



**NATIONAL ENVIRONMENTAL HEALTH
ACTION PLAN (NEHAP) MALAYSIA**

**ACTION PLAN FOR
ENVIRONMENTAL HEALTH**

2016 - 2020

Prepared by

**Secretariat of NEHAP
Engineering Services Division
Ministry of Health
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1. BACKGROUND

1.1 Introduction

This document lists all the action plans that have been proposed to be implemented by all Thematic Working Group of National Environmental Health Action Plan (NEHAP). It is also to complement Part 3 of the Guidance Document of NEHAP for Malaysia.

NEHAP acknowledge that the Ministries, Departments or Agencies related to environment have played a role in implementing initiatives to conserve or enhance the level of environment in the country. The establishment of NEHAP is to identify the grey areas, bridge the gap and introduce element of health in the environmental health management. Nevertheless, the function of NEHAP should not duplicate the role or jurisdiction of other stakeholders. NEHAP also serves as a platform for collaboration between various stakeholders to address environmental health issues.

1.2. Overview

1.2.1. Thematic Working Group (TWG) of NEHAP

In implementing NEHAP, TWG is set up for each areas of concern. TWGs serves to identify and implement action plans to achieve environmental health objectives in Malaysia.

In order to guide the TWGs, the role of TWG were specified in Part 1 of the Guidance Document of NEHAP for Malaysia. The NEHAP Secretariat has also developed the Standard Operating Procedures (SOP) for TWG NEHAP to guide TWG in conducting their periodic meeting.

Each TWG is chaired by the Ministry, Department or Agency of authority or having high stakes with respect to the areas of concern. It is his responsibility to appoint his TWG members to implement action plans.

Members of the TWG may be added and updated according to current needs.

The important environmental health areas of concern were agreed during the 1st and 2nd Ministerial Meeting of the Regional Forum on Environment and Health in Southeast and East Asian Countries on 2007 in Bangkok, Thailand and 2010 in Jeju, Republic of Korea. Based on the agreement, 7 TWGs was first established under NEHAP Malaysia in 2014 as follows:

- i) Air Quality;
- ii) Water, sanitation and hygiene
(Subsequently was change to Water and Sewerage in 2015);
- iii) Solid Waste;
- iv) Toxic Chemicals and Hazardous Substances & Waste ;
- v) Climate Change, Ozone Depletion and Ecosystem Change;
(Subsequently was change to Climate Change in 2019)
- vi) Contingency Planning, Preparedness and Response in Environmental Health Emergencies; and
- vii) Health Impact Assessment.

With the need to develop a National Environmental Health Databases and to look after the issues of drainage in the cities, two (2) more TWGs were formed in 2015 names as:

- i) Urban Drainage; and
- ii) Information and Communications Technology (ICT)

Two (2) more TWGs were formed in 2017 name as Vector Bearing Disease and Environmental Health Expert.

1.2.2. Action Plan for Environmental Health

In developing the action plan for environmental health there are a number of broad areas which are of concern. The action plan should include but not limited to the category below:

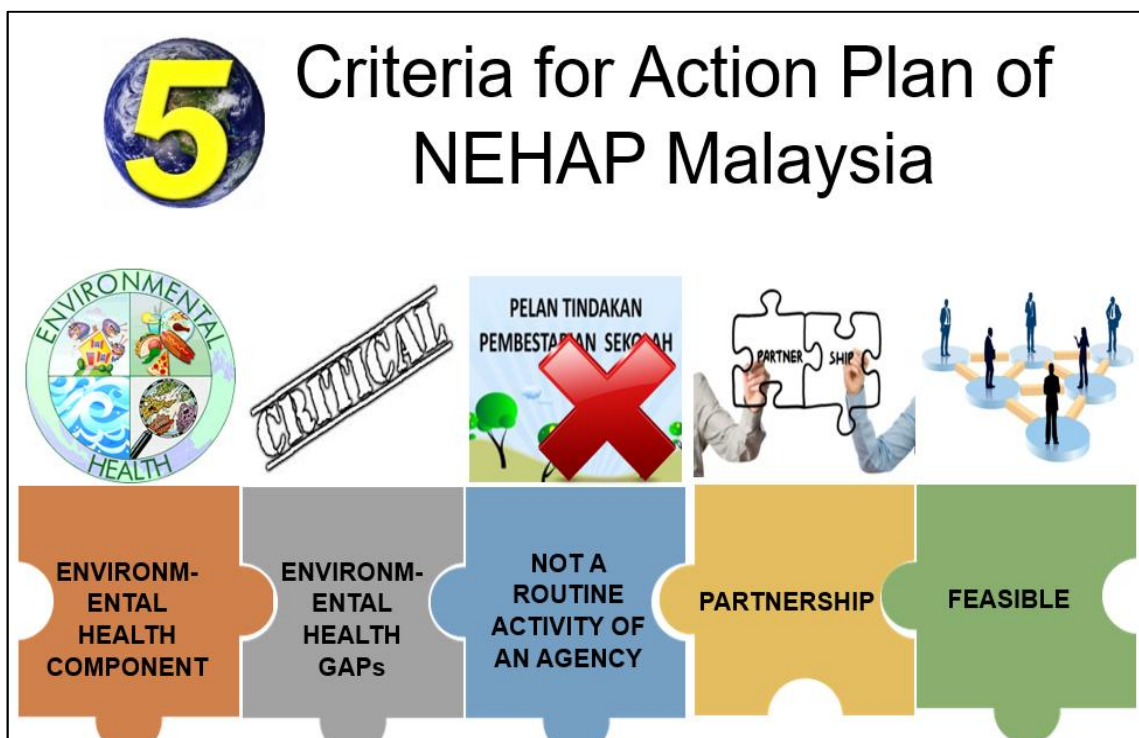
- i) Institutional components and government structure
 - a) Policies, procedures, economic factors, and legislative requirements.
- ii) Essential functions of environmental health:
 - a) Environmental health information systems with links to environmental and health information systems;
 - b) Identification, monitoring and evaluation of health hazards (e.g. physical, chemical, biological and psychosocial in air, water, food, waste disposal, climate change and human ecology);
 - c) Oversight and implementation of risk management measures.
- iii) Essential support functions for environmental health
 - a) Environmental health services
 - b) Professional training and education, public information and education
 - c) Research and technological development
 - d) International collaboration

To standardise the action plans, NEHAP Secretariat proposed the following criteria:

- i) environmental health issues;
- ii) grey area or gaps of environmental health management;
- iii) does not duplicate the function of the other agencies;
- iv) has a collaborative element between various stakeholders; and
- v) feasible.

Graphically, action plan can be depicted as in Figure 1.

Figure 1: Criteria for Action Plan of NEHAP Malaysia



1.2.3. Development of Action Plan

The development of action plan for NEHAP began in 2014 and principally agreed by the Steering Committee (SC) of NEHAP in September of the same year. The action plans were then refined and finalised in December 2015.

TWG were requested to prioritise one (1) action plan to be implemented in 2016. The prioritised action plan for TWG 1-7 were presented and endorsed during SC Meeting No. 1/2016 dated 21 April 2016. TWG 8 has only one (1) action plan that is to manage the development of Malaysian Environmental Health Information System (MyEHIS).

The prioritised action plan for TWG 9 were endorsed during Steering Committee Meeting No 2/2016 dated 1 September 2016 followed by prioritised action plan for TWG 10 and TWG 11 during Steering

Committee Meeting No. 1/2018 dated 19 April 2018. Since then, prioritised action plan were monitored and reported in each Steering Committee Meeting.

1.2.4. Action Plan Implementation Issues

Action plan which have been identified and prioritised will be either implemented as plan, implemented but the timeframe were extended or spill over to the following year or drop and replace with new action plan.

These are due to:

- i) Action plans are departmental activities. Thus, they are dropped from Action Plan for NEHAP;
- ii) Lack of resources i.e. human resources and finances;
- iii) Budget allocation was not approved by Central Agency;
- iv) Implementation of the said Action Plan falls under other TWG's jurisdiction; and
- v) TWGs reprioritised focus area to the area that is more related to the current issue.

2. SITUATIONAL ANALYSIS FOR ENVIRONMENTAL HEALTH AREAS OF CONCERN IN MALAYSIA

2.1. Air Quality

2.1.1. Current situations

2.1.1.1. Outdoor Air

Clean air is a prerequisite for good quality of life and the avoidance of damage to plants, soils and buildings.

