengthen Legal and Policy Frameworks
Goal 1.1: Strengthen the Legal and Policy Frameworks for Health Security

Objective	Activities	Time frame	Technical Area	Indicator
1. Develop and enforce a comprehensive legal framework for all-hazards health security.	Conduct a legal review of existing national health security policies and laws.		P1 – Legal Instrument	Completion of legal and policy reviews.
	Draft and pass new legislation or amend existing laws to mandate health security programs.		P1 – Legal Instrument	Number of new or amended laws.
	Establish a multi-sectoral task force to coordinate the enforcement of health security laws.		P1 – Legal Instrument	Number of multi-sectoral task forces established.

Goal 1.2: Enhance Foundational Frameworks for Public Health Emergencies

Objective	Activities	Time frame	Technical Area	Indicator
1. To create, review, and update essential national policies and guidelines	Develop, review, and update essential national health security policies, guidelines, and standard operating procedures (SOPs) across all relevant sectors including; a) health emergency management; b) case management; c) chemical event; d) radiological emergency; e) human resources; f) IPC; g) points of entry; h) international travel-related measures; and i) Accessing Emergency Health Financing to ensure a comprehensive and coordinated framework for preparedness and response.		P1 - Legal Instrument P2 - Financing D3 - Human Resources R1 - Health Emergency Management R3 - Health Service Provision R4 - Infection Prevention and Control PoE - Point Of Entry CE - Chemical Events RE - Radiation Emergency	**Health Emergency Management:** The national guidelines and SOPs for health emergency management are reviewed and updated on schedule. **Case Management:** Standard operating procedures (SOPs) for case management during health crises are reviewed and updated. **Chemical Event:** Chemical event guidelines are regularly tested and updated at least once a year. **Radiological Emergency:** A standard operating procedure (SOP) for response and communication during a radiological emergency is developed. **Human Resources:** The draft guidelines on human resource management during public health

Objective	Activities	Time frame	Technical Area	Indicator
				emergencies are developed and updated. **IPC:** A national IPC action plan is developed and implemented, outlining costs and sources of financing. **Points of Entry:** Updated SOPs for public health activities at all Points of Entry (PoE) are in place. **International Travel-related Measures:** The national multisectoral risk-based approach for international travel-related measures is revised and updated accordingly. **Accessing Emergency Health Financing:** Guidelines for accessing emergency health funds are developed.
2. To formalize legal and regulatory support for key public health programs.	Formalize and institutionalize the legal, regulatory, and financial frameworks required to support essential public health programs, including the drafting and passing of dedicated legislation, the establishment of a dedicated		P1 - Legal Instrument P2 – Financing	Legal & Regulatory Frameworks: 1) Specific health security legislation is drafted and passed (e.g., Pathology Act, Biosecurity Act/ Regulation).

Objective	Activities	Time frame	Technical Area	Indicator
	financing mechanism, and the securing of resources for key health security domains.		P7 - Biosafety and Biosecurity D1 - National Laboratory D3 - Human Resources R1 - Health Emergency Management R3 - Health Service Provision R4 - Infection Prevention and Control PoE - Point of Entry CE - Chemical Events RE - Radiation Emergency	2) A legal framework for mandatory IPC programs is established. 3) A functional database of existing policies and legislation for key public health areas (e.g., chemical event management) is created. Financial Frameworks: 1) A dedicated health security financing mechanism is established. 2) A dedicated IPC budget is created and approved at the national level. 3) Specific financing sources (e.g., government, international donors) are identified and secured.
3. Formalize the foundational legal and financial frameworks to support national health security.	Develop and implement the legal frameworks and financial mechanisms necessary to strengthen national health security, including:	Immediate	P1 - Legal Instrument P2 - Financing	National consultations are conducted.

Objective	Activities	Time frame	Technical Area	Indicator
	a) legal framework for Public-Private Partnerships (PPPs); b) mobilizing domestic and external resources; and c) establishing a dedicated emergency fund.			Legal review conducted and new legal instruments drafted. Domestic and external resources are mobilized. Emergency Health Security Fund is developed. Legal framework for PPPs developed and standardized agreements/MOUs drafted.

Goal 1.3: Improve Inter-agency Coordination and Information Sharing

Objective	Activities	Time frame	Technical Area	Indicator
1. To establish formal communication channels and working groups for multisectoral collaboration.	Develop mechanism to formalize the information sharing between public health and security authorities both for routine and during emergencies	Short term	R2 - Linking Public Health Services	Formal information sharing mechanism developed.
	Establish Strategic Communications Committee at national and state levels for coordination of risk communication work	Immediate	R5 - Risk Communication and Community Engagement	Strategic Communications Committees established.

Objective	Activities	Time frame	Technical Area	Indicator
	Form an Intersectoral Technical Working Group	Immediate	PoE - Point of Entry	Intersectoral Technical Working Group established.
	Annual or biannual Inter-agency coordination meeting on radiological emergency events in Malaysia or as required	Long term	RE - Radiation Emergency	Coordination meetings are held regularly.
	Nomination of National IHR Authority following interministerial engagement (Jawatankuasa Pemandu IHR Kebangsaan, Jawatankuasa Teknikal IHR Kebangsaan)	Immediate	P3 - National IHR Focal point	National IHR Authority and committees are nominated and established.
	Establish a multi-sectoral task force to coordinate enforcement of health security laws	Short term	P1 - Legal Instrument	Multi-sectoral task force is established.
2. To develop standardized protocols and plans for a coordinated response.	Develop a National Public Health Emergency Contingency Plan for PoE Response	Immediate	PoE - Point of Entry	National Contingency Plan for PoE developed.
	Develop Risk Communication Guideline for Public Health Emergencies	Immediate	R5 - Risk Communication and Community Engagement	Risk communication guideline developed.
	Public Awareness and Legal Literacy Campaign	Short term	P1 - Legal Instrument	Public awareness campaign launched and legal literacy training conducted.

Goal 1.4: Ensure Readiness and Competency of the Workforce and Infrastructure

Objective	Activities	Time frame	Technical Area	Indicator
1. To ensure readiness and competency of the national workforce and infrastructure by establishing clear roles, plans, and institutional mechanisms.	Develop and Institutionalize Foundational Preparedness and Response Frameworks; a) Developing a national master plan of human resources for health. b) Standardizing the job description of healthcare workers. c) Establishing a National IPC Committee to coordinate efforts at all levels. d) Developing and reviewing contingency plans for animal diseases. e) Reviewing and updating SOP guidelines for human resources mobilization during a public health emergency (PHE).		D3 - Human Resources R4 - Infection Prevention and Control R1 - Health Emergency Management	**National Master Plan Developed:** A national master plan of human resources for health is developed and officially approved. **Job Descriptions Standardized:** A full set of standardized job descriptions for all key healthcare workers is established and adopted. **National IPC Committee Established:** The National IPC Committee is officially set up and is functioning with clear terms of reference. **Contingency Plans Developed:** Contingency plans for animal diseases are developed and regularly reviewed and updated.

Objective	Activities	Time frame	Technical Area	Indicator
				SOPs Reviewed and Updated: Standard operating procedures (SOPs) for human resources mobilization during public health emergencies (PHE) are reviewed and updated on schedule.
2. To build the competence of the workforce across all relevant sectors by providing essential training on implementing health security laws and managing emergency resources.	Conduct Multi-Sectoral Training and Capacity Building; a) Conducting training programs for law enforcement agencies and health officers to implement health security laws. b) Conducting training on accessing and utilizing emergency health funds.		P1 - Legal Instrument P2 - Financing	Legal Literacy Training Conducted: Training programs on legal literacy for law enforcement agencies and health officers are conducted. Training on Fund Access Conducted: Training sessions on accessing and utilizing emergency health funds are conducted for relevant personnel.

Objective	Activities	Time frame	Technical Area	Indicator
3. To ensure essential protocols and assets are in place.	Procurement of Level C PPE in phases for health care facilities in high-risk areas	Long term	CE - Chemical Events	**Level C PPE is procured for healthcare facilities.**
	Procurement of mobile decontamination shelter in health care facilities by region	Long term	CE - Chemical Events	**Mobile decontamination shelters are procured.**
	Building fixed decontamination facility in health care facilities by region	Long term	CE - Chemical Events	**Fixed decontamination facilities are built.**
	Procurement of personal dosimeter and radiation detection devices in phases	Long term	RE - Radiation Emergency	Dosimeters and detection devices are procured.
	Procurement and maintenance of medical equipment	Long term	R3 - Health Service Provision	**Medical equipment is procured and maintained.**
	Procurement of additional vehicle (4x4) and medical equipment	Long term	R3 - Health Service Provision	**Vehicles and medical equipment are procured.**

Objective	Activities	Time frame	Technical Area	Indicator
4. To implement a robust system for tracking health-related data.	Develop a reporting methodology for multiple agencies to provide data and notification of chemical exposures/poisoning	Short term	CE - Chemical Events	Reporting methodology for chemical events developed.
	Develop a platform to compile information on radiological incidents/accidents and high-risk areas in Malaysia	Short term	RE - Radiation Emergency	Information platform for radiological events is developed.
	Evaluation of All Legal framework (ensure full alignment with MyNAPHS)	Long term	P1 - Legal Instrument	Legal frameworks evaluated for alignment with MyNAPHS.
	Developed standardized monitoring and evaluation protocols to track compliance with health security laws	Long term	P1 - Legal Instrument	M&E protocols for legal compliance are developed.
	Framework Development and Mechanism for Data collection and Reporting	Short term	D2 - Surveillance	Cross-sectoral framework for EWSS and real-time data collection mechanism are developed.

4.0 EXPAND CORE CAPACITIES FOR PREPAREDNESS AND RESPONSE

4.1 BACKGROUND AND CONTEXT

Malaysia's preparedness and response to public health emergencies rely heavily on the strength of its laboratory systems, the availability of skilled human resources, and the resilience of supply chains and logistics. The **national public health laboratory network** anchored by the National Public Health Laboratory (NPHL), the Institute for Medical Research (IMR), and five State Public Health Laboratories forms the backbone of the country's diagnostic capacity. This is complemented by hospital-based diagnostic laboratories and an extensive network of **private laboratories**, which provide essential surge testing capabilities during emergencies.

The **veterinary laboratory network**, led by the Veterinary Research Institute (VRI) under the Department of Veterinary Services (DVS) and supported by regional veterinary laboratories, plays a critical role in detecting **transboundary animal diseases, zoonotic pathogens, and food safety hazards**. These capacities contribute to Malaysia's compliance with the **One Health approach**, linking human, animal, and environmental health security.

