



# Summary of the Workshop

Tetsuo Kuyama (WEPA Secretariat)  
Manager (Water Resource Management)  
Institute for Global Environmental Strategies

## What is the fact NOT identified?

For the future discussion about problem solution, following fact is needed.

- What is the **status of compliance** regarding industrial wastewater quality standards in WEPA countries?
- If there is a **gap** between the **standard** and its **compliance**, what is the **reason** for this?
- What is the **type of industry (and pollutants)commonly issued** in the respect of wastewater management among WEPA countries?

The purpose of yesterday's session

## Industrial Wastewater Management in Asian countries

### The purpose of today's session

To have an overview of **monitoring methods** and state of **compliance** regarding wastewater quality standards. **Industries which face challenges** in meeting those standards will be highlighted. The **status** and **issues for those industries** will be shared, and the next steps will be discussed.

## Overview of industrial wastewater regulations

- The existing types of industrial wastewater quality standards (if they exist) and their outlines (Basis for regulation, target industries, target pollutants)
- Industrial wastewater quality monitoring methods (e.g. self-monitoring by industries, monitoring by public entities)
- Challenges in monitoring
- The situation of compliance regarding industrial wastewater quality standards and industries which face challenges in compliance

### Situation and challenges for the problematic industries and countermeasures

- Overview of the problematic industry
- Impact to the environment of wastewater emitted from the respective industry
- The reason for non-compliance of the respective industry and the problematic pollutant(s)
- Current mitigation measures and the problems therein
- Technologies and needs for addressing the challenges

# Effluent Water Quality Standard

General Standard + Stringent standard  
+ Specific standard for specific industry  
(Different values for different receiving water bodies)

Country	Basis for Standard	Structure of Standard
Cambodia		<ul style="list-style-type: none"><li>• Standard values for 2 different type of receiving bodies</li></ul>
China		<ul style="list-style-type: none"><li>• 1 integrated standard</li><li>• 63 industry based standard</li></ul>
Indonesia		
Japan	Water Quality Based on Dilution Ratio	<ul style="list-style-type: none"><li>• National standard</li><li>• Prefectural stringent standard</li><li>• Temporary standard for specific industry</li></ul>
Laos		<ul style="list-style-type: none"><li>• 1 standard</li></ul>
Malaysia		<ul style="list-style-type: none"><li>• EQ (Industrial Effluent) Reg 2009</li><li>• EQ (Crude Palm Oil ) Reg. 1997</li><li>• EQ (Raw Natural Rubber) Reg. 1978</li></ul>

# Effluent Water Quality Standard

Country	Basis for Standard	Structure of Standard
Myanmar		
Nepal		<ul style="list-style-type: none"> <li>• Generic Standard</li> <li>• Specific Industrial Effluent Standards for 9 industries</li> </ul>
Philippine		<ul style="list-style-type: none"> <li>• Effluent Standard (DAO 2016-8)(Standard values for 4 different type of receiving bodies)</li> <li>• Significant Effluent Quality Parameter for 13 industries</li> </ul>
Republic of Korea		
Sri Lanka		<ul style="list-style-type: none"> <li>• National Discharge and Emission Standard</li> <li>• Wastewater Discharge Standard for 3 industry</li> </ul>
Thailand		<ul style="list-style-type: none"> <li>• General Effluent Standard</li> <li>• Specific Effluent Standard for 6 industry</li> <li>• Water Recycle Standard</li> </ul>
Vietnam		<ul style="list-style-type: none"> <li>• National Technical Regulation on Industrial Wastewater (Standard value for 2 different type of receiving bodies)</li> <li>• National technical Regulation specific for 10 industries</li> </ul>

# Monitoring

## Reliability of Result of Monitoring: Issues in some countries

Country	Industry	Local/national government
Cambodia		Monitoring by Local Government (Non-Chemical) Monitoring by National government (Chemical Industry)
China		
Indonesia		
Japan	Monitoring, Recording and Storing result of the monitoring	Request to report the result On-site Inspection
Laos		Compliance Inspection (PCD) Regular Monitoring (ESIA)
Malaysia	Monitoring by Competent Person	Monitoring by DOE
Myanmar		
Nepal	Not authorized monitoring Considered as a Reference	Monitoring by the Public Entity
Philippine	Self-Monitoring Report or Compliance Monitoring Report	Compliance Evaluation Report
Republic of Korea		
Sri Lanka		
Thailand	Monitoring Reporting	Monitoring/Inspection by MONRE, MOI
Vietnam	Monitoring and Reporting	On-site Inspection