- i. Ambient air quality is monitored in Peninsular Malaysia by the Department of Environment (DOE) through a network of 65 continuous air monitoring stations (CAMS). Five parameters are measured, namely PM₁₀, sulfur dioxide (SO₂), nitrogen dioxide (NO₂), carbon monoxide (CO), and carbon dioxide (CO₂). The air quality obtained from each station is used to determine the Air Pollutant Index (API) for the particular areas.
- ii. DOE enforces the Environmental Quality Act (EQA) 1974 and Environmental Quality (Clean Air) Regulations 2014 to prevent, abate, and control pollution, and to enhance the quality of environment through enforcement visits, inspection, aerial and ground surveillance on pollution sources.
- iii. DOE also participated in international negotiations on relevant environmental issues, such as the trans-boundary haze pollution arising from land and forest fires.
- iv. A Clean Air Action Plan is currently being updated by DOE to improve the ambient air quality. The plan outlines the strategies and plan of action in a holistic and inter-sectoral manner and its strategies are focused on the following areas:
 - a. Reduction of air pollution from motor vehicles.
 - b. Reduction of air pollution from industrial activities.
 - c. Haze caused by land clearing and forest fires, and open burning activities, including transboundary haze.
 - d. Human resources development and capacity building.

- e. Strengthening education program and awareness to the public and to encourage public participation in sustainable air quality management.
- v. MOH monitor diseases related to haze at 52 sentinel health clinics throughout Malaysia.

2.1.1.2. Indoor Air

A Code of Practice (COP 2005) for indoor air quality in workplaces had been established by the Department of Occupational Safety and Health (DOSH) and it have been reviewed to Industry Code of Practice in 2010 (ICOP 2010). Standards were established for chemical parameters (carbon dioxide, carbon monoxide, formaldehyde, respirable particles, total volatile organic compounds, and ozone), biological parameters (total bacterial and fungal count), and physical parameters (air temperature, relative humidity and air movement). These standards were designed for 8-hour exposures of healthy adults. This Industrial Code is applicable to all buildings or any part of the building or totally enclosed areas served by a mechanical ventilating and air conditioning (MVAC) systems, including air-cooled split unit, where there are persons at work, except:

- i. Domestic buildings;
- ii. Any area or any part of the building which is constructed, used or intended to be used for domestic or industrial purposes;
- iii. Any area or part of building where any chemicals hazardous to health are used for analytical research or preservation purposes;
or
- iv. Removal and disposal of asbestos containing materials.

Prohibition of cigarette smoking in public areas and workplaces under the Control of Tobacco Product Regulations 2004. Enforcement activities are carried out by the MOH to discourage smoking and to control indoor air pollution from environmental tobacco smoke.

The Uniform Building By-law under the purview of the Ministry of Housing and Local Government specifies requirements for ventilation in buildings.

2.1.2. Issues and challenges

2.1.2.1. Outdoor Air

- i. Air pollution control measures, policies, plans and strategies are developed without solid support of data and assessment.
- ii. Inadequate urban planning, the establishment of satellite cities and the preference of individual over public transport result in increasing motor vehicle usage which in turn increases the level of pollution in urban areas
- iii. Low quality of fuel and outdated emission standards from motor vehicles.
- iv. To move towards environmentally sustainable transport.
- v. Industries without adequate control measures, the use of low quality of fuel and the lack of land-use planning, thus allowing heavy polluting industries to be sited in urban dwelling centres also contribute to deteriorating air quality.
- vi. Prolonged traffic congestion which is difficult to curb in metropolitan areas is one of the main contributors of air pollution.
- vii. Rapid development of industries as the nation move towards developed status plays a major part in the increase in air pollution.
- viii. Haze problem caused by land clearing, forest fires, and open burning activities, including trans-boundary haze.
- ix. Numerous construction activities that are carried out constantly in metropolitan areas in pursue of better and improved infrastructures have been contributing to dust pollution.
- x. Lack of enforcement by relevant authorities.
- xi. Lack of education and awareness program related to health.
- xii. Poor linkages exist between air quality monitoring and health and environmental impacts due to air pollutant exposure.

- xiii. Limited number of reliable epidemiological studies and there is particularly a lack of cohort and a scarceness of time series studies.
- xiv. Poor data availability and information transparency on health.
- xv. No law to enforce regular mandatory inspection of private vehicles.

2.1.2.2. Indoor Air

- i. Lack of awareness on Indoor Air Quality (IAQ) by premise owners and dwellers.
- ii. Lack of IAQ assessors and technical assistant personnel in the field of IAQ.
- iii. The high cost of building remediation is a discouraging factor for premise owners to improve their building infrastructures.

2.1.3. Prioritised Action Plan for TWG 1 Year 2016-2020

NO.	ACTION	LEAD AGENCY	SUPPORTING AGENCY	TIME FRAME	PERFORMANCE INDICATOR	IMPLEMENTATION STATUS	Remarks
Institutional Components and Government Structures							
1	Development of mold removal / control / remediation guideline	DOSH	DOSH, NIOSH, MOH, JKR and IAQ Assessor	-	-	Dropped/ Not implemented	Department's activity
Essential Support Functions for Environmental Health							
2	Research on deterioration of air quality and its potential impact to human health:						
	i. Effect of Air Pollution on Adverse Pregnancy Outcome During 2015 Haze Episode	MOH (IMR)	DOE	-	-	Research canceled	Unapproved allocation
	ii. Improve emission inventories	DOE	-	2016-2017 (2 years)	Final Report submitted end of 2017	Completed	-
	iii. Standard Establishment Study of BTEX Toxic Pollutants Concentration in the Air	DOE	-	2017 (1 year)	Final Report submitted end of 2017	Completed	-
	iv. Cardiovascular and respiratory burden of diseases due to outdoor air pollution in Malaysia	IMR	DOE MOH	2 Years (2019-2020)	Final Report in 2020	On-going	-
	Effects and Predictions of Air Pollution on Mortality and Hospital Admission in Malaysia	IMR	DOE MOH	2 Years (2019-2020)	Final Report in 2020	On-going	-
3	Compliance and awareness program on Indoor Air Quality	DOSH	DOE, MOH, IMR, RTD, MOT, MAI	One-Off in 2020	Awareness program on Indoor	Planning Stage	-

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NO.	ACTION	LEAD AGENCY	SUPPORTING AGENCY	TIME FRAME	PERFORMANCE INDICATOR	IMPLEMENTATION STATUS	Remarks
					Air Quality implemented		

2.1.4. Members of TWG 1: Air Quality

Chairman:		Secretariat:
Director Air Division, Department of Environment		Air Division, Department of Environment
Members:		
1.	Ministry of Health (MOH) i) Engineering Services Division ii) Disease Control Division iii) Institute of Medical Research (IMR)	
2.	Ministry of Transport (MOT)	
3.	Road and Transport Department (RTD)	
4.	Department of Environment (DOE)	
5.	Department of Occupational Safety and Health (DOSH)	
6.	Malaysia Automotive Institute (MAI)	
7.	National University of Malaysia (UKM)	

2.2. Water and Sewerage

2.2.1. Current situations

Access to clean water and sewerage represents one of the most basic foundations of life. Malaysia today has already achieved impressive outcomes with close to 95.5% of its population having access to clean and treated water. The Government remains committed to expanding coverage and improving the quality of the water services industry nationwide. To achieve these objectives, the Water Services Industry Act (WSIA) was introduced in 2006. Among others, WSIA aims to integrate both water and sewerage services as a single industry, and upholds water sustainability.

The decline in the surface water quality can be attributed to human activities, primarily land use change for urban, industrial and agricultural areas, as well as an intensification of economic activities and population growth.

For Malaysia to actualise its vision for water sustainability, it has to eliminate downstream river pollution and reduce nationwide pollution & ecological footprint. In addition, it must also promote environmental awareness, regulatory compliance, public participation, pollution prevention and the centralisation of policy making. The realisation of eco-strategy on the sustainability of water would inevitably create an eco-culture which is education focused with local expertise and low carbon footprint.