Collectively, these facilities provide **molecular diagnostics, genomic sequencing, and a range of diagnostic platforms** (including standard and rapid methods) alongside specialised reference testing for high-risk pathogens, particularly those with **epidemic and pandemic potential** such as influenza, novel coronaviruses, viral haemorrhagic fevers, and emerging zoonoses. They also support **antimicrobial resistance (AMR) surveillance**. Biodiversity-related pathogen surveillance, including monitoring of wildlife and invasive species, is conducted in collaboration with environmental and wildlife agencies, though coverage remains limited.

The **COVID-19 pandemic** accelerated investment in diagnostic capacity, resulting in decentralised PCR testing, expanded genomic sequencing infrastructure, and mobilisation of laboratory resources across public, hospital-based, private, and veterinary sectors. These advancements improved Malaysia's ability to detect and characterise emerging threats in near real time. However, the sustainability of these gains is challenged by **workforce shortages**, particularly microbiologists, epidemiologists, veterinary diagnosticians, biosafety officers, and field outbreak teams in rural and high-burden districts.

Some surveillance innovations, such as **wastewater-based epidemiology**, remain underutilised due to **low sample submission rates, high operational costs, and**

limited geographic coverage, affecting their integration into routine early warning systems. Additionally, **biosecurity-related laboratory testing for environmental and biodiversity threats** is not consistently applied across all regions, leaving gaps in detecting potential spill over events.

Supply chains for laboratory reagents, PPE, vaccines, and other critical consumables are stronger than pre-pandemic levels but remain vulnerable to **global market disruptions**. The deployment of **mobile laboratories** and optimisation of courier networks could help reduce delays in sample transport from remote areas but are not yet fully operationalised. Concurrent emergencies such as **floods, haze, and zoonotic spillovers linked to biodiversity changes** can divert laboratory resources away from outbreak response.

Integration between **human, animal, and environmental laboratories** is improving but remains largely **event-based rather than routine**, with minimal interoperability of data systems. Private laboratory data and environmental biosecurity results are not consistently incorporated into national surveillance in real time. The **absence of an updated, enforceable pathology law** limits regulatory oversight, weakens enforceability of quality standards, and hinders mandatory cross-sectoral data integration.

Malaysia must strengthen the integration between laboratory and surveillance systems across human, animal, plant, and environmental health sectors to enable timely detection and coordinated response to emerging threats. Efforts should include expanding the trained workforce and decentralising diagnostic capacity, particularly to rural and biodiversity-sensitive areas where early intervention can mitigate wider spread. Equally important is the institutionalisation of routine multisectoral data sharing and joint risk assessment mechanisms to ensure coordinated, evidence-based decision-making across sectors. These improvements must be supported by sustainable financing, strategic stockpile management, and resilient logistics systems that can maintain operational continuity during multi-hazard events, including biosecurity-related emergencies.

4.2 KEY ISSUES AND CHALLENGES

Malaysia's laboratory network, while technically strong, is operationally fragmented. Key gaps include a lack of real-time data sharing between human, animal, environmental, and private laboratory systems, which hinders effective surveillance. The workforce faces imbalances, with shortages in rural and high-burden districts limiting surge capacity. Supply chain vulnerabilities for critical reagents, PPE, and consumables also pose a significant challenge during global disruptions. Legislative gaps, such as the absence of an updated pathology law, prevent the enforcement of standards, data sharing mandates, and the integration of private and veterinary data.

Furthermore, there is an underutilization of innovative surveillance tools like wastewater and biosecurity testing due to limited coverage and high costs. The nation also faces limited preparedness for concurrent emergencies, where climate-related and biodiversity-driven threats may compete for resources.

Key Factors Influencing Performance

Category	Details
Strengths	• Nationwide network of public health laboratories anchored by NPHL, state laboratories, IMR, and supported by hospital-based and private diagnostic facilities with established referral systems. • Advanced molecular, genomic, and specialised diagnostic capabilities for priority pathogens, including those with epidemic and pandemic potential. • Demonstrated capacity for large-scale resource mobilisation, rapid infrastructure scaling, and multi-sectoral coordination during the COVID-19 pandemic. • Existing veterinary laboratory network under DVS contributing to zoonotic disease detection.
Strengths	• Shortages of skilled laboratory personnel, particularly in rural, remote, and high-burden districts, limiting surge capacity during emergencies. • Inconsistent resilience of supply chains for critical laboratory reagents, PPE, and medical supplies, with vulnerability to global market disruptions. • Limited integration of private laboratory data, veterinary diagnostics, and environmental health testing results into national surveillance systems in real time. • Event-based rather than routine collaboration between human and animal health laboratories, with minimal interoperability of data systems. • Underutilisation of innovative surveillance tools such as wastewater monitoring due to low coverage, high costs, and sustainability challenges. • Absence of an updated, enforceable pathology law to mandate quality standards and cross-sectoral data sharing.
Opportunities	• Strengthening public–private partnerships to expand laboratory coverage, surge testing capacity, and data sharing arrangements. • Deployment of mobile laboratories and optimised courier networks to reduce turnaround times for sample transport from rural and hard-to-reach areas.

Category	Details
	• Integration of laboratory information systems across human, animal, and environmental sectors to enable real-time, interoperable surveillance. • Scaling up wastewater surveillance, genomic sequencing, and biodiversity-linked pathogen monitoring as part of early warning systems.
Threats	• Global shortages of laboratory reagents and essential supplies during simultaneous international emergencies. • Loss of skilled health professionals due to brain drain and competition from the private sector or international organisations. • Increasing frequency of concurrent public health, environmental, and climate-related emergencies (e.g., floods, haze) diverting resources from outbreak response. • Emerging high-consequence zoonotic threats through trade, food imports, wildlife trafficking, and cross-border animal movement.

4.3 SUPPORTING ACTION

In line with the mission to expand core capacities for preparedness and response, the strategic plan outlines a series of supporting actions. These actions are designed to strengthen key pillars of public health infrastructure, including legal frameworks, financing, and technical expertise. The following table details the objectives, activities, and timeframes for these critical initiatives, providing a roadmap for achieving a robust and resilient national health system.

Mission 2: Expand Core Capacities for Preparedness and Response
Goal 2.1: Establish a Fully Integrated and Interoperable Multisectoral Laboratory Network

Objective	Activities	Time frame	Technical Area	Indicator
1. Develop and deploy a single, unified data-sharing platform that can aggregate	Establish a dedicated task force with representatives from MOH, DVS, private laboratories, and environmental agencies.		P4 AMR P5 Zoonotic	Establishment of a central database for One Health surveillance data.

Objective	Activities	Time frame	Technical Area	Indicator
real-time diagnostic results from public, private, and veterinary laboratories.	Establish a dedicated task force with representatives from MOH, DVS, private laboratories, and environmental agencies.		D1 National Laboratory D2 Surveillance	
	Strengthen national reference laboratories and lab capacity		D1 National Laboratory	
	Develop a database system/ inventory (for bio risk management)		P7 Biosafety & Biosecurity	A functional national bio risk inventory.
2. Formalize routine, cross-sectoral data sharing protocols and reporting standards to ensure seamless information flow for surveillance and outbreak response.	Establish multisectoral coordination mechanisms and regular meetings.		P4 AMR P5 Zoonotic D1 National Laboratory D2 Surveillance	Number of formal data-sharing protocols approved
	Regularly share surveillance information and conduct periodic interagency meetings.		P4 AMR P5 Zoonotic D1 National Laboratory D2 Surveillance	AFrequency of interagency meetings to review and share data.
3. Conduct joint risk assessments and	Establish a National One Health Committee and develop a joint action plan.		P5 Zoonotic	A functioning National One Health Committee.

Objective	Activities	Time frame	Technical Area	Indicator
data analysis on a regular basis, integrating insights from human, animal, and environmental health data to identify emerging threats.				Completion of a joint action plan for zoonoses.
	Conduct joint simulation exercises.		P5 Zoonotic	Number of joint risk assessment reports produced per year.

Goal 2.2: Address Workforce Shortages and Decentralize Diagnostic Capacity

Objective	Activities	Time frame	Technical Area	Indicator
1. Launch a targeted recruitment and training program to fill critical gaps in skilled personnel, such as microbiologists and field epidemiologists, especially in rural and remote districts.	Conduct training for the CPRC workforce and MyCHAMPION on preparedness and response, including workshops and CME sessions for awareness and advocacy, and create a centralized database.	Long Term	P3 National IHR Focal point R1 Health Emergency R5 Risk Communication & Community Engagement	Number of training sessions and workshops conducted Database of CPRC workforce and trained professionals established

Goal 2.2: Address Workforce Shortages and Decentralize Diagnostic Capacity

Objective	Activities	Time frame	Technical Area	Indicator
1. Create and maintain a strategic national stockpile of critical	Update the emergency/ disaster resources regularly, and identify and map emergency	Long Term	R1 Health Emergency Management	A functioning system for stockpiling and distribution, with

Objective	Activities	Time frame	Technical Area	Indicator
laboratory reagents, PPE, and medical supplies to mitigate the impact of global supply chain disruptions.	resources to improve stockpile mechanisms.			regular inventory updates.
2. Optimize logistics by establishing a dedicated courier network to ensure the timely and secure transport of biological samples from collection sites to laboratories.	establish a mechanism and agreement for transporting specimens and reference material between the human, food, environment and animal sectors	Long term	P2 Financing D1 National Laboratory	Number of formal agreements and MOUs signed for inter-sectoral specimen transport.
3. Diversify national and state-level procurement strategies by forging partnerships with both local and international suppliers to avoid single points of failure.	Mobilize domestic and external resources by forging partnerships with both local and international suppliers.	Long term	P2 Financing	The number of local and international partnerships established, and the percentage of critical supplies sourced from diversified suppliers.

