



# Assessment of Capacity for the Management of POPs Containing E-waste: A Case Study of Malaysia and Thailand

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Introductory meeting with key stakeholders, Thailand

23 - 24 December 2024

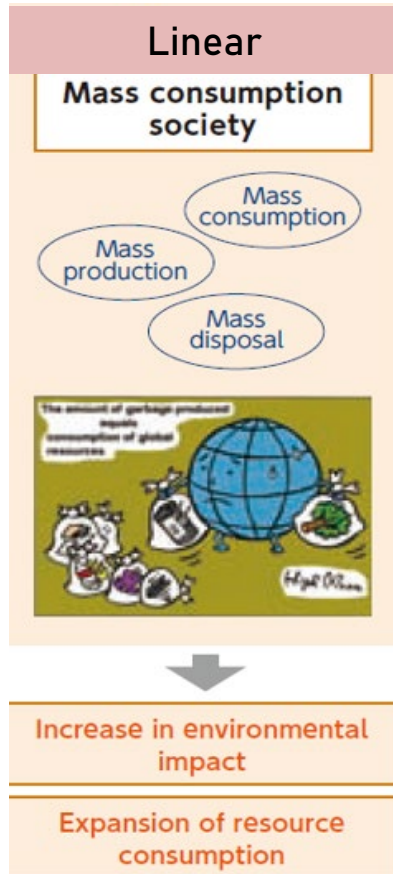
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# About CCET

- Established in 2014 under a memorandum of understanding (MOU) between UN Environment Programme (UNEP) and the Institute for Global Environmental Strategies (IGES).
- Aims to assist national/ local governments to sound management of municipal solid waste (MSW) towards achieving resource efficiency, climate change, SDGs and other pollution free targets.
- Three priority action areas:
  - Provide technical support to develop national/ city waste management action plans and pilot implementation
  - Development and dissemination of science-based knowledge products – methods, tools, analysis, good practices for decision makers and practitioners
  - Building partnership and networking to facilitate regional/ global policy dialogue and leadership)