## MONITORING APPROACH 1. Guided Self-Regulation (GSR) Approach

The operation IETS should be supervised by competent person

Certified by Director General Of DOE

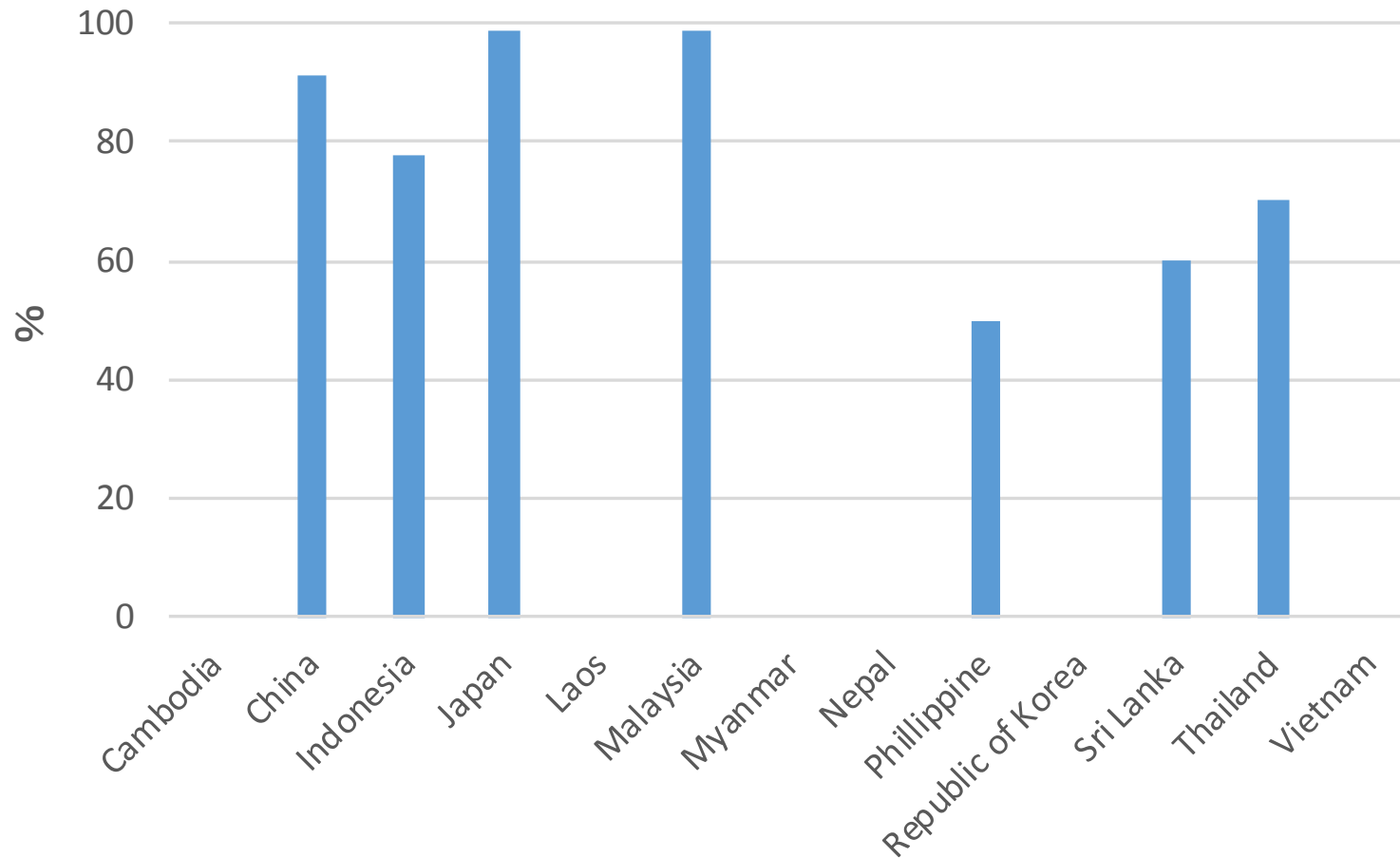
Ensure the competent person on duty at anytime IETS in operation

**Competent Person**

- Regulation 10, Industrial Effluent Regulations, 2009
- Handle by Institute Of Environmental Malaysia, (EiMAS)



# Compliance Ratio



Percentage of Industry Complying with Standard among Investigated One

## Reason for Non-Compliance

Many Reasons.....should be more analyzed....