Goal 2.4: Institutionalize and Scale-Up Innovative Surveillance and Monitoring Systems

Objective	Activities	Time frame	Technical Area	Indicator
1. Pilot and expand the use of wastewater-based epidemiology in a wider range of high-density urban and high-risk districts to serve as an early warning system for pathogens.	Develop environmental AMR surveillance and produce an annual One Health AMR Surveillance report involving human and animal health, food safety, and the environment.	Long Term	P4 Antimicrobial Resistance P5 Zoonotic Diseases D2 Surveillance	A functional early warning system based on environmental and wastewater data.
2. Collaborate with environmental and wildlife agencies to increase the frequency and geographic coverage of biodiversity-related pathogen surveillance to detect potential spillover events.	Enhance collaborative surveillance on priority zoonotic diseases among relevant agencies through regular sharing of surveillance information, and conducting periodic interagency technical meetings at state and national levels	Long term	P5 Zoonotic Diseases D2 Surveillance	Number of inter-sectoral surveillance activities conducted per year. Development of a National Strategic Plan One Health Joint Plan of Action.
3. Integrate advanced genomic sequencing and bioinformatics into routine surveillance activities to track the evolution and spread of pathogens in near real-time.	Expand sequencing capability and bioinformatics analysis for surveillance and outbreaks (one pathogen per year).	Long term	D1 National Laboratory	The number of pathogens analysed using genomic sequencing and bioinformatics per year

5.0 STRENGTHEN PREVENTION, DETECTION, AND CONTROL OF ALL PUBLIC HEALTH THREATS

5.1 BACKGROUND AND CONTEXT

Malaysia's preparedness and response to public health emergencies depends on the strength of its laboratory systems, the availability of skilled human resources, and the resilience of supply chains and logistics. The **national public health laboratory network**, anchored by the National Public Health Laboratory (NPHL), 5 State Public Health Laboratories, and the Institute for Medical Research (IMR), forms the backbone of the country's diagnostic capacity. This is complemented by diagnostic laboratories within public hospitals and an extensive network of private laboratories, which provide essential surge testing capabilities during emergencies.

These facilities collectively provide molecular diagnostics, genomic sequencing, and a range of diagnostic platforms (both standard and rapid), as well as specialised reference testing for high-risk pathogens particularly those with **epidemic and pandemic potential** alongside antimicrobial resistance (AMR) surveillance. Capabilities extend to priority diseases such as influenza, novel coronaviruses, viral haemorrhagic fevers, and **emerging zoonotic infections linked to biodiversity interfaces** (e.g., Nipah virus, rabies, avian influenza), enabling early detection and characterisation of threats before they escalate.

Malaysia's **veterinary laboratory network**, led by the Veterinary Research Institute (VRI) and supported by regional veterinary laboratories, provides diagnostics for **transboundary animal diseases**, zoonotic pathogens, and **wildlife-origin threats**, alongside food safety hazards. This network is crucial for **biosecurity enforcement**, such as screening wildlife imports, monitoring livestock trade, and detecting invasive species that could threaten agriculture, ecosystems, and human health.

Surveillance activities increasingly reflect a **One Health and biodiversity-sensitive approach**, incorporating event-based surveillance, sentinel animal surveillance, and targeted environmental testing. For example, wastewater surveillance and wildlife pathogen monitoring contribute to early warning for novel pathogens emerging from ecological disruption or illegal wildlife trade. However, these initiatives face operational challenges, including low sample submission rates, limited geographic coverage, and high operational costs.

While the **COVID-19 pandemic** accelerated investment in laboratory capacity, resulting in decentralised PCR testing and expanded genomic sequencing across multiple sectors, integration between **human, animal, and environmental health laboratory systems remain largely event-driven rather than institutionalised**.

Data sharing between public, private, and veterinary laboratories is ad hoc, and there is no unified national platform that fully incorporates biodiversity and biosecurity surveillance data into routine public health risk assessment.

Malaysia's laboratory and surveillance systems are technically strong but **operationally fragmented.** Without systematic integration of biodiversity monitoring (e.g., wildlife health checks, habitat surveillance, invasive species control) and biosecurity protocols (e.g., biosafety standards for handling exotic species, secure transport of high-risk samples), early warning capacity for health threats originating from environmental and cross-border sources remains limited.

5.2 KEY ISSUES AND CHALLENGES

While Malaysia's laboratory capacity is technically advanced, it is **not yet fully integrated with biodiversity and biosecurity monitoring systems**. There is no institutionalised mechanism for **routine multisectoral surveillance** that brings together data from human, animal, environmental, and wildlife health systems into a unified early warning framework. Laboratory–surveillance linkages across sectors remain largely event-driven, with fragmented governance and inconsistent interoperability of data platforms.

The absence of a dedicated **Pathology Act** covering public, private, and veterinary sectors weaken regulatory enforcement, limits the mandatory reporting of biodiversity-related health risks, and reduces accountability for cross-sectoral data sharing. Current multisectoral collaboration is often reactive during outbreaks but lacks sustained, proactive integration into risk assessment and preparedness planning.

Key Factors Influencing Performance

Category	Key Points
Strengths	• Nationwide public health laboratory network with advanced molecular and genomic diagnostic capacity. • Established veterinary laboratory network capable of detecting transboundary animal diseases and zoonotic threats. • Experience in rapid scaling of laboratory capacity during COVID-19. • Emerging biodiversity-linked pathogen surveillance (e.g., wildlife disease monitoring, environmental sampling).
Weaknesses / Gaps	• Event-based rather than routine integration of human, animal, and environmental laboratory data. • Limited incorporation of biodiversity monitoring and wildlife health data into health security decision-making. • Workforce shortages in rural, remote, and high-biodiversity hotspots, reducing surge and field response capacity. • Inconsistent biosecurity enforcement in wildlife trade, plant/animal imports, and invasive species control.

Category	Key Points
Opportunities	• Expansion of integrated laboratory information systems linking human, animal, and environmental sectors. • Strengthening public–private partnerships to include biodiversity and biosecurity monitoring. • Leveraging global biodiversity and wildlife health networks (e.g., OIE-WAHIS, GBIF, CITES data). • Using AI-enabled predictive modelling to detect health risks from biodiversity changes and illegal wildlife trade patterns.
Threats	• Increased pathogen spillover risk due to habitat loss, biodiversity decline, and illegal wildlife trade. • Introduction of invasive species and exotic pathogens through unregulated imports. • Global shortages of laboratory reagents during concurrent health and environmental crises. • Climate change–driven shifts in vector and wildlife populations, altering disease transmission dynamics.

5.3 SUPPORTING ACTION

To address the identified gaps, Malaysia must focus on five key strategic areas. These include institutionalizing cross-sectoral integration of laboratory and surveillance systems, establishing a comprehensive national framework for data sharing across human, animal, environmental, and wildlife sectors, and strengthening biosecurity enforcement for imports. Furthermore, it is crucial to embed biodiversity-related surveillance into national early warning systems and secure sustainable financing for these critical multi-sectoral operations. These actions are essential for building a more resilient and integrated public health defense against emerging threats.

Mission 3 - Strengthen Prevention, Detection, and Control of All Public Health Threats

Goal 3.1: Institutionalize Cross-Sectoral Laboratory-Surveillance Integration

Objective	Activities	Time frame	Technical Area	Indicator
1. Pilot and expand the use of wastewater-based epidemiology in a wider range of high-density urban and high-risk districts to serve as an early warning system for pathogens.	Develop environmental AMR surveillance and produce an annual One Health AMR Surveillance report involving human and animal health, food safety, and the environment.	Long Term	P4 Antimicrobial Resistance P5 Zoonotic Diseases D1 National Laboratory D2 Surveillance	The number of multisectoral coordination mechanisms established and the frequency of meetings held annually. The number of formal data-sharing protocols approved.
2. Collaborate with environmental and wildlife agencies to increase the frequency and geographic coverage of biodiversity-related pathogen surveillance to detect potential spillover events.	Enhance collaborative surveillance on priority zoonotic diseases among relevant agencies through regular sharing of surveillance information, and conducting periodic interagency technical meetings at state and national levels	Long term	P5 Zoonotic Diseases D1 National Laboratory D2 Surveillance	A functioning National One Health Committee. Number of joint risk assessment reports produced per year

Goal 3.2: Strengthen Biosecurity and Surveillance for Emerging Threats

Objective	Activities	Time frame	Technical Area	Indicator
1. Strengthen biosecurity enforcement for wildlife, plant, and animal imports, linking	Establish a regulation on Biosafety & Biosecurity; Develop a database system/inventory;	Long Term	P7 Biosafety & Biosecurity	A new regulation on Biosafety & Biosecurity enacted.

Objective	Activities	Time frame	Technical Area	Indicator
enforcement to laboratory confirmation and surveillance triggers.	Conduct periodic inspections and training on sanitary practices.		P5 Zoonotic Diseases	Reduction in the number of illegal wildlife and animal import-related incidents.
2. Embed biodiversity-related surveillance into national early warning systems, supported by interoperable digital platforms.	Develop environmental AMR surveillance and produce an annual One Health AMR Surveillance report involving human and animal health, food safety, and the environment.	Long Term	P7 Biosafety & Biosecurity P4 Antimicrobial Resistance P5 Zoonotic Diseases D2 Surveillance	A functional environmental surveillance system. Annual publication of a One Health / Integrated – AMR Surveillance report.

Goal 3.3: Secure Sustainable Financing

Objective	Activities	Time frame	Technical Area	Indicator
1. Secure sustainable financing for multi-sectoral laboratory and surveillance operations, especially for high-cost biodiversity-linked and environmental pathogen monitoring.	Conduct national consultations on health security financing Establish a dedicated health security financing mechanism	Long Term	P2 Financing	Establishment of a dedicated health security financing mechanism.

Goal 3.4: Enhance Biosecurity for Biological and Environmental Risks

Objective	Activities	Time frame	Technical Area	Indicator
1. Fortify the national biosafety and biosecurity system.	Develop a national database system/inventory for biosafety and biosecurity.	Long Term	P7 - Biosafety & Biosecurity)	A functional database system is implemented.
	Establish a National Biorisk Curriculum Program.		P7 - Biosafety & Biosecurity)	A National Biorisk Curriculum Program is established.

Goal 3.5: Strengthen Food Safety and Food Chain Security

Objective	Activities	Time frame	Technical Area	Indicator
1. Enhance monitoring and surveillance programs for foodborne diseases and contaminants.	Conduct a Total Diet Study (TDS) every 5 years to determine chemical exposure in the population.	Long Term	P6 - Food Safety	A Total Diet Study is conducted every 5 years.
	Strengthen the food safety and quality assurance of food animal origin along the food chain		P6 - Food Safety	Increased compliance with food safety and quality standards.

6.0 ADVANCE EPIDEMIC POTENTIAL PREVENTION, INCLUDING IMMUNIZATION, ANTIMICROBIAL RESISTANCE AND FOOD SAFETY

6.1 BACKGROUND AND CONTEXT

Preventing epidemics before they occur is a cornerstone of Malaysia's health security strategy, with food safety and food chain management playing a critical role in reducing epidemic potential. Many diseases with the capacity to spark large-scale outbreaks stem from preventable hazards such as contaminated food, unsafe water, poor hygiene, environmental contamination, and biosecurity breaches within the animal and agricultural sectors.