2.2.2. Issues and challenges

Malaysia's Environmental Quality Report 2015 states an overall decline in river water quality over the last ten years based on the Water Quality Index (WQI). In 2007, 63% of rivers nationwide were classified as 'clean', however this dropped to only 57% in 2015. As natural systems, rivers nevertheless have an intrinsic capacity to reduce the impact of most pollutants either through the process of degradation, dispersion or dilution to concentrations that are below harmful levels. However, this assimilative capacity is finite and when exceeded, results in the impairment of river water quality. While there

have been significant improvements in terms of regulation, enforcement and technology, river water quality nationwide can be expected to decline further unless the relationship between pollution discharge and the assimilative capacity of a river system is understood.

Therefore, Total Maximum Daily Load (TMDL) study has been conducted with the objective to develop and implement a pollution loading reduction programme using Sg. Semenyih as a Case Study to identify and resolve; technical and institutional challenges. This Study will also aim to form the framework for the implementation of pollution loading reduction programme for Sg. Semenyih, and as a guide for replication in other river catchments in Malaysia. Total Maximum Daily Load (TMDL) is a pollution allocation budget that prescribes the maximum amount of pollutants that can be received by a water body without adversely affecting the beneficial uses of water or designated water quality targets. TMDL has been used as a planning tool for the restoration of water quality in impacted water bodies where pollution load limits are prescribed to individual sources of pollution and supported with targeted mitigation measures within the catchment.

As such, the study has recommended that expanding connected sewerage programme for small sewage treatment plants especially in the rural areas to reduce the use of individual septic tanks and pour flushes, which are both major threats to the environment and public health, and result in a two million population-equivalent reductions. Priority programme is suggested to be given to areas bordering water sources and polluted rivers. In addition, inefficient sewage treatment plants will also need to be rationalised through the construction of regional and centralised plants with larger capacities and more efficient technologies. These plants will be considered for areas that have sufficient demand. In areas where such plants are not feasible, existing treatment plants will be upgraded with new mechanical and electrical components to ensure effluent levels are compliant with standards.

2.2.3. Prioritised Action Plan for TWG 2 Year 2016-2020

NO.	ACTION	LEAD AGENCY	SUPPORTING AGENCY	TIME FRAME	PERFORMANCE INDICATOR	IMPLEMENTATION STATUS	Remarks
WATER							
Institutional Components and Government Structures – Policies, Procedures, Economic Factors and Legislative Requirements							
1	To carry out Total Maximum Daily Loading (TMDL) study for rivers (raw water sources) to determine suitable standard for effluent.	DOE	NRE, MOH, KeTTHA, JPS, JPSP, Local Authorities	3 years (2016-2018)	Final Report submitted end of 2018	Completed	-
2	To establish Safe Drinking Water Act	MoH	KeTTHA, NRE, JBA, KKLW, SPAN, State Government	-	-	Dropped/ Not implemented	Department's activity
3	Implementation of Water Safety Plan (WSP) for all WTP	MoH	KeTTHA, SPAN, JBA, State Water Authority, Water Operator	-	-	Dropped/ Not implemented	Department's activity
Essential Functions Of Environmental Health							
4	To upgrade WTP treatment process to treat significant pollutant in raw water by using technology such as Ozone treatment, membrane filtration, GAC	KeTTHA	State Water Authority, PAAB, JBA, MoF, SPAN	-	-	Dropped/ Not implemented	Department's activity
Essential Support Functions For Environmental Health							
5	To promote water safety, quality and rehabilitation of water resources and drinking water among general public	MoH	NRE, KeTTHA, NGOs, KKMM	-	-	Dropped/ Not implemented	Department's activity
6	To enhance the existing school curriculum	MoE	KeTTHA, NRE, MoH,	-	-	Dropped/ Not implemented	Department's activity

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NO.	ACTION	LEAD AGENCY	SUPPORTING AGENCY	TIME FRAME	PERFORMANCE INDICATOR	IMPLEMENTATION STATUS	Remarks
			KBS SPAN, JBA, JPS, JPP, IWK				
7	1. Commercialized R&D product/finding in water services industry through smart partnership (Public Private Partnership) 2. To promote/share research and application on safe drinking water parameters including other contaminant effects (hormonal, pharmaceuticals, etc) e.g. Japan Water Research Centre	MOSTI	KeTTHA, NRE, MoH, KKLW, MoA and other relevant agencies, Akademi Sains M'sia	-	-	Dropped/ Not implemented	Department's activity
SEWERAGE							
Institutional Components and Government Structures – Policies, Procedures, Economic Factors and Legislative Requirements							
8	To gazette Desludging Rules (addendum) to complement WSIA and enforce periodical desludging	KeTTHA	IWK, Maajari, LA, SPAN	-	-	Dropped/ Not implemented	Department's activity
9	To enhance monitoring and enforcement of sullage discharge	KPKT	KeTTHA, LA, SPAN, MOH, MOA, Veterinary Services Dept	10 years 2015 – 2025	No. of enhancement related to sullage discharge	Removed from TWG2	TWG 2 only focus to water and sewerage.
10	To implement awareness programme on sewerage services and its impacts to the public	KATS/ Ministry of Environment and Water	JPP, IWK, SPAN	2 years 2019-2020	No. of programme implemented	On going	

* Ministry of Energy, Green Technology and Water (KeTTHA) and Ministry of Land, Water and Natural Resources (KATS) were dissolved and part of their responsibility is taken by new ministry, Ministry of Environment and Water.

2.2.1. Members of TWG 2 : Water and Sewerage

Chairman:		Secretariat:
Deputy Under Secretary Water and Sewerage Services Division Ministry of Environment and Water		Water and Sewerage Services Division Ministry of Environment and Water
Members:		
1.	Engineering Services Division, Ministry of Health (MOH)	
2.	Water Resources, Drainage and Hydrology Division Ministry of Environment and Water (KASA)	
3.	Ministry of Housing and Local Government	
4.	Ministry of Tourism, Arts and Culture Malaysia	
5.	Ministry of Rural Development	
6.	Ministry of Agriculture and Food Industries	
7.	Department of Environment	
8.	Sewerage Services Department	
9.	Water Supply Department	
10.	Department of Irrigation and Drainage Malaysia	
11.	Forestry Department Peninsular Malaysia	
12.	National Water Services Commission (SPAN)	
13.	Academy of Sciences Malaysia	

2.3. Solid Waste

2.3.1. Current situations

Solid waste management in Malaysia is currently under transformation in both services and facility. Under Federalisation of solid waste management policy, only 7 states adopt the policy by implementing Solid Waste Management and Public Cleansing Act 2007 (Act 672). While in the remaining states, solid waste is still managed by respective local authorities.

Major environmental pollution in solid waste management comes from the disposal / open dumping sites which cause serious water and air pollution. This is due to most of Malaysian landfills are non-sanitary landfill where out of 146 landfill in operation, only 18 sites are sanitary landfills.

Generally illegal dumping and littering is still common in Malaysia although a stringent action has been taken to the illegal dumper under Act 672. But action to illegal dumper in states that did not adopt Act 672 is unknown and need to be verified.

As Malaysia's economy and population continue to grow, so does the waste generation. Malaysia has shown a steady growth of waste generation of around 4% each year. Thus, Malaysia cannot totally rely on landfill alone and must start implementing solid waste treatment such as waste to energy plant. However due to high cost of implanting waste to energy (WTE) plant on both CAPEX and OPEX, most of the WTE project has been put on hold.

2.3.2. Issues and challenges

Difficulty to implement solid waste management facility project due to public opposition is one of the biggest obstacle faced by the government to build a new and advanced facilities in Malaysia. Thus current open dump sites cannot be closed and still operates under non sanitary conditions.

Financial burden also is one of the main challenges in the government to expand the implementation of Act 672 and managing solid waste facilities. As a comparison an open dump sites only cost RM4/tonne to operate, while sanitary landfill cost up to RM50/tonne and a WTE plant will cost a staggering RM150 to RM200/tonne.

As Act 672 is not implemented to all states, enforcement of solid waste offence is found to be difficult. This is due to non-standard SOP in enforcement officers and insufficient related regulations.

As plastic waste importation increases, the number of plastic treatment factory also increases. However, due to high cost of operating a plastic waste factory, most of the factories are illegal and they pollute the environment in daily basis. Banning and enforcement of plastic waste import is found to be difficult due to legal constrains and financial burden.