Country	Industry
Cambodia	<ul style="list-style-type: none"> <li>• Factory's owner have to choose the appropriate method or technology for constructing installation and running their WWTP properly and discharged effluent must conform to national standard</li> <li>• However, a few of them select only focus on cheap price, old equipment and low cost operation without qualified operator</li> <li>• Intact, electricity price is higher than neighbor country, so they do not want to run their WWTP fully.</li> </ul>
China	
Indonesia	<ul style="list-style-type: none"> <li>• Economic reason: some industries are trying to reduce the environmental cost, for this reason; difficulty in access to finance to get the funding for WWTP</li> <li>• The capacity of the operators do not assign in WWTP unit</li> <li>• WWTP do not meet the load capacity of wastewater generated by the industries</li> <li>• Wrong WWTP design</li> <li>• A tight effluent standard for a certain parameter for a certain industry</li> </ul>
Japan	
Laos	
Malaysia	<ul style="list-style-type: none"> <li>• Different characteristic of POME</li> <li>• Factors affecting the quantity and quality of POME produced:</li> <li>• Different batches or day, different oil extraction technique, the quality of the palm fruits, different climate and cropping season</li> <li>• Treatment efficiency</li> <li>• Overflow during heavy rain</li> </ul>

## Reason for Non-Compliance

Country	Industry
Myanmar	
Nepal	<ul style="list-style-type: none"> <li>• Most industries are very older than the act, rule and standards</li> <li>• Country's priority in the industrial development</li> <li>• Industrial contribution to national economy (GDP)</li> <li>• Country's situation of unemployment</li> <li>• Low priority on environment</li> </ul>
Philippine	<ul style="list-style-type: none"> <li>• Low awareness of the industries on the existing law, rules and regulations on wastewater management</li> <li>• Low awareness of the effect to humans and lives of water pollution</li> <li>• Big investment on the part of industrial establishments to put up to WTF as a result of the inclusion of additional parameters in the new effluent standard</li> <li>• Unavailability of enough space for the construction of WTF or enhancement of existing WTF</li> </ul>
Republic of Korea	
Sri Lanka	<ul style="list-style-type: none"> <li>• Economical issues in small and medium enterprises for pollution control, Technology, Weakness in law enforcement, Willing to apply cleaner technology</li> </ul>
Thailand	<ul style="list-style-type: none"> <li>• One general effluent standard can not fit with all type of factories</li> <li>• Only concentration-based standard</li> <li>• Lack of knowledgeable person for wastewater treatment plant operation</li> </ul>
Vietnam	

## What type of industry has issues in wastewater management?

### Common Industry: Textile, Dyeing, Leather Tanning, Livestock

Country	Industry
Cambodia	<b>Textile, Dyeing</b>
China	
Indonesia	<b>Textile</b> (Jakarta, Bandung)
Japan	
Laos	
Malaysia	<b>Palm Oil</b>
Myanmar	
Nepal	<b>Tanning/Leather, Dyeing, Fermentation/Beverage</b>
Philippine	<b>Livestock Sector</b>
Republic of Korea	
Sri Lanka	Rubber, <b>Textile, Tanning</b>
Thailand	Petrochemical, ethanol, sugar and cold storage ( <b>high risk</b> ) Starch, <b>Textile</b> , Pulp and Paper, <b>Leather Tanning</b> ( <b>high polluted</b> ) Small Industry and Community Factory ( <b>low capacity</b> )
Vietnam	Petrochemical, Steel, Food Processing, Paper, <b>Livestock</b> , etc

# Pollutants

still should be investigated....

Country	Industry
Cambodia	COD, BOD, SS
China	
Indonesia	COD, BOD. Color (Textile)
Japan	
Laos	
Malaysia	Nutrient (Palm Oil)
Myanmar	
Nepal	BOD, COD, Chemical
Philippine	
Republic of Korea	BOD, COD, SS (70-80 's), TN, TP (90 's), Heavy Metal/Toxic Organics (00's), Micropollutants. EDCs, Pops (10's)
Sri Lanka	
Thailand	
Vietnam	

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## Future Work

### Secretariat:

- summarize the result of workshop
- identify the missing data/information for each country
- request focal point/speaker to provide the missing data/information

### Focal point/speaker:

- review the result of workshop and provide comment
- provide data/information requested by Secretariat