Malaysia's food safety system operates under the **Food Act 1983** and its associated regulations, supported by the Ministry of Health's **Food Safety and Quality Division**, the **Department of Veterinary Services (DVS)**, and the **Ministry of Domestic Trade**. Surveillance for priority foodborne pathogens including Salmonella, Listeria, Vibrio, and other hazards is integrated into national laboratory networks, with outbreak investigations coordinated through the **Public Health Emergency Operation Centre** (PHEOC) when required. Preventive measures such as Hazard Analysis and Critical Control Point (HACCP) certification and risk-based inspections are in place, but enforcement remains uneven, particularly for small-scale producers, informal markets, and certain segments of the food supply chain in biodiversity-sensitive or remote areas.

Malaysia has also strengthened epidemic potential prevention for zoonotic and vector-borne diseases including dengue, Japanese encephalitis, Nipah virus, and avian influenza through environmental health interventions, vector control programmes, animal health monitoring, and community awareness campaigns. The **One Health** approach underpins these efforts, linking human, animal, plant, and environmental health systems. However, the current level of integration is inconsistent; food safety surveillance, environmental monitoring, and zoonotic disease prevention activities are often implemented in parallel rather than as harmonised, multi-hazard interventions.

Climate change, urbanisation, intensive farming, wildlife trade, and increased demand for animal protein continue to amplify risks at the human–animal–environment interface. Cross-border trade and movement of goods, live animals, and agricultural products introduce further biosecurity challenges, particularly when legal frameworks do not fully address transboundary risks. While there is existing collaboration among agencies, gaps remain in **multisectoral surveillance, legal alignment, rapid data exchange, and enforcement capacity**, especially for early detection of emerging threats that could compromise food chain safety and biodiversity conservation.

6.1 BACKGROUND AND CONTEXT

Key Factors Influencing Performance

Category	Details
Strengths	• Comprehensive national food safety legislation, including the **Food Act 1983**, supported by established inspection and certification systems. • Integrated laboratory surveillance for priority foodborne pathogens such as **Salmonella, Listeria, and Vibrio**, enabling timely detection and response. • Proven capability in coordinated outbreak investigations for foodborne, zoonotic, and environmental hazards through the **Public Health Emergency Operation Centre (PHEOC)**.
Weaknesses / Gaps	• Uneven enforcement and inspection coverage, particularly in small-scale production, informal markets, and rural areas. • Limited integration of food safety surveillance with broader epidemic prevention and **One Health** programmes. • Inconsistent and sometimes delayed risk communication to the public during the prevention phase, reducing early mitigation effectiveness.
Opportunities	• Strengthening **One Health integration** by linking food safety, environmental monitoring, and zoonotic disease prevention into a unified multi-hazard framework. • Leveraging **digital tools and emerging technologies** for food supply chain traceability, predictive analytics, and early warning systems. • Expanding and adapting **risk-based inspection models** to address high-risk informal sectors and evolving hazards.
Threats	• **Climate change** altering disease ecology, vectors, and contamination patterns, creating new exposure risks. • **Globalised food trade** increasing vulnerability to imported pathogens, toxins, and other hazards. • Spread of **antimicrobial resistance (AMR)** through the food chain, undermining both public health and veterinary treatment effectiveness.

Malaysia has well-developed systems for food safety, environmental monitoring, and zoonotic disease prevention, but these components largely operate in parallel. The key gap lies in achieving full integration under a unified One Health prevention framework where all sectors collaborate seamlessly, share data in real time, and coordinate proactive interventions to neutralise threats before they escalate into outbreaks.

6.3 SUPPORTING ACTION

The following table provides a detailed breakdown of the activities, timeframes, technical areas, and indicators that align with the mission to “Advance Epidemic Potential Prevention.” It is organized by goals and objectives to provide a clear and actionable roadmap for strengthening public health measures, including food safety, surveillance, and immunization.

Mission 4: Advance Epidemic Potential Prevention, Including Immunization
Goal 4.1: Strengthen Food Safety and Food Chain Management

Objective	Activities	Time frame	Technical Area	Indicator
1. Improve enforcement and inspection coverage for food safety across all sectors, including small-scale producers and informal markets.	Conduct national monitoring and surveillance sampling plans; Implement the Pelan Strategik Kesihatan Awam Veterinar (PSKAV).	Long-term	P6 Food Safety	Number of inspections conducted in small-scale production and informal markets. Percentage of food supply chain segments covered by regular inspections
2. Integrate food safety surveillance with broader epidemic prevention and One Health programs to create a unified multi-hazard framework.	Strengthen One Health integration by linking food safety, environmental monitoring, and zoonotic disease prevention into a unified multi-hazard framework.		P6 Food Safety	Establishment of a unified multi-hazard framework for food safety, environmental monitoring

Goal 4.2: Enhance Multi-Hazard Prevention and Surveillance

Objective	Activities	Time frame	Technical Area	Indicator
1. Harmonize food safety, environmental monitoring, and zoonotic disease prevention activities into a cohesive, coordinated, and real-time framework	Establish multisectoral coordination mechanisms and regular meetings	Long-term	P4 AMR P5 Zoonotic P6 Food Safety	The number of multisectoral coordination mechanisms established and the frequency of meetings held annually.
2. Leverage digital tools and emerging technologies for food supply chain traceability, predictive analytics, and early warning systems.			D2 Surveillance	A functional digital system for food supply chain traceability implemented. Reduction in response time to food safety incidents.

Goal 4.3: Improve Risk Communication and Public Awareness

Objective	Activities	Time frame	Technical Area	Indicator
1. Harmonize food safety, environmental monitoring, and zoonotic disease prevention activities into a cohesive, coordinated, and real-time framework.	Develop a formal mechanism to share information between public health and security authorities. Conduct training for MyCHAMPION on preparedness and response.	Long Term	R2 Linking Public Health Services R5 Risk Communication and Community Engagement	A formal risk communication protocol established. Number of risk communication training sessions conducted for key stakeholders.

Goal 4.4: Advance Immunization Prevention

Objective	Activities	Time frame	Technical Area	Indicator
1. Strengthen policies to increase immunization coverage.	Provide free vaccination for non-citizen children; Enhance the immunization registry.		P8 Immunization	Percentage of non-citizen children with full immunization coverage. A fully functional and up-to-date national immunization registry.
2. Ensure vaccine safety and enhance public confidence.	Improve vaccine safety evaluation and pharmacovigilance; Conduct advocacy and health promotion activities.		P8 Immunization	Number of vaccine safety evaluation reports produced annually. Increase in public confidence in vaccines as measured by surveys.
3. Achieve measles/ rubella elimination by 2030.	Implement a National Strategic Framework for Measles and conduct risk assessments.	Short term	P8 Immunization	Reduction in the number of measles/rubella cases. A fully implemented National Strategic Framework for Measles.
	Conduct a Nationwide Supplementary Immunisation Activities (SIA).	Short term	P8 Immunization	A nationwide SIA is conducted.

7.0 MOVEMENT OF PEOPLE, ANIMALS, AND GOODS: SAFEGUARDING MALAYSIA'S HEALTH SECURITY

7.1 BACKGROUND AND CONTEXT

The movement of people, animals, plants, and goods across borders is a critical driver of Malaysia's economic growth but also a key pathway for the introduction and spread of infectious diseases, pests, and other biosecurity threats. Malaysia's border health system operates under a **multi-agency framework** involving the Ministry of Health (MOH), Department of Veterinary Services (DVS), Malaysian Quarantine and Inspection Services (MAQIS), Royal Malaysian Customs Department, Immigration Department, and other enforcement agencies.

A total of **81 official Points of Entry (PoEs)** (Land – 19; Sea – 44; Air – 18) have been designated in line with the International Health Regulations (IHR), each with standard operating procedures (SOPs) for health screening, quarantine, and reporting. At major PoEs, inter-agency collaboration is well established, and specific biosecurity measures are implemented under various laws including the **Prevention and Control of Infectious Diseases Act 1988 (Act 342), Animal Act 1953, Plant Quarantine Act 1976, MAQIS Act 2011, and Food Act 1983**. These laws collectively support the **One Health approach** by providing the legal basis for human, animal, and plant health protection.

Malaysia also participates in ASEAN and WHO cross-border cooperation mechanisms, including joint outbreak investigations, simulation exercises, and information-sharing platforms for threats such as rabies, Nipah virus, avian influenza, and plant pest incursions. However, **data interoperability between human, animal, plant, and environmental health systems remains limited**, with most reporting **siloed** within sector-specific platforms.

While the importation of food products, live animals, ornamental plants, and wildlife is regulated, **informal trade and unregulated entry points** remain high-risk channels for disease introduction, including zoonotic pathogens, plant-borne diseases, and invasive alien species. Surveillance at PoEs is still heavily focused on human health, with biodiversity and environmental biosecurity monitoring not systematically embedded into operations.

Technological tools such as electronic traveller health declarations and vector surveillance systems are used at major PoEs, but **predictive modelling and AI-based risk forecasting** for cross-border threats are not yet institutionalised. Furthermore, biodiversity monitoring mechanisms are not consistently included in PoE risk assessment processes, limiting the early detection of emerging ecological risks.

Current provisions under the Infectious Diseases Prevention and Control Act are confined to Malaysia's jurisdiction, creating challenges for managing public health risks arising from cross-border infrastructure and operational projects. This limitation can hinder timely, coordinated responses to threats that transcend national boundaries, such as infectious disease outbreaks linked to the movement of people, goods, animals, or agricultural products.

7.2 KEY ISSUES AND CHALLENGES

To address these gaps, there is a pressing need for a **holistic, cross-sectoral regulatory framework** that systematically integrates health security considerations into the planning, approval, and implementation of any new cross-border projects. This may include:

- Strengthening existing laws or introducing specific provisions for **transboundary health risk management.**
- Establishing binding bilateral or regional agreements that mandate preventive measures, surveillance integration, and rapid information exchange.

Such measures will help ensure that h**ealth security protocols are fully applied**, safeguarding Malaysia against external threats while meeting **IHR core capacity requirements.**

Key Factors Influencing Performance

Category	Key Factors
Strengths	a) Clear legal designation and governance of official Points of Entry (PoEs) in line with IHR requirements. b) Multi-agency collaboration established at major PoEs, involving MOH, DVS, MAQIS, Customs, Immigration, and other enforcement bodies. c) Existing SOPs for health screening, quarantine, and reporting at major entry points, including measures for zoonotic and plant health threats. d) Regional cooperation through ASEAN, WHO, and bilateral agreements for joint outbreak investigation and information sharing. e) Deployment of technological tools such as electronic traveller health declarations and vector surveillance at high-volume PoEs.