2.3.3. Prioritised Action Plan for TWG 3 Year 2016-2020

NO.	ACTION	LEAD AGENCY	SUPPORTING AGENCY	TIME FRAME	PERFORMANCE INDICATOR	IMPLEMENTATION STATUS	Remarks
Institutional Components and Government Structures – Policies, Procedures, Economic Factors and Legislative Requirements							
1	Solid Waste and Public Cleansing Management Regulation - Scheme For Household Solid Waste and Solid Waste Similar to Household Solid Waste - Scheme For Business Solid Waste - Scheme for Construction and Demolition Solid Waste	NSWMD	-	-	-	Dropped/ Not implemented	Department's activity
2	Food Waste Plan For Industries, Commercials and Institutions (ICI) Sector	NSWMD	-	-	-	Dropped/ Not implemented	Department's activity
Essential Support Functions For Environmental Health							
3	Increase public awareness/ promote self-regulation, implement 3R activities, encourage proper waste disposal method to improve environmental health	NSWMD	-	-	-	Dropped/ Not implemented	Department's activity
4	To propose new action/ work plan for addressing issues on States not enter into force under Solid Waste Management and Public Cleansing Act (Act 672) (JPSPN) - To prepare Garis Panduan Pengurusan Pembuangan Sisa Pepejal Tidak Sempurna Di Negeri – Negeri Yang Tidak Menerima Pakai Akta Pengurusan Sisa Pepejal Dan Pembersihan Awam (Akta 672)	NSWMD	SWCorp, State Government, Local Authority, KKM	3 years 2018-2020	Guidelines prepared and distribute to relevant state	Guidelines completed and distributed to relevant State.	-

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NO.	ACTION	LEAD AGENCY	SUPPORTING AGENCY	TIME FRAME	PERFORMANCE INDICATOR	IMPLEMENTATION STATUS	Remarks
5	To prepare New Blue Print for Solid Waste Management Facility	NSWMD	SWCorp, JAS, PlanMalaysia, State Government, Land Office, Local Authority	-	-	Dropped/ Not implemented	Department's activity
6	To prepare Guidelines on Efficient Solid Waste Management for Non Act 672 States	NSWMD	SWCorp, State Government, Local Authority, KKM	-	-	KIV	-
7	To formulate solid waste importation regulation	NSWMD	SWCorp, AGC, Kastam	-	-	Dropped/ Not implemented	Department's activity
8	To allocate special <i>Feed In Tariff</i> for solid waste management	MeSTECC	JPSPN, State Government, Local Authority	-	-	Dropped/ Not implemented	Department's activity

2.3.4. Members of TWG 3 : Solid Waste

Chairman:		Secretariat:
Deputy Director General (Technical) National Solid Waste Management Department (NSWMD)		Technical Services Division, NSWMD
Members:		
1.	Ministry of Health (MOH) i) Engineering Services Division ii) Disease Control Division	
2.	Solid Waste and Public Cleansing Management Corporation (SWCorp)	
3.	Local Government Department	
4.	Enforcement Division, Department of Environment	
5.	Local Government Division, State of Terengganu	
6.	Local Government Division, State of Kelantan	
7.	Local Government Division, State of Perak	
8.	Local Government Division, State of Selangor	
9.	Local Government Division, State of Pulau Pinang	

2.4. Toxic Chemicals, Hazardous Substances and Hazardous Wastes

2.4.1. Current situations

Hazardous waste management in Malaysian industries was formally introduced in 1989 and has since then gained remarkable achievements and progress in term of its establishment, administration, and implementation. In the past few years, there has been a rapid increase in the development of industrial sectors. The Government has taken positive steps to ensure that the growth of industrial sectors shall continue.

Hazardous waste became an emerging issue in Malaysia ten years after the Environmental Quality Act (EQA) was introduced in 1974. The EQA 1974 is the main form of legislation in Malaysia to control the discharge of hazardous wastes into the environment. The Act is administered by the DOE under the Ministry of Environment and Water

Several shortcomings were encountered after the scheduled waste regulation was enforced for more than 15 years. In view of these shortcomings, a comprehensive review of the regulation was carried out. A new regulation known as the Environmental Quality (Scheduled Wastes) Regulations 2005 was enacted and came into force on 15 August 2005. With this regulation coming into force, the Environmental Quality (Scheduled Wastes) Regulations 1989 was revoked. Some of the major changes in the 2005 Regulation includes waste categorization that are now based on the type of waste as opposed to the source or origin of waste in the 1989 Regulation, inclusion of new provisions for special waste management of waste, limiting the amount and duration for the storage of waste, recovery of hazardous waste, the requirement to conduct training for persons handling hazardous waste and improvement in the labelling requirements.

The current situation of hazardous waste management in Peninsular Malaysia are further elaborated below:

- i. Mandatory that all hazardous waste listed under the First Schedule of the Environmental Quality (Scheduled Wastes) Regulations 2005, under the EQA 1974, for treatment, disposal or recovery of material or product from scheduled wastes.
- ii. Enforcement to curb illegal dumping or disposal of hazardous waste is carried out by the Department of Environment under the EQA 1974.
- iii. Risk elimination or minimisation to workers' safety and health with regards to the use of any hazardous substances in any working premises is legislated under the Occupational Safety and Health Act (OSHA) 1994 by the Department of Occupational Safety and Health (DOSH).
- iv. Clinical wastes are categorised under the First Schedule of the Environmental Quality (Scheduled Wastes) Regulations 2005. Guidelines for the Management of Clinical and Related Wastes in Hospitals and Health Care Establishments (MOH, July 1993) and Guidelines on the Handling and Management of Clinical Waste in Malaysia 2010 (DOE) had been developed through close consultation and cooperation between MOH and DOE to ensure that clinical waste from healthcare establishments are disposed according to the requirements of the Environmental Quality (Scheduled Wastes) Regulations 2005, EQA 1974.
- v. The management of clinical wastes in government hospitals and clinics had been privatised under the management of hospital support services concession companies throughout the nation.
- vi. Collection, transport, and disposal of clinical waste from government and private health care centres are carried out by authorized agencies registered with DOE.
- vii. Pharmaceutical wastes are managed according to the requirements of the Environmental Quality (Scheduled Wastes) Regulations 2005, EQA 1974.

2.4.2. Issues and challenges

- i. Asbestos is being used by the construction and engineering works, automotive, manufacturing and other related industries in Malaysia. There are five (5) types of asbestos used in Malaysia, namely Actinolite, Amosite, Anthophyllite, Chrysotile and Tremolite. Whereas, the usage of Crocidolite is prohibited at workplace except for research or analytical purposes in accordance to Occupational Safety and Health (Prohibition of Use of Substance) Order 1999. There are still demand among the industries for the usage of asbestos. Currently there is no regulation in place to prohibit the usage of the other five (5) types of asbestos at workplace. Human exposure to asbestos. Insufficient local database in regards to disease related to asbestos exposure.
- ii. Illegal dumping of toxic wastes resulted in negative impacts on environment and health. Besides that, it difficult to identify premises which carry out illegal disposal and also cause a high cost for clean-up and disposal of hazardous wastes to DOE licenses contractors. Contaminated land from spillage of toxic wastes can cause adverse impacts to nearby public.
- iii. Electrical and electronic wastes or the so called e-waste has become a serious environmental and health challenge for two major reasons:
 - a. it is potentially hazardous, and
 - b. it is being generated at an alarming rate, e.g. computer scraps containing heavy metal such as lead, chromium, and mercury that can be hazardous to human health and the environment if not managed properly. Dumping of used computers or mobile phones in the guise of refurbishment and recycling should be given attention.
- iv. There is no specific regulation addressing soil and groundwater contamination in Malaysia which reflect to the absent of the requirement of Section 21 to enable the enforcement of Section

24, Environmental Quality Act 1974. Severe land contamination will have significant impacts on human health and environment.

- v. Workers who handle the pesticides at site such as organophosphates can have adverse impact in the long term exposure such as high *cholinesterase* level in blood can cause effect the nervous system. These also cause adverse impacts to public health from ingestion of these crops which has Maximum Residual Limit (MRL) and can lead to food poisoning.
- vi. There is lack of information for certain agencies regarding domestic/premises/household hazardous wastes or products that may contains corrosive, toxic, ignitable or reactive (example such as e-waste, spent drugs, aerosol canisters and batteries) that are disposed at municipal landfill/dumpsites.
- vii. Lacking in the field of research and development which is important for gathering basic information that can be used for estimating the amount of hazardous substance that been used and hazardous waste generated in Malaysia. Correlation between diseases and various hazardous wastes information based on local conditions also are scarce and need to be strengthened.