# CCET's Principles of Practice



## Institutional Capacity (System Change)

Pro-active Policies

Sound Institutions

Sustainable Financial Mechanism

Appropriate Technology

## Integrated Solid Waste Management Planning

## Individual Capacity (Behaviour Change)

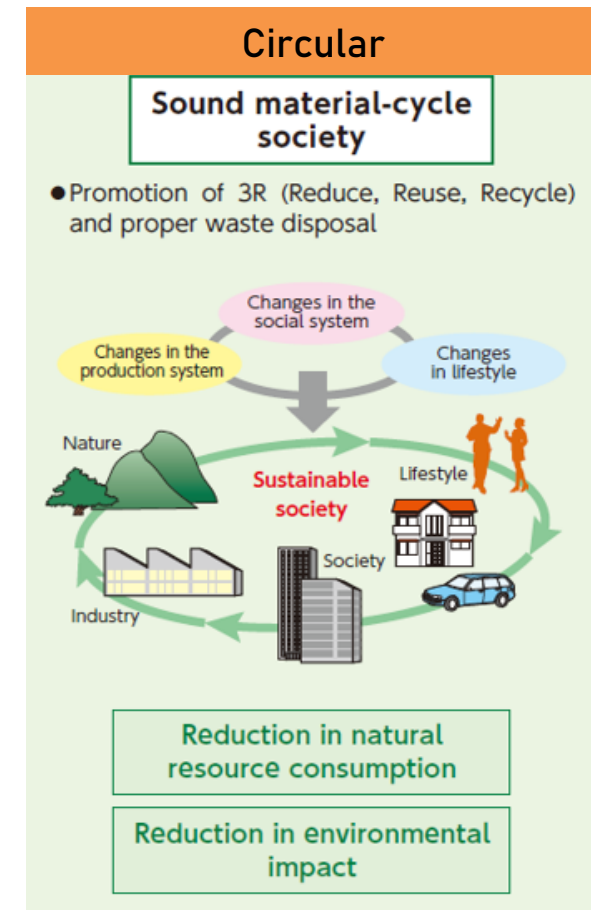
Awareness

Knowledge

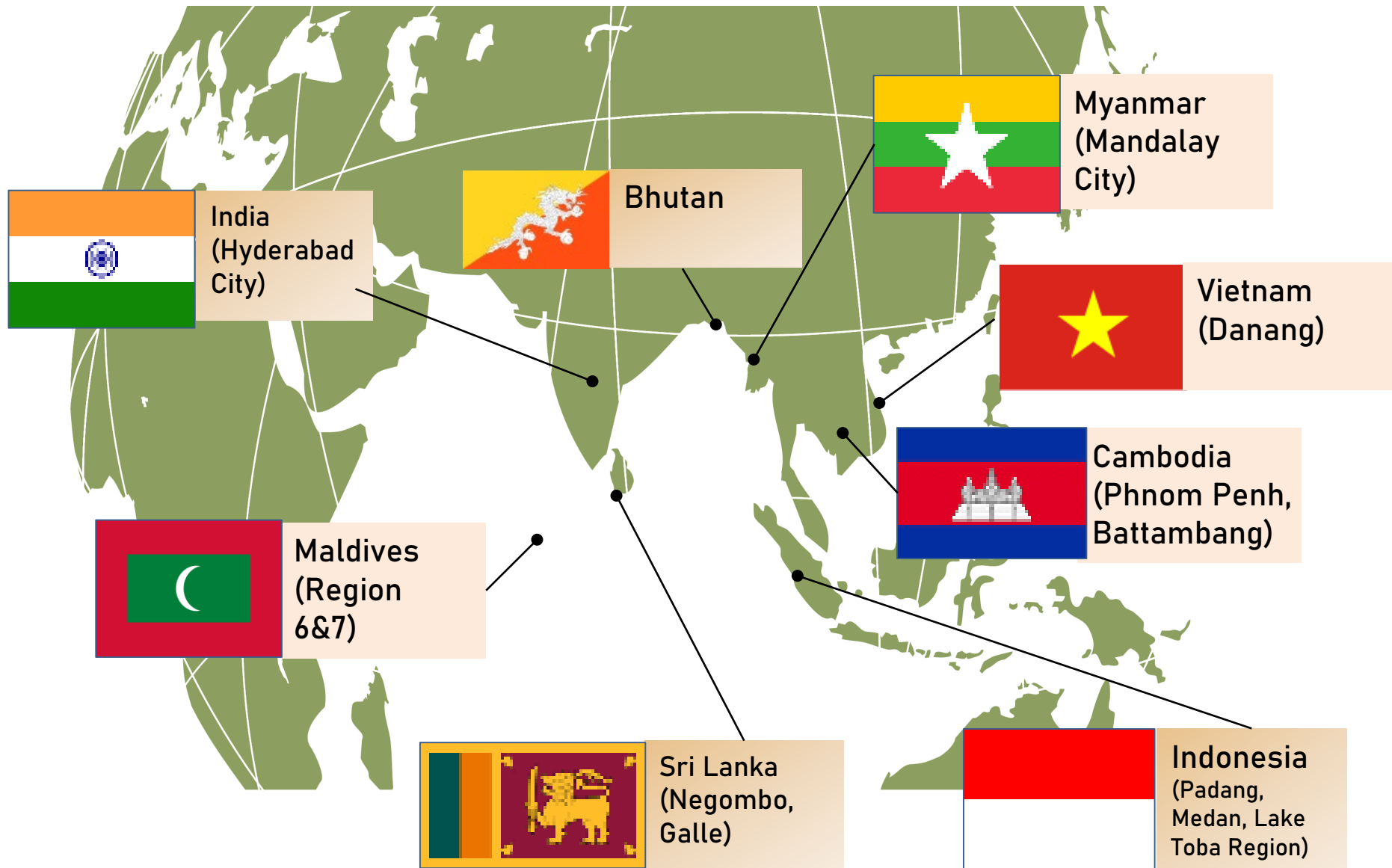
Norms

Attitudes

Behaviours



# The countries/ cities partnered with CCET



# Introduction to the Project

## 1. Project Overview

### *1.1. Project Goals:*

Enhance understanding of the availability of information, knowledge, and capacity for managing Persistent Organic Pollutants (POPs) containing e-waste in Malaysia and Thailand.

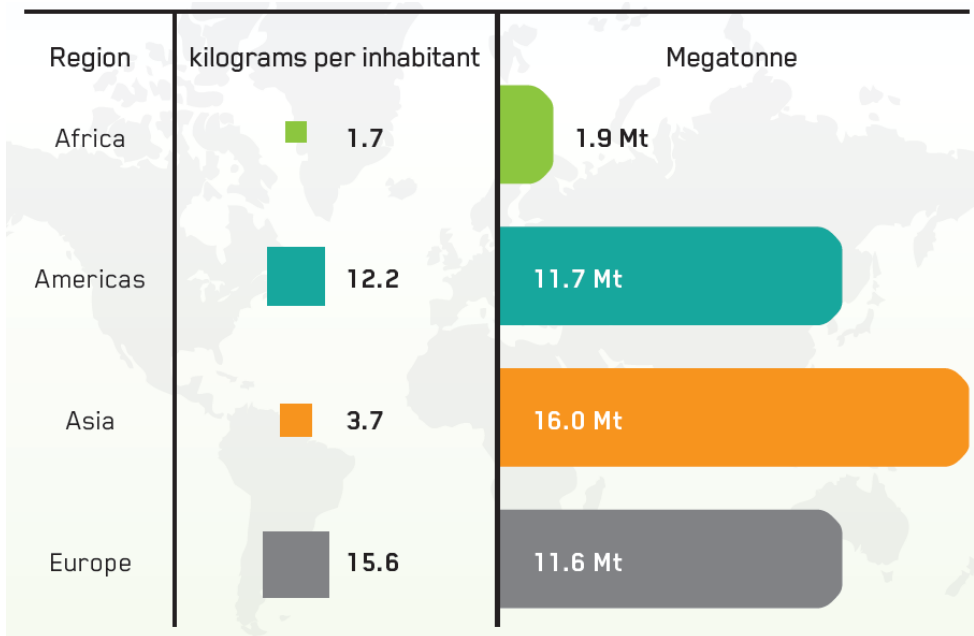
### *1.2. Key Activities:*

- Conduct assessments of current information and capacity for POP waste management within e-waste.
- Provide training to key stakeholders on improving methodology to identify and environmentally sound management practices of POP waste in e-waste.
- Develop case studies and formulate recommendations for improved POP waste management within e-waste.

### *1.3. Expected Outcomes:*

- Improved understanding of POP waste in e-waste
- Enhanced management practices and regulatory compliance.
- Contribution to the BRS Secretariat's mission by generating case studies
- Promoting regional cooperation and capacity-building. <sup>5</sup>

# E-waste generation in ASEAN Countries



Source: E-waste 2.0: Recycling for Sustainability (2016).  
<https://www.unep.org/resources/infographic/e-waste-20-recycling-sustainability>

- E-waste is one of the fastest growing solid waste streams in the world.
- In 2022, an estimated 62 million tonnes of e-waste were produced globally. Out of them, only 22.3% was documented as formally collected and recycled.
- ILO and WHO (2021) estimated that millions of women and child labourers working in the informal recycling sector globally may be at risk of hazardous e-waste exposures.