Category	Key Factors
Weaknesses / Gaps	a) Uneven resource allocation and workforce presence, with smaller and rural PoEs lacking trained health, veterinary, and environmental officers. b) Limited integration of human, animal, plant, and environmental surveillance data, with reporting still siloed between sectors. c) Insufficient biodiversity and environmental biosecurity monitoring within routine PoE operations. d) Overreliance on event-based rather than routine collaboration for cross-sectoral response. e) Predictive modelling, AI-based risk forecasting, and biodiversity monitoring are not yet institutionalised for cross-border risk assessment. f) Current legal provisions under Act 342 apply only within national jurisdiction, creating enforcement gaps for transboundary health risks.
Opportunities	a) Strengthening public–private partnerships for laboratory and surveillance coverage at PoEs, including biodiversity monitoring. b) Expanding the use of mobile inspection units and courier networks to improve sample transport and testing from remote PoEs. c) Developing a National Multisectoral Data Integration Framework for real-time, secure sharing of human, animal, plant, and environmental health data. d) Leveraging ASEAN and bilateral agreements to formalise cross-border health risk management provisions.
Threats	Informal and unregulated cross-border movement of people, animals, plants, and goods, increasing the risk of disease

While Malaysia maintains a well-governed and technically capable PoE system at major entry points, **operational readiness is uneven** across all designated and non-designated PoEs, particularly those in rural or high-risk biodiversity zones. The **fragmentation of surveillance systems** across human, animal, plant, and environmental sectors, combined with the absence of **routine multisectoral data integration and joint risk assessment**, limits early detection of cross-border threats.

Current **legal frameworks**, while strong domestically, lack provisions for **transboundary health risk management** tied to cross-border infrastructure, operational projects, and informal trade routes. **Biodiversity and environmental biosecurity considerations** are not systematically embedded in PoE risk assessments, and advanced analytical tools such as **predictive modelling** remain underutilised.

Closing these gaps will require a comprehensive approach that includes legislative reform to extend enforcement powers to transboundary contexts and mandate data sharing. It will also be essential to standardize capacity across all Points of Entry (PoEs) by ensuring adequate human resources, equipment, and consistent biodiversity monitoring protocols. Furthermore, it is crucial to institutionalize multisectoral surveillance integration across human, animal, plant, and environmental health systems, while also embedding predictive analytics and modelling tools into routine cross-border health risk assessment frameworks.

7.3 SUPPORTING ACTION

To close the identified gaps and safeguard Malaysia's health security, a multifaceted approach is required. The following table outlines the goals, objectives, activities, timeframes, and indicators for a comprehensive strategy. This framework focuses on strengthening legal instruments, achieving multisectoral data integration, and leveraging advanced technology to ensure that the movement of people, animals, and goods across borders does not compromise national health.

Mission 5: Strengthen Health Security at Points of Entry *for preventing cross-border threats.*
Goal 5.1: Strengthen Cross-Border Health Management and Biosecurity

Objective	Activities	Time frame	Technical Area	Indicator
1. Institutionalize a holistic, cross-sectoral regulatory framework that integrates health security considerations into the planning and implementation of all cross-border projects.	Strengthen existing laws or introduce specific provisions for transboundary health risk management; Establish binding bilateral or regional agreements that mandate preventive measures, surveillance integration, and rapid information exchange.	Long Term	P1 Legal Instrument	Number of new legal provisions or bilateral/ regional agreements established. Percentage of new cross-border projects that include health security assessments.
2. Strengthen biosecurity enforcement for wildlife, plant, and animal imports, linking enforcement to laboratory confirmation and surveillance triggers.	Conduct periodic inspections and training on sanitary practices; Strengthen biosecurity enforcement for wildlife, plant, and animal imports.	Long Term	P7 Biosafety & Biosecurity P5 Zoonotic D2 Surveillance **PoE Point of Entry**	Reduction in the number of illegal wildlife and animal import-related incidents. Number of biosecurity enforcement activities conducted annually.

Goal 5.2: Achieve Multisectoral Data Integration and Surveillance at Points of Entry (PoEs)

Objective	Activities	Time frame	Technical Area	Indicator
1. Establish a national multisectoral data integration framework for real-time, secure sharing of human, animal, plant, and environmental health data.	Develop a National Multisectoral Data Integration Framework.		P1 Legal Instrument	Number of new legal provisions or bilateral/ regional agreements established. Percentage of new cross-border projects that include health security assessments.
2. Embed biodiversity and environmental biosecurity monitoring into routine PoE operations and risk assessment processes.	Expand the use of mobile inspection units and courier networks to improve sample transport and testing from remote PoEs.		D2 Surveillance P5 Zoonotic **PoE Point of Entry**	Reduction in the number of illegal wildlife and animal import-related incidents. Number of biosecurity enforcement activities conducted annually.

Goal 5.3: Leverage Advanced Technology for Risk Assessment

Objective	Activities	Time frame	Technical Area	Indicator
1. Institutionalize the use of predictive modelling and AI-based risk forecasting for cross-border threat assessment.	Integrated Systems with LLM		D2 Surveillance **PoE Point of Entry**	A functional system for predictive modelling and AI-based risk forecasting implemented. Reduction in time to identify potential cross-border threats...

Goal 5.4: Enhance Public Health Capacity and Contingency Planning at All Points of Entry (PoEs)

Objective	Activities	Time frame	Technical Area	Indicator
1. Improve preparedness and response capabilities at all PoEs.	Develop a National Public Health Emergency Contingency Plan for PoE response.		D2 Surveillance **PoE Point of Entry**	A national contingency plan for PoE is developed.
	Develop a focused training course and conduct a series of training sessions for IHR obligation personnel at PoE.		**PoE Point of Entry**	Number of training sessions conducted.

8.0 HEALTH EMERGENCY MANAGEMENT – CHEMICAL AND RADIOLOGICAL EVENTS

8.1 BACKGROUND AND CONTEXT

Malaysia adopts an all-hazards approach to health emergency management, incorporating chemical and radiological events into its broader disaster risk reduction and preparedness framework. This involves **risk assessment and mapping** at district, state, and national levels, with regular updates to reflect emerging threats, industrial growth, and environmental changes. Risk profiles guide **contingency planning**, resource allocation, and training priorities.

Simulation drills are conducted periodically to test readiness, coordination, and interoperability among health, emergency services, and enforcement agencies. The **supply chain management system** supports the pre-positioning of essential materials, including personal protective equipment (PPE), antidotes, decontamination kits, and radiation monitoring devices, with clear linkages to public health services for patient management and follow-up.

For **chemical events**, Malaysia has established Hazardous Materials (HazMat) response units within the Fire and Rescue Department, with health sector partners providing medical management for exposed individuals. Chemical poisoning surveillance and toxicological analysis are coordinated with the National Poison Centre and relevant laboratories.

For **radiological events**, the Atomic Energy Licensing Board (AELB) serves as the regulatory authority, supported by the Ministry of Health's Radiological Health Division. National arrangements include environmental radiation monitoring, emergency exposure guidance, and health surveillance for potentially exposed populations. Cross-border cooperation is in place under the IAEA framework for early notification and assistance.

Despite these structures, challenges remain in integrating chemical and radiological event preparedness into **routine public health emergency systems**, ensuring community awareness, and maintaining **specialised technical capacity** across all levels.

8.2 KEY ISSUES AND CHALLENGES

To close the identified gaps and safeguard Malaysia's health security, a multifaceted approach is required. The following table outlines the goals, objectives, activities, timeframes, and indicators for a comprehensive strategy. This framework focuses on strengthening legal instruments, achieving multisectoral data integration, and leveraging advanced technology to ensure that the movement of people, animals, and goods across borders does not compromise national health.

Key Factors Influencing Performance

Category	Details
Strengths	• Established multi-agency coordination mechanisms for chemical and radiological emergencies. • Regular simulation drills involving health, emergency response, and enforcement agencies. • Availability of HazMat units, radiation monitoring systems, and national poison information services. • National risk profiles that inform emergency planning and resource allocation. • Established regulatory frameworks under the *Environmental Quality Act, Atomic Energy Licensing Act, and allied legislation.*
Weaknesses / Gaps	• Limited integration of chemical and radiological preparedness into broader public health emergency management cycles. • Inconsistent frequency and scope of risk mapping updates, particularly at district level. • Gaps in technical expertise and equipment maintenance for radiological and chemical detection at subnational levels. • Limited community engagement and awareness campaigns on protective actions during such events. • Insufficient pre-positioning of specialised antidotes and decontamination resources in high-risk regions.
Opportunities	• Expanding all-hazards training for health and non-health responders to include chemical and radiological scenarios. • Leveraging regional and international networks for technical assistance and joint exercises. • Integrating chemical and radiological event surveillance into national health information systems. • Enhancing public communication strategies through targeted outreach in high-risk industrial and port areas. • Utilising new technologies for real-time environmental monitoring and plume modelling.

Category	Details
Threats	• Increasing industrialisation and hazardous material transport raising exposure risks. • Potential for cross-border chemical or radiological hazards due to regional trade and transit. • Climate change effects on industrial safety and disaster frequency. • Dependence on imported detection equipment and specialised materials, posing risks during supply chain disruptions.

8.3 SUPPORTING ACTION

The following table outlines the goals, objectives, activities, timeframes, and indicators for strengthening Malaysia's health emergency management framework to specifically address chemical and radiological events. This all-hazards approach is designed to improve preparedness, enhance inter-agency coordination, and leverage technology for more effective prevention, detection, and response to these specialized public health threats.

Mission 6: Strengthen Preparedness and Response for Chemical and Radiological Events
Goal 6.1: Integrate Chemical and Radiological Preparedness into All-Hazards Health Emergency Management

Objective	Activities	Time frame	Technical Area	Indicator
1. Improve the frequency and scope of risk mapping updates for chemical and radiological hazards at national, state, and district levels.	Conduct evidence-based risk mapping for chemical and radiological events at district, state, and national levels.		R1 Health Emergency Management CE Chemical Events RE Radiological Events	Regularity and scope of risk mapping updates at all levels. Number of new hazards identified and mapped annually.