2.4.3. Prioritised Action Plan for TWG 4 Year 2016-2020

NO.	ACTION	LEAD AGENCY	SUPPORTING AGENCY	TIME FRAME	PERFORMANCE INDICATOR	IMPLEMENTATION STATUS	Remarks
Management and disposal of toxic and hazardous wastes							
Institutional Components and Government Structures							
1	To formulate appropriate legislation for the control of land pollution as a subsidiary regulation under the Section 24, Environmental Quality Act 1974	DOE	HAZMAT, MOH, DOC, DOSH	-	-	Dropped/ Not implemented	Department's activity
2	To strengthen the existing legislation such as Environmental Quality Act 1974 and Environmental Quality Regulation (Scheduled Wastes) 2005	DOE	HAZMAT, MOH, DOC, DOSH	-	-	Dropped/ Not implemented	Department's activity
Essential Functions of Environmental Health							
3	Strengthening E-Consignment Note (E-CN) system	DOE	HAZMAT, MOH, DOSH	-	-	Dropped/ Not implemented	Department's activity
4	Bar-Code System for traceability of hazardous wastes that are generated from industries	DOE	HAZMAT, MOH, DOSH	-	-	Dropped/ Not implemented	Department's activity
Human exposure to asbestos and currently there are still demands in the industries for the use of asbestos.							
Institutional Components and Government Structures							
5	To develop guideline on the asbestos removal.	DOSH	DOE, KKR	-	-	Dropped/ Not implemented	Department's activity

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NO.	ACTION	LEAD AGENCY	SUPPORTING AGENCY	TIME FRAME	PERFORMANCE INDICATOR	IMPLEMENTATION STATUS	Remarks
6	To create inventories for point source that has the potential to release harmful chemicals that will eventually pollute the Semenyih River and affect human and environmental health.	LUAS	DOE, PBT	-	-	Dropped/ Not implemented	Inappropriate resources
7	To develop awareness programme to promote Guidelines for Asbestos Removal	DOE	DOSH, DOE, JKT, MOH, LESTARI, MOA, NSWMD	2 years 2018-2019	No. of programme implemented	Preparation of Awareness Module finished in 2018 and Seminar on Asbestos Management For The Construction Industries conducted in July 2019. Module can be accessed in NEHAP Malaysia website.	Action plan 2018-2019
8	To strengthen control measures on chemical importation	DOE		2020-2021	Planning stage		New Action plan for 2020

2.4.4. Members of TWG 4 : Toxic Chemicals, Hazardous Substances and Hazardous Wastes

Chairman:		Secretariat:
Director Hazardous Substances Division, Department of Environment		Hazardous Substances Division, Department of Environment
Members:		
1.	Ministry of Health (MOH) i) Engineering Services Division ii) Disease Control Division iii) Pharmaceutical Services Division iv) Institute of Medical Research (IMR)	
2.	Environmental Management and Climate Change Division, Ministry of Environment and Water	
3.	Department of Occupational Safety and Health	
4.	Local Government Department	
5.	National Solid Waste Management Department	
6.	Department of Agriculture	
7.	Malaysian Agricultural Research and Development Institute (MARDI)	
8.	Institute for Environment & Development (LESTARI), Universiti Kebangsaan Malaysia (UKM)	

2.5. Climate Change (Formally known as Climate Change, Ozone Depletion, Ecosystem Change)

2.5.1. Current situations

Climate change has been shown to have significant impacts on public health and well-being. Climate Change has not only exacerbated the effects of existing diseases and conditions, but has also expanded the range of pests and pathogens into new regions or communities. The increase in the planet's atmospheric and oceanic temperatures are causing oceans to expand and sea levels to rise. Floods and droughts have become more frequent and intense, and heat waves and hurricanes more severe.

For these reasons, taking measures to reduce climate change (mitigation) and reduce the impact of climate change to public health and wellbeing (adaptation) is crucial in order to create healthier and more sustainable communities.

Currently, continuous monitoring and prevention are being carried out as part of the public health responses to climate change. Climate change is expected to bring new challenges to the public health service. The major climate change sensitive diseases are Dengue, Malaria, food and water-borne diseases like Cholera and Typhoid, and chronic non-communicable diseases sensitive to air pollution and heat. Research in these areas are being carried out by the Institute for Medical Research (IMR) and universities especially the United Nations University – International Institute for Global Health (UNU-IIGH), UKM

2.5.2. Issues and challenges

Climate change effects the public health and wellbeing in several ways which among others are:

- i. Increase in cases and hotspot related to vector-borne such as Dengue, Malaria, food and water borne diseases and chronic non-communicable diseases sensitive to air pollution and heat.

- ii. Greater likelihood of injury, disease and death due to more intense heat waves and fires.
- iii. Disaster relief center and public health facilities prone to inundation due to sea level rise and flood. The number affected facilities is likely in the next coming years.
- iv. Emergence of new strain of disease.

Challenges:

- i. The vulnerability of healthcare facilities needs to be assessed to enable planning and implementation of adaptive management strategies in order to be more resilient towards challenges due to climate change.
- ii. Research will need to incorporate artificial intelligence in disease modelling and predictive analytics.
- iii. Studies on the economic impact of diseases due to or related to climate change need to be initiated.

2.5.3. Prioritised Action Plan for TWG 5 Year 2016-2020

NO.	ACTION	LEAD AGENCY	SUPPORTING AGENCY	TIME FRAME	PERFORMANCE INDICATOR	IMPLEMENTATION STATUS	Remarks
Enhancing National Actions On Climate Change Adaptation (including a focus on public health)							
Institutional Components and Government Structures							
1	To develop National Adaptation Plan (NAP) Title of action plan changed to: To incorporate public health component in National Adaptation Plan (NAP)	MESTECC/ Ministry of Environment and Water (KASA)	NAHRIM, MOH, IMR	-	-	Dropped/ Not implemented	Department's activity
2	To establish a study on the establishment of the National Climate Change Center	NRE	NAHRIM, MOH, NSC, KeTTHA, IMR	-	-	Dropped/ Not implemented	Department's activity
Improve National Capacity On Climate And Health Related Issues							
Institutional Components and Government Structures							
3	To establish National Climate and Health Rooster of Experts	MOH	Related agencies	-	-	Dropped/ Not implemented	Will be incorporated in action plan for TWG10
To Encourage The Dependency On Ground Water As An Alternative Water Resources							
Institutional Components and Government Structures							
4	To Encourage The Dependency On Ground Water As An Alternative Water Resources	NRE/ NAHRIM	JMG, DOE, KeTTHA, BPSP, MoA, JPSM	-	-	Dropped/ Not implemented	Inappropriate resources
5	To Held a Communication, Education, Public Awareness (CEPA) program on Climate Change and Health	KASA	MOH, ASM, Universities	2020	No of activities implemented	Planning Stage	-

* Ministry of Natural Resources and Environment (NRE) and Ministry of Energy, Science, Technology, Environment & Climate Change (MESTECC) were dissolved and part of their responsibility is taken by new ministry, Ministry of Environment and Water (KASA) and Ministry of Energy And Natural Resources (KETSA).

2.5.4. Members of TWG 5 : Climate Change

Chairman:		Secretariat:
Deputy Undersecretary Environmental Management and Climate Change Division, Ministry of Environment and Water		Environmental Management and Climate Change Division, Ministry of Environment and Water
Members:		
1.	Ministry of Health (MOH) i) Engineering Services Division ii) Institute of Medical Research (IMR)	
2.	Academy of Sciences Malaysia	

2.6. Contingency Planning Preparedness & Response in Environmental Health Emergencies

2.6.1. Current situations

The most common disaster in Malaysia is flood which occurs annually. The biggest flood disaster occurred in Kelantan 2014/2015 and in Johor 2006/2007. During the massive flood disaster in Kelantan in 2014, there was lack of coordination among the various agencies providing assistance to the disaster area.

On top of that, many members of the various agencies including volunteers who were deployed to the disaster area were seen to be unprepared and not competent to perform the task given.

Currently there is no standard competency curriculum in Malaysia to empower disaster responders pertaining to protection of self and others from environmental hazards exposure.

2.6.2. Issues and challenges

A training module needs to be established to ensure the smooth flow of disaster management among various parties from both government and private agencies. Ideally, all members of relevant agencies involved in the disaster management need to undergo the training module before entering the disaster area. The modules can be accessed online. After development of the training module, a table top exercise and simulation is required for further improvement.