Country	E-waste Generated (Kg/Capita)		
	2016	2019	2022
Brunei Darussalam	18.3	19.7	19.9
Cambodia	0.9	1.1	1.5
Indonesia	4.9	6.1	6.9
Lao PDR	1	2.5	3.6
Malaysia	8.8	11.1	12.2
Myanmar	1	1.6	1.4
Philippines	2.8	3.9	4.7
Singapore	17.9	19.9	20.3
Thailand	7.4	9.2	10.5
Vietnam	1.5	2.7	5.3
Japan	16.9	20.4	21.2
China	5.2	7.2	8.5
Republic of Korea	13.1	15.8	17.9

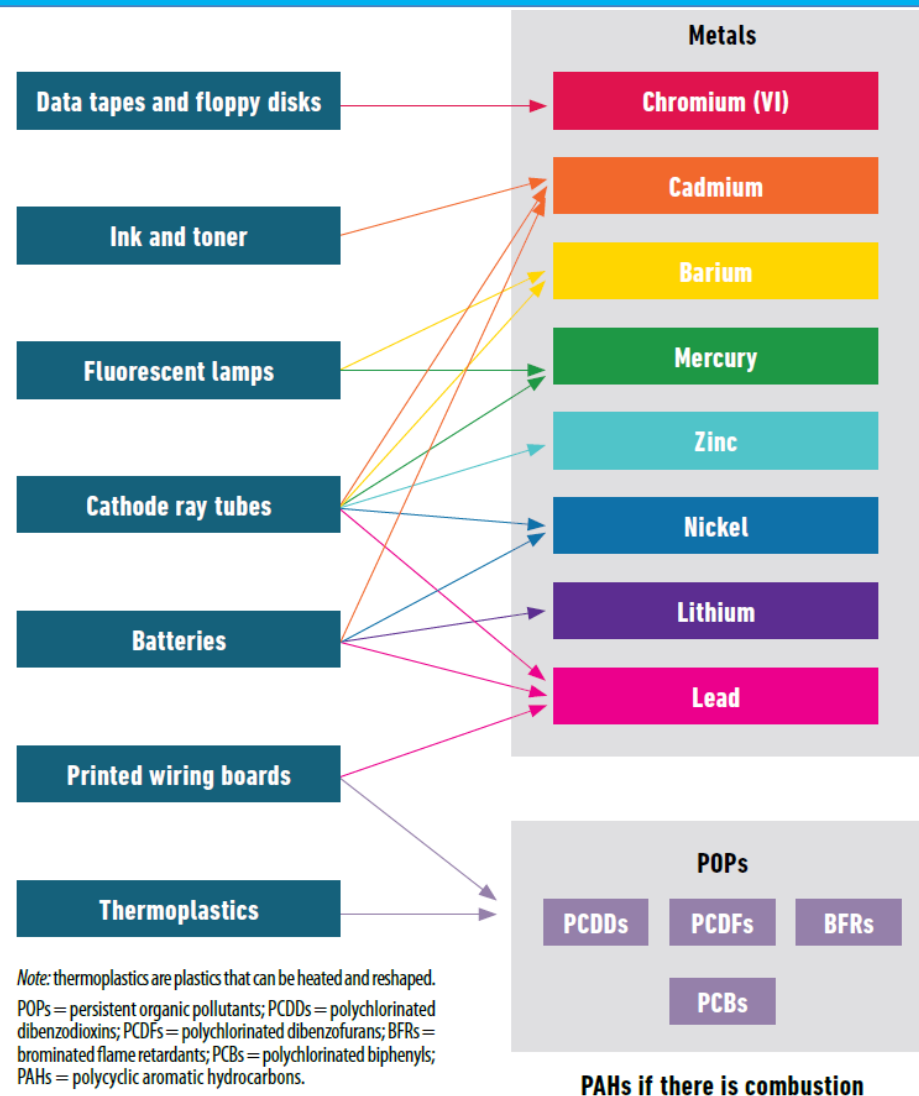
Source: Global E-waste Monitor 2017, 2020, 2024.  
<https://www.itu.int/en/ITU-D/Environment/Pages/Toolbox/Global-Ewaste-Monitors.aspx>

# Importance of Managing POPs Containing E-Waste

POPs are toxic chemical substances that are harmful to human health and the environment. They don't break down and remain in the environment for a long time, negatively affecting any wildlife and humans they encounter. POPs can transfer by air, and water, and pass from one species to another through the food chain.