Objective	Activities	Time frame	Technical Area	Indicator
2. Strengthen technical expertise and ensure adequate equipment for chemical and radiological detection and response at subnational levels.	Conduct all-hazards training for health and non-health responders; Ensure proper maintenance and calibration of detection equipment.		R1 (Health Emergency Management) CE (Chemical Events) RE (Radiological Events) R3 Health Service Provision	Number of trained personnel for chemical and radiological events at the subnational level. Percentage of detection equipment that is regularly maintained and calibrated.
3. Ensure the pre-positioning of specialized antidotes and decontamination resources in high-risk regions.	Strengthen supply chain management systems to support the pre-positioning of essential materials, including PPE, antidotes, and decontamination kits.		**R1 (Health Emergency Management)** **CE (Chemical Events)** **RE (Radiological Events)** **R3 Health Service Provision** **R4 IPC (Infection Prevention and Control)**	Number of high-risk regions with pre-positioned specialized antidotes and decontamination resources. Availability of essential materials during simulation drills.

Goal 6.2: Enhance Surveillance and Data Management for Chemical and Radiological Events

Objective	Activities	Time frame	Technical Area	Indicator
1. Establish and improve mechanisms for detecting and responding to chemical and radiological emergencies.	Develop a reporting methodology for multiple agencies to provide data on chemical exposures/ poisoning.		R1 Health Emergency Management CE Chemical Events RE Radiological Events	A functional multi-agency reporting system is in place.
	Conduct annual or biannual inter-agency coordination meetings on radiological emergency events.		**R1 (Health Emergency Management)** **CE (Chemical Events)** **RE (Radiological Events)**	Regularity of inter-agency coordination meetings.

Goal 6.3: Enhance Inter-Agency and Community Readiness

Objective	Activities	Time frame	Technical Area	Indicator
1. Expand all-hazards training for both health and non-health responders to include specific chemical and radiological scenarios.	Conduct periodic simulation drills to test readiness, coordination, and interoperability among health, emergency services, and enforcement agencies.		R1 Health Emergency Management R3 Health Service Provision CE Chemical Events RE Radiological Events	Number of multi-agency simulation drills conducted per year. Performance evaluation scores from simulation drills.

Objective	Activities	Time frame	Technical Area	Indicator
2. Strengthen community engagement and public awareness campaigns on protective actions during chemical and radiological events.	Enhance public communication strategies through targeted outreach in high-risk industrial and port areas.		R1 (Health Emergency Management) CE (Chemical Events) RE (Radiological Events)	Number of community awareness campaigns conducted in high-risk areas. Increase in public knowledge of protective actions, as measured by surveys.

Goal 6.4: Leverage Technology and International Cooperation

Objective	Activities	Time frame	Technical Area	Indicator
1. Integrate chemical and radiological event surveillance into national health information systems.	Integrate chemical and radiological event surveillance into national health information systems.		D2 Surveillance CE Chemical Events RE Radiological Events	A functional surveillance system that incorporates chemical and radiological event data. Reduction in time to report and analyze chemical and radiological events.

Objective	Activities	Time frame	Technical Area	Indicator
2. Utilize new technologies for real-time environmental monitoring and plume modelling.	Utilize new technologies for real-time environmental monitoring and plume modelling.		R1 (Health Emergency Management) CE (Chemical Events) RE (Radiological Events)	Number of new technologies adopted for environmental monitoring and plume modelling
3. Leverage regional and international networks for technical assistance and joint exercises.	Leverage regional and international networks for technical assistance and joint exercises.		R1 (Health Emergency Management) CE (Chemical Events) RE (Radiological Events)	Number of joint exercises and collaborations with regional and international partners. Availability of international technical assistance when needed.

9.0 LEVERAGE TECHNOLOGY AND DATA SYSTEM TO ENHANCE AND ACCELERATE ALL HEALTH SECURITY MISSION

9.1 BACKGROUND AND CONTEXT

An integrated, technology-enabled approach to health security is critical for detecting, assessing, and responding to threats that span the human, animal, and environmental interface. Malaysia has made notable progress in building platforms that support surveillance and response, including **eDOCE** (event-based reporting), **MyHDW** (health data warehouse), and laboratory information systems (LIS). These platforms have improved timeliness and accessibility of data for public health decision-making.

Under the One Health framework, some cross-sectoral data sharing has been established between the Ministry of Health, Department of Veterinary Services, and environmental agencies, enabling joint investigation of zoonotic disease outbreaks such as rabies, Nipah virus, and avian influenza. However, **true interoperability** between human, animal, and environmental health information systems remain limited. Data is often siloed within sector-specific platforms, and the absence of a **centralised, secure, and real-time integration framework** constrains early multi-sector risk assessment.

Emerging technologies such as **artificial intelligence (AI), machine learning (ML), predictive analytics, and geospatial mapping tools** are not yet fully operationalised in national health security systems. While pilot initiatives in event-based surveillance have shown promise, these have not been scaled up. Similarly, the application of **mathematical modelling and scenario forecasting** for epidemic and pandemic preparedness is not yet institutionalised, with no clear mechanism for integrating modelling outputs into decision-making processes.

In addition, **dissemination and reporting of analysed data** remain inconsistent across sectors. Surveillance outputs, genomic sequencing results, and environmental monitoring data are not routinely transformed into **decision-ready dashboards, intelligence bulletins, or early warning alerts** for operational use. There is no **unified national health security reporting protocol** specifying the recipients, formats, and timelines for report sharing. Dissemination to the public and media often occurs only after formal confirmation, limiting proactive risk communication.

To address these gaps, Malaysia must establish a **National Multisectoral Data Integration and Analytics Framework** that ensures secure, real-time, and

interoperable exchange of human, animal, and environmental health data. This should be supported by:

- Institutionalising modelling and predictive analytics as part of preparedness and response planning.
- Developing a **National Health Security Reporting Protocol** for timely dissemination of information to decision-makers, partners, and the public.
- Sustained investment and capacity building in digital health technologies, analytics, and risk communication.

9.2 KEY ISSUES AND CHALLENGES

While Malaysia has a growing portfolio of digital health and surveillance platforms, these remain **sectoral and fragmented**, limiting their full potential for integrated, real-time health security intelligence. The **lack of institutionalised modelling** and **absence of a unified reporting protocol** further weaken the ability to convert data into timely, actionable decisions. Closing these gaps will require **technical integration, governance agreements,** and **investment in digital health literacy** across all sectors, alongside a culture of **proactive information sharing**.

Key Factors Influencing Performance

Category	Details
Strengths	• Existing digital platforms (eDOCE, MyHDW, LIS) supporting surveillance and reporting in human health. • Established inter-agency coordination for certain zoonotic investigations (rabies, Nipah, avian influenza). • Early adoption of geospatial tools for targeted vector control and outbreak response.
Weaknesses / Gaps	• Limited interoperability between human, animal, and environmental health systems. • Modelling and predictive analytics not institutionalised or linked to decision-making. • Dissemination/reporting of analysed data inconsistent and lacking standard protocols. • Event-based rather than routine cross-sectoral risk assessment.

Category	Details
Opportunities	• Expansion of digital integration under a National Multisectoral Data Integration Framework. • Scaling AI/ML for anomaly detection, modelling, and scenario planning. • Development of standardised reporting dashboards for multi-sectoral use.
Threats	• Data silos limiting early warning and cross-sectoral situational awareness. • Slow dissemination of critical intelligence during fast-moving events. • Public trust erosion if risk communication is delayed or fragmented.

9.3 SUPPORTING ACTION

To enhance and accelerate all health security missions, Malaysia must leverage technology and data systems effectively. The following table provides a comprehensive overview of the goals, objectives, activities, timeframes, and indicators for this strategic area. This framework is designed to bridge the current gaps in data integration, standardize reporting, and build the necessary capacity to transform raw data into actionable intelligence for a more resilient national health security system.

Mission 7: Integrate technology and data systems as a cross-cutting enabler for all health security missions.
Goal 7.1: Establish a National Multisectoral Data Integration and Analytics Framework

Objective	Activities	Time frame	Technical Area	Indicator
1. Develop a national framework to ensure secure, real-time, and interoperable exchange of human, animal, and environmental health data.	Establish a National Multisectoral Data Integration and Analytics Framework that ensures secure, real-time, and interoperable exchange of human, animal, and environmental health data.	Long-term	D2 (Surveillance)	A functional National Multisectoral Data Integration and Analytics Framework implemented.

Objective	Activities	Time frame	Technical Area	Indicator
2. Institutionalize modelling and predictive analytics as a core component of preparedness and response planning.	Scale AI/ML for anomaly detection, modelling, and scenario planning.	Long-term	D2 (Surveillance)	A functional system for predictive modelling and AI-based risk forecasting implemented. The number of predictive models and scenarios developed and used in decision-making.

Goal 7.2: Standardize Data Reporting and Dissemination

Objective	Activities	Time frame	Technical Area	Indicator
1. Develop a National Health Security Reporting Protocol for the timely and consistent dissemination of information to decision-makers, partners, and the public.	Develop a National Health Security Reporting Protocol for timely dissemination of information to decision-makers, partners, and the public.	Long-term	R5 (Risk Communication and Community Engagement)	A National Health Security Reporting Protocol finalized and implemented. Reduction in time to disseminate critical intelligence during fast-moving events.
2. Transform surveillance outputs, genomic sequencing results, and environmental monitoring data into decision-ready dashboards and intelligence bulletins.	Develop standardised reporting dashboards for multisectoral use.	Long-term	D2 (Surveillance)	The number of standardised reporting dashboards developed and in use. Frequency of intelligence bulletins and reports produced.

Goal 7.3: Enhance National Laboratory Systems for Health Security

Objective	Activities	Time frame	Technical Area	Indicator
Strengthen specimen referral and transport systems.	Finalize a list of 10 priority diseases for human, animal, food, and environment	Immediate	D1 (National Laboratory)	A final list of 10 priority diseases is agreed upon.
	Establish a mechanism and agreement for transporting specimens and reference material.	Immediate	D1 (National Laboratory)	A formal mechanism for specimen transport is established.