2.6.3. Prioritised Action Plan for TWG 6 Year 2016-2020

NO.	ACTION	LEAD AGENCY	SUPPORTING AGENCY	TIME FRAME	PERFORMANCE INDICATOR	IMPLEMENTATION STATUS	Remarks
Institutional Components and Government Structures							
1	To develop specific guideline for emergency preparedness and response plan focusing on health hazards, role of agencies and management of risk related to preparedness and response for radiological or nuclear emergency on health hazards	MOSTI / AELB/ ANM	MOH, ANM, JBPM, MOA (Agriculture, Veterinar)	-	-	Dropped/ Not implemented	TWG reprioritized focus area
2	To develop guidelines for rapid measurement, assessment and protective countermeasures related to preparedness and response for radiological or nuclear emergency on health hazards	MOSTI / AELB/ ANM	MOH, ANM, JBPM, MOA (Agriculture, Veterinar)	-	-	Dropped/ Not implemented	TWG reprioritized focus area
Essential Functions of Environmental Health							
3	Voluntary competency for HCW and health volunteers for those involve in pereparedness and response in disaster	UKM	MOH, UKM, UPM, DOSH, MHLG, Dept of Meteorology	2016-2018	No of module developed	1 Online Module completed in 2018. Field simulation done in 2019.	-
4	Develop short version validated "Safe Hospital" questionnaire	MOH	Relevant Agency	2020-2021	"Safe Hospital" questionnaire	Planning stage	
Essential Support Functions for Environmental Health							
5	Organize National Environmental Health Disaster Conference	MOH	Relevant Agency	-	-	Dropped/ Not implemented	To incorporate in other related conference

2.6.4. Members of TWG 6 : Contingency Planning Preparedness & Response in Environmental Health Emergencies

Chairman:		Secretariat:
Senior Principal Assistant Director Preparation, Surveillance and Response Branch, Disaster, Outbreak, Crisis and Emergency (DOCE) Management Sector, Disease Control Division, Ministry of Health		Preparation, Surveillance and Response Branch, Disaster, Outbreak, Crisis and Emergency (DOCE) Management Sector, Disease Control Division, Ministry of Health
Members:		
1.	Ministry of Health (MOH) i) Engineering Services Division ii) Disease Control Division iii) Medical Development Division iv) Family Health Development Division v) Institute of Medical Research (IMR)	
2.	Enforcement Division, Department of Environment	
3.	Department of Occupational Safety and Health	
4.	Local Government Department	
5.	Department of Irrigation and Drainage	
6.	National Disaster Management Agency (NADMA)	
7.	Negeri Sembilan State Health Department	
8.	Community Health Department, UKMMC	
9.	Faculty of Engineering, UPM	
10.	UTM Razak School of Engineering & Advanced Technology	
11.	Southeast Asia Disaster Prevention Research Initiative (SEADPRI-UKM)	
12.	Prof. Dr. Jamal Hisham Hashim, Chairman of TWG10	

2.7. Health Impact Assessment

2.7.1. Current situations

Environmental assessment is an important technique for ensuring that the likely impacts on the environment of proposed development are fully understood and taken into account before such development is allowed to go ahead. In Malaysia, Environmental Impact Assessment (EIA) is required for activities prescribed under the Environmental Quality (Prescribed Activities) (Environmental Impact Assessment) Order 2015 which has been gazette and enforced since 28th August 2015 (EIA Order). Those industrial activities that are not subject to the mandatory EIA requirements are nevertheless subject to various regulations under the Environmental Quality Act, 1974 (EQA).

Health impact assessment (HIA) is a very critical component of the environmental impact assessment (EIA) process. HIA is a process and a planning tool that systematically identifies and examines, in a balanced way, both the potential positive and negative health impacts of an activity or development project. In this planning context, the outcome of an HIA provides the ideal platform to implement efforts to maximize positive health impacts and prevent or minimize negative health impacts. Presently, the conduct of HIA in Malaysia is based on Guidance Document on Health Impact Assessment (HIA) in EIA developed by Department of Environment (DOE) in 2012. This Guidance Document on HIA aims to provide information to stakeholders such as consultants, industries, government agencies and the public on the assessment of health impacts from a development project.

At this time around, the implementation of the HIA was only implemented against projects listed under EIA Order.

2.7.2. Issues and challenges

In conducting HIA during EIA process, some significant issues were identified include:

- i. Some project proponents does not aware the need to conduct HIA in EIA.
- ii. The awareness to conduct of HIA in Malaysia during scoping & screening stage inadequate even though all practicing HIA consultants are registered under EIA Consultation Registration Scheme
- iii. Inadequate awareness on the importance of conducting HIA among various stakeholders/agencies.

2.7.3. Prioritised Action Plan for TWG 7 Year 2016-2020

NO.	ACTION	LEAD AGENCY	SUPPORTING AGENCY	TIME FRAME	PERFORMANCE INDICATOR	IMPLEMENTATION STATUS	Remarks
Institutional Components and Government Structures – Policies, Procedures, Economic Factors and Legislative Requirements							
1	Application of HIA in non EIA prescribed activities	MOH	MOH Local Authority	-	-	Dropped/ Not implemented	TWG reprioritize focus area
2	To strengthen HIA in EIA prescribed activities	MOH	DOE, MOH, Universities, Professional bodies, DOSH	-	-	Dropped/ Not implemented	TWG reprioritize focus area
3	To develop HIA Guideline to enable stakeholders in determining the health impact quantum for relevant project activities that prescribed by DOE in EIA Guideline. Title of action plan changed to: To develop Health Requirement for Health Impact Assessment (HIA) in Environmental Impact Assessment (EIA).	MOH	DOE, Statistics Department, DOSH, JMG, Meteorology Dept., MOH (Engineering Division, KPAS), NAHRIM	2017-2020	Development of Health Requirement for HIA	In progress	-

2.7.4. Members of TWG 7 : Health impact assessment

Chairman:		Secretariat:
Deputy Director Environmental Control Section, Regulatory Branch, Engineering Services Division, Ministry of Health		Environmental Control Section, Regulatory Branch, Engineering Services Division, Ministry of Health
Members:		
1.	Ministry of Health (MOH) i) Engineering Services Division ii) Disease Control Division iii) Institute for Medical Research (IMR)	
2.	Assessment Division, Department of Environment	
3.	National Hydraulic Research Institute of Malaysia (NAHRIM)	
4.	Perak State Health Department	
5.	Sarawak State Health Department	
6.	Johor State Health Department	
7.	Prof. Dr. Jamal Hisham Hashim, Chairman of TWG10	

2.8. Information and Communications Technology (ICT)

2.8.1. Current situations

Currently there is no consolidated platform or hub for policy maker to make the most effective decision in environmental health field. In addition, there are no linkages between various environment and health whereby these data stand alone in various agencies. Therefore, there is an urgent need to develop this database linking the existing databases. This database shall serve as a data repository on environmental health that enables analysis and co-relating of data and information concerning environment and clinical incidences.

TWG 8 was established to help NEHAP Malaysia to develop an environmental health information system that includes all relevant information from various agencies. The system proposed as Malaysia Environmental Health Information System (MyEHIS). MyEHIS shall be designed and developed at the national level with a network of health statistical databases linking data to information at the local level on exposures, exposure pathways, the injury and disease burden attributable to environmental factors.

In June 2015, Engineering Services Division as the Secretariat for NEHAP Malaysia with TWG8 published Malaysia Environmental Health Information System (MyEHIS) - The Conceptual Framework document that provided an overview of the envisioned National Environmental Health Databases system to support NEHAP activities and decision makings. After conceptual completed, MOH has held a preliminary discussion with Universiti Teknikal Malaysia (UTeM) to develop MyEHIS. However, the initiative cannot be continued as there are certain constraints especially on budget and expertise.

Based on the agreement entered into between MOH and MIMOS Berhad, the following documents have been developed in 2016:

- i) Business Requirement Book for TWG 2,
- ii) Business Requirement Book for TWG 1, TWG 3 and TWG 4, and

iii) Proof of Concept (PoC) – System Design Document for TWG 2.

The development of MyEHIS require cost. Budget applications for the development of MyEHIS have been made through various means such as applications to the Economic Planning Unit (now known as Ministry of Economic Affairs) and Yearly Rolling Plan for 11th Malaysian Plan. However, the application is yet to be approved.