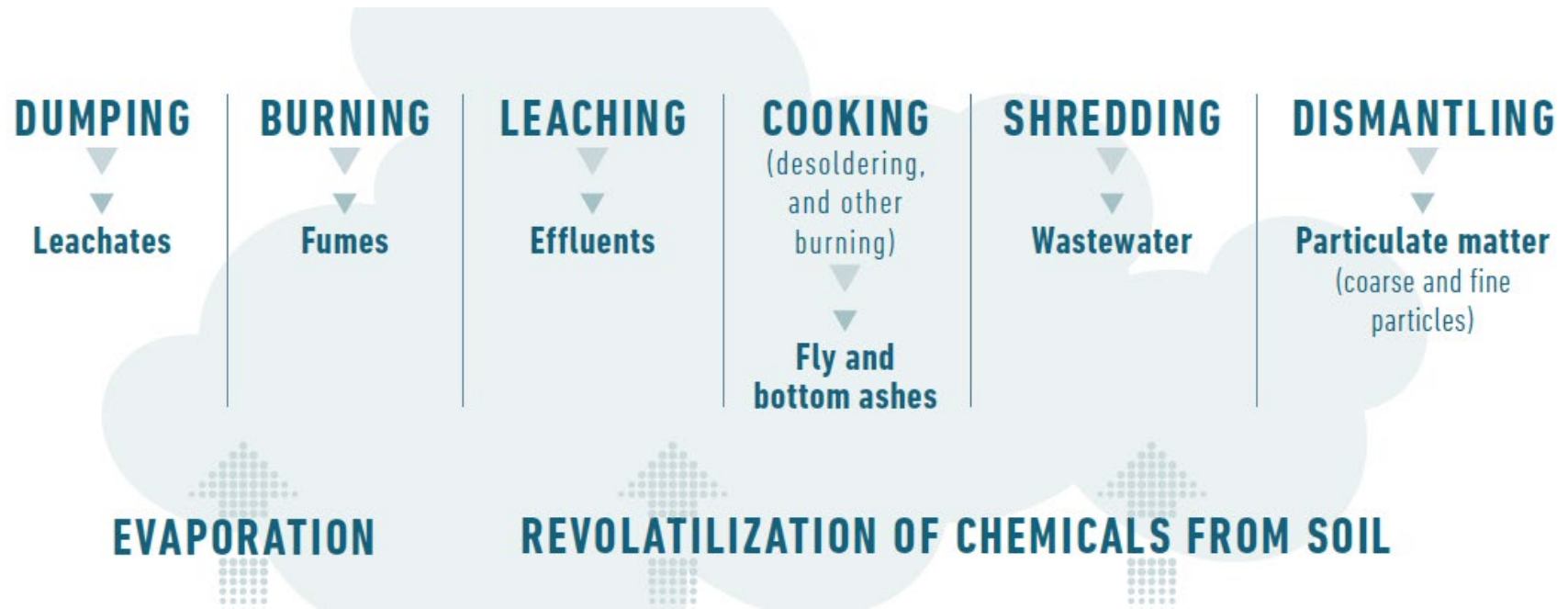
Persistent organic pollutant (POP)	Concentration threshold	Persistent organic pollutant (POP)	Concentration threshold
Aldrin	50mg per kg	Mirex	50mg per kg
Alkanes C10 – C13, chloro (short-chain chlorinated parafins) (SCCPs)	10,000mg per kg	Polychlorinated Biphenyls (PCBs)	50mg per kg
Chlordane	50mg per kg	Toxaphene	50mg per kg
Dieldrin	50mg per kg	Polychlorinated naphthalenes	10mg per kg
Endosulfan	50mg per kg	DDT (1,1,1-trichloro-2,2-bis (4-chlorophenyl) ethane)	50mg per kg
Endrin	50mg per kg	Chlordecone	50mg per kg
Heptachlor	50mg per kg	Polychlorinated dibenzo-p-dioxins (PCDDs) and polychlorinated dibenzofurans (PCDFs)	15µg (micrograms) per kg,
Hexabromobiphenyl	50mg per kg	Hexachlorocyclohexanes, including lindane	50mg per kg
Hexachlorobutadiene	100mg per kg	Total of tetra-, penta-, hexa-, hepta- and deca- bromodiphenyl ether	1,000mg per kg
Hexabromocyclododecane	1,000mg per kg	Perfluorooctane sulfonic acid (PFOS) and PFOS derivatives	50mg per kg
Hexachlorobenzene	50mg per kg	Pentachlorobenzene	50mg per kg