Goal 7.4: Invest in Digital Health Infrastructure and Capacity to Strengthen Surveillance and Public Health Information Systems

Objective	Activities	Time frame	Technical Area	Indicator
1. Secure sustained investment in digital health technologies and analytics.	Conduct national consultations on health security financing; Establish a dedicated health security financing mechanism; Mobilize domestic and external resources.	Long-term	P2 (Financing)	A dedicated financing mechanism for digital health infrastructure established. Amount of investment secured for digital health

Objective	Activities	Time frame	Technical Area	Indicator
2. Build capacity and promote digital health literacy across all relevant sectors.	Conduct all-hazards training for health and non-health responders.	Long-term	R1 (Health Emergency Management) D2 (Surveillance)	Number of training sessions on digital health technologies and analytics conducted. Percentage of workforce with documented digital health literacy.
3. Ensure public health events are promptly verified and investigated	Develop and implement the electronic National Centre for Disease Control (eNCDC) system.	Immediate	D2 (Surveillance)	A functional eNCDC system is implemented nationwide.
	Conduct capacity-building workshops and field exercises for professionals in event investigation.	Immediate	D2 (Surveillance)	Number of workshops and field exercises conducted.

10.0 HEALTH SECURITY LITERACY, RISK COMMUNICATION, AND COMMUNITY ENGAGEMENT

10.1 BACKGROUND AND CONTEXT

Health security literacy and effective risk communication are essential pillars for building a resilient society that can prevent, detect, and respond to public health threats. In Malaysia, efforts to strengthen health security literacy aim to ensure that individuals, communities, and stakeholders understand the nature of health risks, the rationale for preventive measures, and the importance of coordinated action across sectors. Community engagement plays a critical role in translating technical health information into culturally relevant messages and fostering trust between the public and authorities.

In Malaysia, health risk communication is guided by the Ministry of Health's Crisis Communication Plan, which outlines protocols for timely, accurate, and transparent messaging during health emergencies. This function involves multiple divisions primarily the Disease Control Division, the Health Education Division, and the Corporate Communication Unit working collaboratively to receive information, synthesise key messages, conduct sentiment analysis, and disseminate risk communications to target audiences in a coordinated manner.

The Health Education Division also works closely with trusted community figures, including social media influencers, to deliver verified information in an accessible way and counteract misinformation or misleading narratives. This targeted engagement helps to reach diverse audiences, including youth and digitally active populations, ensuring that public health messages are both accurate and relatable.

While national health literacy has been assessed through initiatives such as the National Health and Morbidity Survey (NHMS), these measurements do not yet capture the specific dimension of **health security literacy** the ability of individuals and communities to understand, interpret, and act upon information related to infectious disease threats, biosecurity risks, and emergency response. No dedicated survey has been conducted to assess Malaysia's baseline health security literacy, resulting in a gap in understanding current public readiness and knowledge in this domain.

Another critical gap lies in **capacity building among community leaders**, particularly in equipping them with the skills, tools, and preparedness knowledge required to play a frontline role during public health emergencies. While some training exists for community health volunteers, there is no structured, nationwide programme to systematically develop leadership capacity for preparedness and response at the

grassroots level. This limits the ability to mobilise communities rapidly and effectively when emerging threats occur.

Despite established communication structures, challenges remain in ensuring message consistency, combating misinformation, and engaging hard-to-reach or vulnerable populations during both preparedness and response phases. Public trust can be undermined when there are delays in information release or when messages appear fragmented across agencies. Furthermore, while health promotion activities are ongoing, there is a need to more systematically integrate health security literacy into broader health education programmes, community preparedness training, and local leadership capacity-building.

10.2 KEY ISSUES AND CHALLENGES

While Malaysia has a well-established crisis communication structure and demonstrated capacity to disseminate timely health information during outbreaks, significant gaps remain in health security literacy and community-based preparedness capacity. The absence of a dedicated health security literacy survey limits understanding of public awareness and readiness for infectious disease threats and biosecurity risks. Furthermore, the lack of a structured national programme to train and equip community leaders for preparedness and response leaves a critical gap in grassroots mobilisation and trust-building. Integrating health security elements into existing health literacy frameworks, expanding community engagement beyond emergency periods, and strengthening real-time misinformation countermeasures are essential to ensure that the public is both informed and actively involved in safeguarding health security.

Key Factors Influencing Performance

Category	Key Factors
Strengths	• Established **Ministry of Health Crisis Communication Plan** with clear protocols for information flow and message approval during emergencies. • Multiple divisions (**Disease Control Division, Health Education Division, Corporate Communication Unit**) working in a coordinated manner for risk communication. • Use of **social media influencers and community figures** to deliver accurate, relatable public health messages and counter misinformation. • Experience in coordinating information dissemination across traditional and digital platforms during outbreaks (e.g., **COVID-19, mpox, measles**).

Category	Key Factors
Weaknesses / Gaps	• No dedicated n**ational survey** to assess health security literacy, leaving baseline knowledge and readiness levels among the public unknown. • Limited integration of health security topics into routine **health promotion and literacy programmes**. • Lack of a structured, nationwide **capacity-building programme** for community leaders to act as frontline communicators and mobilisers during emergencies. • Inconsistent public engagement in the **preparedness phase**; most efforts are concentrated during active outbreaks. • Limited mechanisms to systematically **counter misinformation in real time**, especially in rural or hard-to-reach populations.
Opportunities	• Integrating health security literacy into the **National Health Literacy Programme** and the **National Health and Morbidity Survey**. • Expanding the role of trained c**ommunity leaders, civil society organisations, and local influencers** in preparedness and response. • Leveraging **AI-based sentiment analysis, behavioural insights, and targeted communication strategies** to improve public trust and compliance. • Developing **multi-sectoral partnerships** to amplify consistent messaging across media, education, and community networks.
Threats	• Proliferation of **misinformation and disinformation** during health crises, amplified by social media algorithms. • **Low trust in official sources** among certain segments of the population, leading to reduced compliance with health advisories. • Potential **language, cultural, and digital access barriers** that limit equitable reach of health messages. • **Competing crisis narratives** (e.g., political, economic) that dilute or overshadow health-related communications.

10.3 SUPPORTING ACTION

Building a resilient society against public health threats requires a strong foundation of health security literacy, effective risk communication, and community engagement. The following table details the strategic goals, objectives, and activities designed to achieve this. By systematically addressing gaps in public knowledge, empowering community leaders, and leveraging technology to counter misinformation, this framework aims to foster a well-informed and actively involved public in safeguarding national health security.

Mission 8: Strengthen National Health Security Literacy and Community Engagement

Goal 8.1: Enhance National Health Security Literacy

Objective	Activities	Time frame	Technical Area	Indicator
1. Conduct a dedicated national survey to assess the baseline level of health security literacy among the public.	Integrate health security literacy into the National Health and Morbidity Survey.	Long-term	R5 (Risk Communication and Community Engagement)	A dedicated national survey on health security literacy conducted and findings published.
2. Integrate health security topics into routine health promotion and literacy programs.	Conduct advocacy and health promotion activities.	Long-term	R5 (Risk Communication and Community Engagement)	Number of health promotion and literacy programs that include health security topics.

Goal 8.2: Strengthen Community-Based Preparedness and Engagement

Objective	Activities	Time frame	Technical Area	Indicator
1. Establish a structured, nationwide capacity-building program to train community leaders as frontline communicators and mobilizers during emergencies.	Conduct training for MyCHAMPION on preparedness and response; Conduct workshops and CME sessions for awareness and advocacy.	Long-term	R5 (Risk Communication and Community Engagement) R1 (Health Emergency Management)	A structured national capacity-building program for community leaders established. Number of community leaders trained annually.

Objective	Activities	Time frame	Technical Area	Indicator
2. Systematically engage communities during the preparedness phase, not just during active outbreaks.	(No direct activity listed, but can be inferred from the context of the document.)	Long-term	R5 (Risk Communication and Community Engagement)	Frequency of community engagement activities conducted during the preparedness phase.

Goal 8.3: Improve Risk Communication and Counter Misinformation

Objective	Activities	Time frame	Technical Area	Indicator
1. Strengthen mechanisms to ensure message consistency across all agencies.	Develop a formal mechanism to share information between public health and security authorities.	Long-term	R5 (Risk Communication and Community Engagement) R2 (Linking Public Health Services)	A formal risk communication protocol established.
2. Develop and implement real-time countermeasures to combat misinformation and disinformation during health crises.	Utilize new technologies such as AI-based sentiment analysis and behavioural insights.	Long-term	R5 (Risk Communication and Community Engagement)	A functional system for real-time misinformation countermeasures implemented.
3. Leverage behavioural insights and targeted communication strategies to improve public trust and compliance.	Utilize new technologies such as AI-based sentiment analysis and behavioural insights.	Long-term	R5 (Risk Communication and Community Engagement)	A measurable increase in public trust and compliance with health advisories.

11.0 MONITORING AND EVALUATION FRAMEWORK

The effectiveness of MyNAPHS's depends on a robust Monitoring and Evaluation (M&E) framework designed to track progress, identify areas for improvement, and ensure accountability. This framework operates at multiple levels and incorporates both quantitative and qualitative data.

Monitoring:

1) **Regular Tracking**: The MyNAPHS Secretariat, based at the Ministry of Health, leads the ongoing and continuous monitoring of implementation. This involves collecting data from Technical Working Groups (TWGs) on key indicators, tracking the progress of planned activities, and documenting outputs and immediate outcomes.

2) **TWG Oversight**: Each TWG is responsible for monitoring the implementation of activities within its specific health security domain. They collect data, conduct regular self-assessments, and report findings to the Secretariat.

3) **Progress Reports**: The Secretariat consolidates input from the TWGs into regular progress reports, which are shared with the Steering Committee and other relevant stakeholders. These reports include quarterly updates from each technical area to the MyNAPHS Coordinator and bi-annual presentations to the MyNAPHS Implementation Committee. They highlight achievements, challenges, and any necessary adjustments to the implementation plan.

4) **Data Management**: A dedicated data management system supports the M&E process, enabling efficient data collection, storage, analysis, and reporting. This system facilitates the tracking of indicators over time and promotes evidence-based decision-making.

Evaluation:

1) **Periodic Reviews:** Formal evaluations of MyNAPHS implementation are conducted periodically, including a mid-term review and a final evaluation. These evaluations assess the overall progress towards achieving MyNAPHS's objectives, the effectiveness of implemented interventions, and the impact on national health security.

2) **Joint External Evaluation (JEE) Participation**: Malaysia actively participates in the JEE process, which provides an independent external evaluation of IHR implementation, including elements covered under MyNAPHS.

Recommendations from the JEE guide adjustments and improvements to to the plan.

3) After-Action Reviews (AARs): AARs are conducted following major public health events or simulation exercises to identify lessons learned and best practices. These findings are incorporated into MyNAPHS to strengthen future preparedness and response.

4) Independent Assessments: Independent assessments may be commissioned periodically to provide objective analysis of specific aspects of MyNAPHS implementation.