2.8.2. Issues and challenges

1. Difficult to define business needs of environmental health.
2. Requires a study because of different platforms between data providers.
3. Presence of variety of data and exist in different format.
4. Data shall come from multiple sources.
5. Transfer of technology from third party developer to internal IT person.
6. Poor data availability and information transparency on environmental health.
7. Higher budget for system development.
8. Limited resources for in-house system development and may increase the delivery timeline.

2.8.3. Members of TWG 8 : Information And Communications Technology (ICT)

Chairman:		Secretariat:	
Undersecretary Information Management Division, Ministry of Health		Information Management Division, Ministry of Health	
Members:			
1.	Engineering Services Division, Ministry of Health		
2.	Information Management Division, Ministry of Health		

2.9. Urban Drainage

2.9.1. Current situations

At present, river pollution problems have become more serious. Among the causes identified are discharge of sullage from food premises to drains and rivers. The quality of sullage from food premises generally contains a lot of food waste, fat, oil, and grease as a result of food preparation and washing of dishes.

In 2005, the government had compulsory imposed the usage of grease trap at all food premises through licensing. At present, more than 118 local authorities enforced this requirement.

Grease traps are tools in the kitchen for separating food waste, grease, oil and grease from wastewater before discharged to sewer or septic tank.

2.9.2. Issues and challenges

Currently, most of sullage from the food premises has discharged:

- Directly to the drains; and
- Pretreatment through grease traps before discharge to the drains.

The issues and challenges related to sullage management are:

- The jurisdiction is not clear regarding the installation of communal grease traps;
- There is no individual grease trap designs that can meet the needs of influent oil and grease 50 mg/l; and
- No specific standard for the design of the grease trap and there is no maintenance of individual grease trap by owners.

2.9.3. Prioritised Action Plan for TWG 9 Year 2016-2020

NO.	ACTION	LEAD AGENCY	SUPPORTING AGENCY	TIME FRAME	PERFORMANCE INDICATOR	IMPLEMENTATION STATUS	Remarks
Grease trap							
Institutional Components and Government Structures – Policies, Procedures, Economic Factors and Legislative Requirements							
1	To Review Guidelines for installation of individual and communal grease trap	Department of Local Government	SPAN, LA, IWK, DID, MOH	-	-	Dropped/ Not implemented	Department's activity
2	Study on performance of existing grease trap	Department of Local Government	SPAN, DOE, DID, LA	2016-2017	Report and guidelines	Completed in 2017	-
3	Provides guidelines to individual grease traps that can meet the needs of the influent O & G 50mg / l or installation of communal grease traps	Department of Local Government	SPAN, DOE, DID, LA	2018	Availability of completed guideline	Completed in 2018	-
4	Amendments of WSIA 2006 (Act 655) which include the sanitary system in a building.	SPAN	KATS, Department of Local Government	-	-	Dropped/ Not implemented	Department's activity
5	To develop standard designs for grease traps Department of Standards Malaysia	SPAN	Department of Local Government, DOE, DID, LA	1 year	Standard designs for grease trap	Will be implemented after amendment of WSIA approved	KIV
Flash Floods							
Essential Support Functions for Environmental Health							
6	To reduce flash floods due to poorly maintained drainage system.	Department of Local Government	DID, MOH, LA	-	-	Dropped/ Not implemented	Department's activity

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NO.	ACTION	LEAD AGENCY	SUPPORTING AGENCY	TIME FRAME	PERFORMANCE INDICATOR	IMPLEMENTATION STATUS	Remarks
7	To carried out desk top study based on secondary data for the effect of flash floods on health delivery	Department of Local Government	MOH, LA, DID	-	-	Dropped/ Not implemented	Inappropriate resources and data
Management for Carwash							
Institutional Components and Government Structures – Policies, Procedures, Economic Factors and Legislative Requirements							
8	To develop Guidelines On Management of Carwash in Local Authorities	Department of Local Government	LA	-	-	Dropped/ Not implemented	Department's activity
Essential Support Functions for Environmental Health							
9	To implement awareness programme for Guidelines On Management of Carwash in Local Authorities	Department of Local Government	LA	2020- 2021	No of activities implemented	Planning Stage	-

2.9.4. Members of TWG 9 : Urban Drainage

Chairman:		Secretariat:
Director Public Health Engineering Consultancy Division, Local Government Department, Ministry of Housing and Local Government		Public Health Engineering Consultancy Division, Local Government Department, Ministry of Housing and Local Government
Members:		
1.	Ministry of Health (MOH) i) Engineering Services Division ii) Disease Control Division iii) Medical Development Division iv) Family Health Development Division v) Institute of Medical Research (IMR)	
2.	Ministry of Environment and Water	
3.	Water Resources, Drainage and Hydrology Division Ministry of Environment and Water (KASA)	
4.	Department of Irrigation and Drainage (DID)	
5.	Department of Environment	
6.	National Solid Waste Management Department, Ministry of Housing and Local Government	
7.	Solid Waste and Public Cleansing Management Corporation (SWCorp)	
8.	National Water Services Commission (SPAN)	
9.	Health and Environment Department, Kuala Lumpur City Hall (DBKL)	

2.10. Environmental Health Experts

2.10.1. Current situations

Environmental health is multi-disciplinary in nature and require the participation of various government and private sector stakeholders. These environmental health issues are extensive and cross-cutting in nature. For a developing country like Malaysia, there is a need to take stock and prioritise these environmental health issues so that valuable resources and manpower can be mobilised to generate maximum impact and change to the nation. Therefore, there is a need to generate a **Priority list of environmental health issues for Malaysia**.

In its meeting on 17 April 2017, the NEHAP Steering Committee has requested that TWG10 looks into SDG 3 (Ensure healthy lives and promote well-being for all at all ages) SDG 6 (Ensure availability and sustainable management of water and sanitation) and SDG 13 (Take urgent action to combat climate change and its impacts). To start with, TWG10 has chosen embark on a project related to SDG 13, which is to prepare a **Policy Brief on Climate Change and Health in Malaysia : Challenges and Recommendations**.

The rapid economic, infrastructural and industrial development in Malaysia over the last decades has led to an escalation of environmental and environmental health related issues. This calls for a multi-sectoral and multi-disciplinary approach in assessing and addressing the issues confronting the nation. As these issues are numerous and complicated in nature, an effort is needed to consolidate and assimilate available information and data on environmental health to enable us to conduct a situational analysis to prioritise them based on the magnitude and severity of these issues.

For 2018, the primary aims of TWG10 would be to:

- Help prioritise these environmental health issues through a focus group discussion with relevant public and private stakeholders.

- Publish a Policy Brief on Climate Change and Health in Malaysia: Challenges and Recommendations.

2.10.2. Issues and challenges

Environmental health issues are currently quite extensive and cut across various disciplines. With limited financial and manpower resources, there is an urgent need to prioritise these issues in a systematic manner, so that emphasis in control and mitigation activities are more focused and prioritised accordingly.

Climate change is undoubtedly the greatest environmental challenge confronting mankind globally. The health consequences of climate change which happens to be the least understood link between climate changes and humans is perhaps the biggest and least understood challenge of climate change.

2.10.3. Prioritised Action Plan for TWG 10 Year 2016-2020

NO.	ACTION	LEAD AGENCY	SUPPORTING AGENCY	TIME FRAME	PERFORMANCE INDICATOR	IMPLEMENTATION STATUS	Remarks
Institutional Components and Government Structures – Policies, Procedures, Economic Factors and Legislative Requirements							
1	Priority list of environmental health issues for Malaysia	NA	TWG10	2018-2019	Meetings, FGD, publication of priority list	Completed in 2019 The Priority list has been finalized and uploaded to NEHAP Malaysia Website	-
2	Policy Brief on Climate Change and Health in Malaysia : Challenges and Recommendations	NA	TWG10	2019-2020	Meetings, writing workshop, publication	In progress	-

2.10.4. Members of TWG 10 : Environmental Health Experts

Chairman:		Secretariat:	
Prof. Dr. Jamal Hisham Hashim		Assoc. Prof. Dr. Rozita Hod (UKM)	
Members:			
1.	Engineering Services Division, Ministry of Health (MOH)		
2.	Prof. Dr. Zailina Hashim (UPM)		
3.	Assoc. Prof. Dr. Juliana Jalaludin (UPM)		
4.	Dr. Norlen Mohamed (Disease Control Division, MOH)		
5.	Dr. Subramaniam a/l Karuppanan (Mahsa University)		

2.11. Vector Bearing Disease

2.11.1. Current situations

Rapid urbanization is having a significant impact on vector breeding and infestation as well as disease transmission in recent years. Some diseases, such as dengue, zika, chikungunya and leptospirosis are emerging in countries where they were previously unknown. Furthermore, negative attitude and poor behaviour towards cleanliness and littering can lead to potential breeding sites for vector.