# Common Toxicants Released from Unsound Waste Management Practices





# Hazardous emissions from informal recycling practices



Source: Children and digital dumpsites: E-waste exposure and child health (2021).

WHO <https://iris.who.int/bitstream/handle/10665/341718/9789240023901-eng.pdf?sequence=1&isAllowed=y>

# POPs Containing E-Waste Management (GOV.UK)

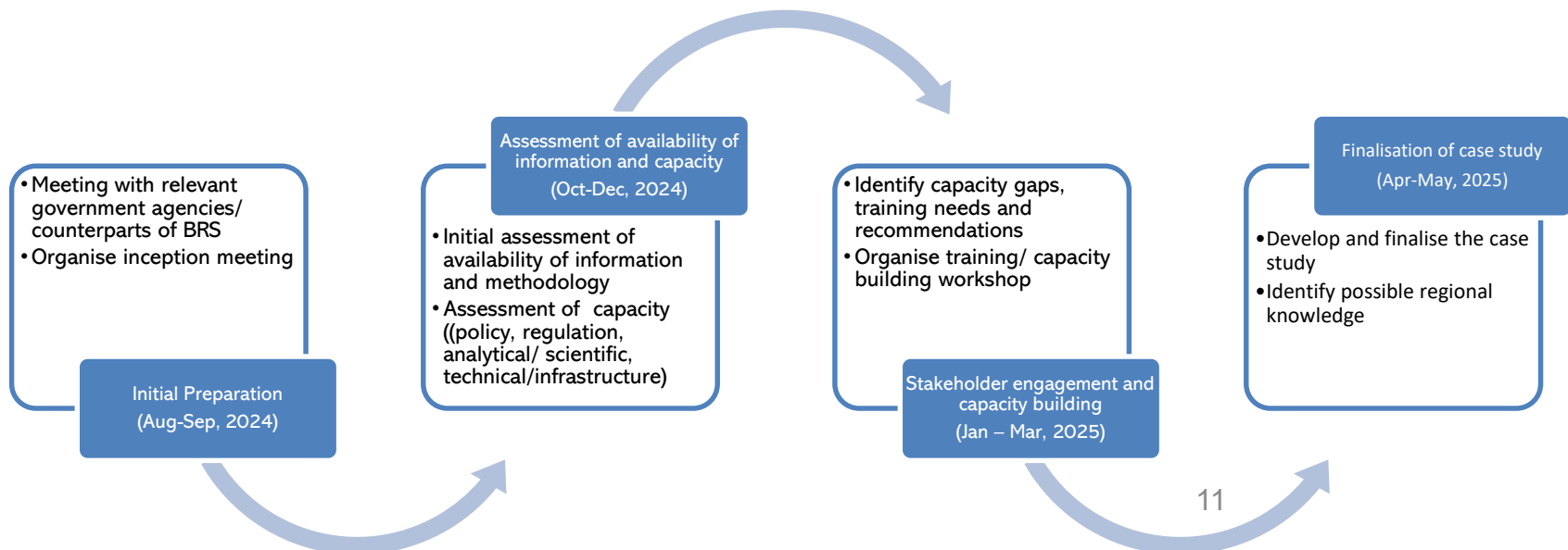
If the levels of hazardous substances or POPs are over a certain amount the item will be classified as hazardous or POPs waste. If the WEEE is POPs waste, there are special rules, guidance on classifying electrical device waste dealing with hazardous waste disposing of POPs waste.