5) Annual Assessments: At the end of each year, a comprehensive assessment is conducted to evaluate achievements. This process uses JEE 2023 grading and SPAR indicators as benchmarks to measure progress and identify areas or improvement. The results contribute to the overall evaluation of MyNAPHS's effectiveness and informs future planning.

Feedback and Improvement:

The M&E process is designed to be iterative and adaptive. Feedback from monitoring activities, evaluations, and AARs is systematically incorporated into MyNAPHS to ensure continued relevance and effectiveness. The Steering Committee plays a crucial role in reviewing evaluation findings and providing policy guidance on necessary changes.

Key Performance Indicators (KPIs):

The M&E framework utilizes a set of predefined KPIs aligned with the IHR (2005 / 2024) and other relevant frameworks. These indicators cover various aspects of health security, such as surveillance capacity, laboratory capacity, emergency preparedness, and risk communication.

Tracking these KPIs allows for the measurement of progress towards achieving MyNAPHS's goals and contributes to national and global reporting requirements. The KPIs are periodically reviewed and updated to ensure they remain relevant and aligned with evolving health security priorities.

In addition to the standard KPIs, MyNAPHS also monitors specific key indicators to measure the achievement of specific goals:

Table 3: Monitoring Indicators for Goal-Specific Outcomes

Indicator / Activity	Evaluation Method	Monitoring Method	Level of Involvement			
			WHO	MOH	Other Agencies	Community
Achievement of Preparedness & Response Capacity (IHR Core Capacity) (100% compliance)	Intra Action Review	Every event / program / intervention		✓	✓	
	After Action Review			✓	✓	
	State Party Self-Assessment Annual Reporting (SPAR)	Annual (mandatory)	✓	✓	✓	
	Joint External Evaluation (JEE)	Every 5 years (voluntary)	✓	✓	✓	
	IHR Capacity monitoring meeting WPRO	yearly	✓	✓		
Cost-Effectiveness Study (CEA) (>40% cost saving)	Retrospective Review	Report		✓	✓	
	Overall review	Report		✓	✓	
Cost-Benefit Analysis (CBA)	Retrospective Review	Report		✓	✓	
	Overall review	Report		✓	✓	
Public Health Threat Literacy Survey (>80% satisfactory rating)	Pre-implementation	Report		✓	✓	✓
	Post-implementation	Report		✓	✓	✓

Indicator / Activity	Evaluation Method	Monitoring Method	Level of Involvement			
			WHO	MOH	Other Agencies	Community
Implementation of MyNAPHS Operational Plan & Activities (>25% operational efficiency)	MyNAPHS Tracking Update	Every 3 months		✓	✓	
	Performance Report of the Achievements of the IHR Authority Committee (2 committees)	Yearly		✓	✓	

Technical Area Indicators for Tracking Progress:

Each technical area within **MyNAPHS** defines its own **specific outputs and targets**, along with the **frequency of monitoring activities** outlined in their operational plans. Detailed information on these **targets and monitoring schedules** is provided in **Annex 5.**

In addition to the **standard KPIs, MyNAPHS** also tracks **key indicators** specific to each technical area to measure the achievement of targeted goals. These indicators provide a more **granular view of progress**, ensuring that both **broad health security objectives** and **area-specific outcomes** are effectively monitored.

Both the **KPIs** and **technical area-specific indicators are regularly reviewed and updated** to remain relevant and aligned with **evolving health security priorities**. This **multi-layered Monitoring and Evaluation (M&E) framework** ensures **comprehensive tracking** of MyNAPHS implementation and supports **data-driven decision-making** for continuous improvement.

ANNEX 1

NATIONAL IHR STEERING COMMITTEE – NISC IHR

Chairperson : Minister of Health, Ministry of Health

Member : Secretaries General and Directors General from relevant ministries and agencies involved in the implementation of IHR and MyNAPHS

Secretariate : Ministry of Health Malaysia, through the National IHR Focal Point (Disease Control Division)

Terms of reference

1. Purpose

The National IHR Steering Committee (JPK IHR) serves as the apex body providing strategic leadership, policy direction, and multisectoral coordination to strengthen Malaysia's compliance with the International Health Regulations (IHR 2005). It oversees the implementation of the Malaysia National Action Plan for Health Security (MyNAPHS) and ensures alignment with national development priorities and international obligations.

2. Roles and Responsibilities

a) Strategic Oversight: Provide high-level guidance to ensure national IHR core capacities are strengthened and maintained.

b) Policy and Resource Mobilization: Endorse strategic priorities and support inter-agency coordination for resource allocation, including MyNAPHS activities approved via Cabinet Memorandum.

c) Progress Monitoring: Review progress reports submitted by the Implementation Monitoring Committee and guide corrective actions.

d) Risk Governance: Address critical health security risks, including emerging and re-emerging threats, through coordinated, whole-of-government responses.

e) External Engagement: Represent Malaysia's health security agenda in regional and international platforms, and facilitate collaboration with global partners.

3. Meeting Frequency

- Convened at least twice a year, or as needed during public health emergencies or policy decision points.

4. Reporting Line

The National IHR Steering Committee (JPK IHR) functions as the highest decision-making body under the National IHR Authority. It sets the strategic direction for IHR implementation in Malaysia and oversees all components of the Malaysia National Action Plan for Health Security (MyNAPHS).

All subordinate bodies—including the Implementation Monitoring Committee, Technical Working Groups (TWGs), and relevant sectoral task forces—report to this Committee. The Steering Committee's decisions and guidance form the basis for national coordination, resource mobilization, and cross-sectoral action on health security.

ANNEX 2

MONITORING AND IMPLEMENTATION COMMITTEE

Chairperson : Secretaries General and Directors General, Ministry of Health

Member : Representative from relevant ministries and agencies involved in the implementation of IHR and MyNAPHS

Secretariate : Ministry of Health Malaysia, through the National IHR Focal Point (Disease Control Division)

Terms of reference

1. Purpose

The IHR Implementation Monitoring Committee (IMC IHR) is established under the National IHR Authority to oversee, coordinate, and monitor the implementation of Malaysia's IHR core capacities. The committee supports the operationalization of the Malaysia National Action Plan for Health Security (MyNAPHS) and ensures continuous progress in national health security readiness.

2. Roles and Responsibilities

a) **Monitor the Implementation of IHR Core Capacities:** Oversee the execution of activities aligned with IHR (2005) requirements and MyNAPHS priorities.

b) **Policy and Strategic Recommendations:** Develop and propose policies, strategies, action plans, and national guidelines to the **National IHR Steering Committee (JPK IHR)**.

c) **Resource Planning and Budgeting:** Estimate the resource requirements for implementing IHR core capacities and submit funding proposals for endorsement by the JPK IHR.

d) **Performance Review and Reporting:** Assess progress and achievements related to IHR capacity development and prepare an annual implementation report for submission to the JPK IHR.

3. Meeting Frequency

- The Committee shall convene at least twice a year, and additional meetings may be held as needed, particularly in response to emerging threats or priority issues

ANNEX 3

TECHNICAL WORKING GROUP FOR MALAYSIA NATIONAL ACTION PLAN FOR HEALTH SECURITY

Advisor	: Director General, Ministry of Health
Chairperson	: Deputy Director General of Public Health, Ministry of Health
Vice Chairperson	: Director Disease Control, Disease Control Division
Secretary	: Deputy Director Disease Control Division
Secretariate	: Disease Surveillance Sector, Disease Control Division

Focal Points :

1) Legal Instruments
2) Financing
3) IHR Coordination, National IHR Focal Point Functions and Advocacy
4) Antimicrobial Resistance (AMR)
5) Zoonotic Disease
6) Food Safety
7) Biosafety and Biosecurity
8) National Laboratory System
9) Surveillance
10) Human Resource
11) Human Health Emergency Management
12) Linking Public Health and Security Authorities
13) Health Service Provision
14) Infection Prevention and Control
15) Risk Communication and Community Engagement
16) Point of Entry and Border Health
17) Chemical Events
18) Radiation Emergencies

Terms of Reference

1. Background

The Malaysia National Action Plan for Health Security (MyNAPHS) 2025–2030 is a multisectoral strategic framework to strengthen the country's core capacities in line with the International Health Regulations (IHR 2005). Technical Working Groups (TWGs) are established under the coordination of the National IHR Authority to drive the implementation of MyNAPHS across 19 identified technical areas.

2. Purpose

The TWGs serve as technical platforms to coordinate planning, implementation, monitoring, and reporting of activities under each thematic area of MyNAPHS. They provide subject matter expertise and ensure alignment with national priorities and international health security standards.

3. Objectives

The objectives of the TWG are to:

- Translate MyNAPHS strategic objectives into actionable annual work plans.
- Coordinate implementation of assigned activities with relevant ministries and stakeholders.
- Monitor progress and assess implementation challenges within their technical area.
- Provide technical recommendations to the Secretariat and Steering Committee.
- Support documentation of best practices, lessons learned, and capacity development needs.

4. Functions and Responsibilities

- Develop and update detailed activity plans, timelines, and cost estimates.
- Identify risks, resource gaps, and recommend solutions to implementation barriers.
- Coordinate with other TWGs for cross-cutting issues.
- Contribute to quarterly and annual reporting for submission to the Implementation Monitoring Committee and Steering Committee.

- Support internal and external assessments (e.g., JEE, SPAR, simulation exercises).
- Facilitate capacity-building initiatives and stakeholder engagement in their domain.

5. Composition

Each TWG shall include:

- A **Chairperson**, preferably from the lead implementing agency for that technical area.
- A **Co-chair**, nominated from a collaborating agency or sector.
- **Members** drawn from relevant government ministries, technical institutions, academia, private sector, and NGOs, as appropriate.
- A **Technical Focal Point** to liaise with the MyNAPHS Secretariat.

The composition may be expanded to include partners from international organizations where relevant.

6. **Meeting Frequency**

- TWGs shall meet **at least once per quarter** or as needed.
- Extraordinary meetings may be called during public health emergencies or when critical decisions are required.

7. **Reporting and Accountability**

- TWGs report to the **Implementation Monitoring Committee**, with technical inputs feeding into reports submitted to the **National IHR Authority and Steering Committee.**
- Documentation of minutes, action points, and progress shall be maintained and shared with the Secretariat.

8. Duration

This TOR shall remain in effect throughout the implementation period of MyNAPHS 2025–2030, and may be reviewed and revised periodically as required.

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BAHAGIAN KAWALAN PENYAKIT
KEMENTERIAN KESIHATAN MALAYSIA