Cost of dengue vector control activities in Malaysia study by Packierisamy et al. found that in 2010, Malaysia spent US\$73.5 million or 0.03% of the country's GDP on its National Dengue Vector Control Program. This spending represented US\$1,591 per reported dengue case and US\$2.68 per capita population. Unfortunately in Malaysia, the incidence of dengue and the number deaths has increased dramatically in recent years especially in 2014 (Rose Nani 2015). Therefore, the cost implication due to dengue infection will continue to increase if the preventive measure not optimized.

Retrospective Study of Leptospirosis in Malaysia by Garba et al. in 2017 showed that Leptospirosis infection tend to be a sharp rise in incidence rate among human population in the year 2014 which was attributed to flooding and heavy rainfall experienced as well as recreational activities. In addition, study by Tan et al. has emphasized Leptospirosis is an emerging public health concern in Malaysia and may pose a significant health impact and burden to the nation in the coming years if not well controlled.

In order to sustained the reduction of dengue, zika, chikungunya and leptospirosis incidence, the vectors such as mosquito, rats, flies and cockroach need to be optimally controlled. The community behavioural change towards clean environment, commitment of relevant agencies in implementing concept of mosquito free building design, proper domestic waste management by food outlet operator, promote innovation towards

controlling vector e.g. dustbin which will trap rats or cockroach, are some of the factors that can be modified and improved to control the vector population and further reduce the burden of diseases.

2.11.2. Issues and challenges

- Excess production of waste, uncontrolled domestic waste disposal, unsanitary food premises as well as presence of illegal dumping site being potential breeding sites for vector.
- A crucial element in vector-borne diseases is behavioural change mainly towards clean environment. Dirty environment encourages the existence of places of breeding vectors including rats. Education and awareness should be improved so that people know how to protect themselves and their communities from mosquitoes and other vectors as well as rats.

2.11.1. Prioritised Action Plan for TWG 11 Year 2016-2020

NO.	ACTION	LEAD AGENCY	SUPPORTING AGENCY	TIME FRAME	PERFORMANCE INDICATOR	IMPLEMENTATION STATUS	Remarks
Institutional Components and Government Structures – Policies, Procedures, Economic Factors and Legislative Requirements							
1	Guideline for Vector Prevention and Control in Priority Premises (combine and improvise established guidelines) <ul style="list-style-type: none"> i) Aedes ii) Rat iii) Cockroach iv) Fly 	IMR	BKP HECC KKR JKR KPKT CIDB DBKL DOSH KPM PERHILITAN	2 years	1) Number of cases vector related diseases (Dengue, Chikungunya, Leptospirosis) 2) Number of complains related to vectors	TWG has prepared a draft guidelines.	-
Essential Functions of Environmental Health							
2	Empowerment of community based activity on vector control 5.11.1. Mesyuarat mengambil maklum bahawa pelan tindakan utama iaitu Empowerment of community based activity (e.g. COMBI) on vector control akan ditangguhkan buat sementara waktu kerana kekangan pelaksanaan aktiviti di lapangan. Makluman	HECC BKP	IPTK KPKT UiTM IMR DBKL ATM KKMM PERPADUAN N JKN DOSH KKR JKR CIDB PERHILITAN	2018 - 2020	1) % household representative trained 2) % weekly 'gotong-royong' activities carried out (isi rumah, lorong dan taman) 3) Environmental assessment using Environmental Vector Infestation Index (EV2i) assessment form before and after intervention	Community engagement activity is postponed to 2021	Empowerment of community based activity (e.g. COMBI) on vector control will be temporarily suspended due COVID-19.

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NO.	ACTION	LEAD AGENCY	SUPPORTING AGENCY	TIME FRAME	PERFORMANCE INDICATOR	IMPLEMENTATION STATUS	Remarks
					I. Environmental Cleanliness Index II. Aedes (Ovitrap Index) III. Rat index IV. Cockroach V. Fly 4) Knowledge Attitude and Practice (KAP) (improvement of KAP score) 5) Number of vector related diseases (Dengue, Chikungunya, Leptospirosis) 6) Number of complains related to vectors		
Essential Support Functions for Environmental Health							
3	Vector Minimisation: Best Practice For The Construction Site i) Aedes ii) Rat iii) Fly	KKR JKR	CIDB DOSH BKP KPKT	2 years	1) Number Construction industry practice vector minimisation methods 2) Vector index	KIV	

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NO.	ACTION	LEAD AGENCY	SUPPORTING AGENCY	TIME FRAME	PERFORMANCE INDICATOR	IMPLEMENTATION STATUS	Remarks
					I. Aedes (Ovitrap Index) II. Rat index III. Fly index		
4	To conduct a research on characterization and productivity profiles on vector (characterize the habitats of vector associated with building design, infrastructure and types of houses with its development)	UiTM	USM UKM IMR JKR	2 years	Related pilot study on: 1. Epidemiological studies related to vector-borne disease 2. Population performance of vectors in terms of their development, survival and reproduction 3. Effect of weather on the habitat of vector associated with building age & design, infrastructure	KIV Pilot study: 1. Temporal pattern of dengue cases in central zone of Shah Alam (Completed) 2. Case study on dengue vectors in central zone of Shah Alam, Selangor (Completed) 3. Interactive effect of rainfall variability in urban housing estates in relation to dengue outbreak (Proposal)	

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NO.	ACTION	LEAD AGENCY	SUPPORTING AGENCY	TIME FRAME	PERFORMANCE INDICATOR	IMPLEMENTATION STATUS	Remarks
					and types of houses.	submission: Fundamental Research Grant Proposal 2018 cycle)	

2.11.2. Members of TWG 11 : Vector Bearing Disease

Chairman:		Secretariat:
The Head of Vector Borne Disease Sector, Disease Control Division		Vector Borne Disease Sector, Disease Control Division
Members:		
1.	Ministry of Health (MOH) i) Engineering Services Division ii) Disease Control Division iii) Health Education Division iv) Institute of Medical Research (IMR) v) Institute for Health Behavioural Research vi) National Public Health Laboratory	
2.	Selangor State Health Department	
3.	School Management Division, Ministry of Education	
4.	Strategic Communication Division, Ministry Of Communications And Multimedia	
5.	Policy And International Division, Ministry of Works	
6.	Local Government Department	
7.	Department of Environment (DOE)	
8.	Architecture Branch, Public Works Department	
9.	Occupational Health Division, Department of Occupational Safety and Health	
10.	Department of Wildlife and National Parks Peninsular Malaysia	
11.	Community Service Unit, Department of National Unity And Integration	
12.	Health Service Division, Malaysia Armed Forces Headquarters	
13.	Enforcement Division, Construction Industry Development Board (CIDB)	
14.	Health and Environment Department, Kuala Lumpur City Hall (DBKL)	
15.	Universiti Teknologi Mara (UiTM)	

3. CONCLUSION

In overall, all TWGs under NEHAP Malaysia have developed action plans based on current situations as well as issues and challenges faced in dealing with their respective areas of concern. Base on the prioritised action plan listed for each TWG for 2016-2020, Table 1 shows the implementation status of the action plans as of 2020.

Jadual 1: The implementation status of the action plans proposed by each TWG as of 2020

TWG	Proposed Action Plan	No. of Action Plan Implemented under NEHAP Malaysia			No. of Action Plan Implemented as Department's activity*	No. of Action Plan Dropped**
		Implemented	On-going	KIV		
1	7	2	3	0	1	1
2	10	1	1	0	7	1
3	8	1	0	1	6	0
4	8	1	1	0	6	0
5	5	0	1	0	2	2
6	5	1	1	0	0	3
7	3	0	1	0	0	2
8	1	0	0	1	0	0
9	9	2	1	1	4	1
10	2	1	1	0	0	0
11	4	0	2	2	0	0
Total	62	9	12	5	26	10

* These action plans were identified as an activities of relevant agencies/ departments. Therefor the implementation is not monitored under NEHAP Malaysia.

** These action plans were not implemented.

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