Component	Waste type	Waste status
<b>Televisions, computer monitors and other display devices</b>		
Components such as screens, circuit boards, batteries or any plastic parts may contain hazardous chemicals or POPs.	Cathode ray tube (CRT), flatscreen (plasma or LCD) containing POPs	Hazardous and POPs
<b>Fridges, freezers, chillers and air-conditioning units</b>		
Components such as circuit boards, motors and any plastic parts may contain hazardous chemicals or POPs. Coolants and foam may also be hazardous. Usually there is not enough POPs for the item to be classified as POPs waste.	Containing ozone-depleting substances as foam blowing agents or coolants	Hazardous, non-POPs
<b>Large domestic appliances (LDA): white goods (washing machines, tumble dryers, dishwashers and cookers)</b>		
Components such as circuit boards, motors or any plastic parts may contain POPs. Usually there is not enough for the item to be classified as POPs waste.	Large domestic appliances: white goods	Non-hazardous, non-POPs
	Heat pump tumble dryers	Hazardous, non-POPs
	Vented and condenser tumble dryers	Non-hazardous, non-POPs
<b>Small mixed WEEE (small household-type electrical items collected from homes or businesses)</b>		
Components such as screens, circuit boards, batteries or any plastic parts may contain hazardous chemicals or POPs.	Small mixed WEEE containing POPs	Hazardous and POPs
<b>Lightbulbs and lamps</b>		
Components such as circuit boards, plastic parts or casings may contain POPs and hazardous chemicals, such as flame retardants.	Linear fluorescent tubes	Hazardous, non-POPs
	Compact fluorescent lamps and other non-linear gas discharge lamps	Hazardous and POPs
	LED containing POPs and hazardous substances	Hazardous and POPs
<a href="https://www.gov.uk/how-to-classify-different-types-of-waste/electronic-and-electrical-equipment">https://www.gov.uk/how-to-classify-different-types-of-waste/electronic-and-electrical-equipment</a>		

# Implementation Approach

- The assessment will involve surveys, interviews, and site visits to collect data on current practices and capacities.
- Engage with government agencies (DOE and others), e-waste recyclers, NGOs, and the private sector to gather insights and ensure broad participation.
- Identify gaps and develop training programs focused on the identification (methodology), handling, managing and disposal of POPs in e-waste in environmentally-sound manner.

## Time Frame:



# Way Forward

- ***Regulatory Advancement:*** Recommendations from the project will support both countries in refining its regulations and policies to better align with international standards to manage POP waste in e-waste.
- ***Technical and Capacity Building:*** Key stakeholders, including recyclers and policymakers, will receive targeted training, strengthening the country's overall capacity to manage POPs in e-waste.
- ***Data-Driven Policy Making:*** Enhanced data collection and analysis will equip governments with the insights needed to craft more effective policies for POP waste management in e-waste.
- ***Regional Leadership:*** Both Thailand and Malaysia can serve as models for other ASEAN countries, showcasing how effective management of POP waste within e-waste can be achieved.

**ご清聴ありがとうございました。**

**Thank you for your attention.**

You can find more information:

<https://www.ccet.jp/publications>

**IGES** Institute for Global Environmental Strategies  
公益財団法人 地球環境戦略研究機関