

# CO-BENEFITS FROM WASTEWATER MANAGEMENT IN INDONESIA

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NOOR RACHMANIAH

DEPUTY DIRECTOR FOR DOMESTIC WATER POLLUTION CONTROL  
DIRECTORATE OF WATER POLLUTION CONTROL, MINISTRY OF ENVIRONMENT AND FORESTRY OF INDONESIA



ERIC ZUSMAN

SENIOR POLICY RESEARCHER  
IGES

With Contributions from

Adriana Gómez-Sanabria<sup>a</sup>, Lena Höglund-Isaksson<sup>a</sup>, Zbigniew Klimont<sup>a</sup>, So-Young Lee<sup>b</sup>, Kaoru Akahoshi<sup>b</sup>,  
Hooman Farzaneh<sup>c, d</sup>, Chairunnisa<sup>d</sup>

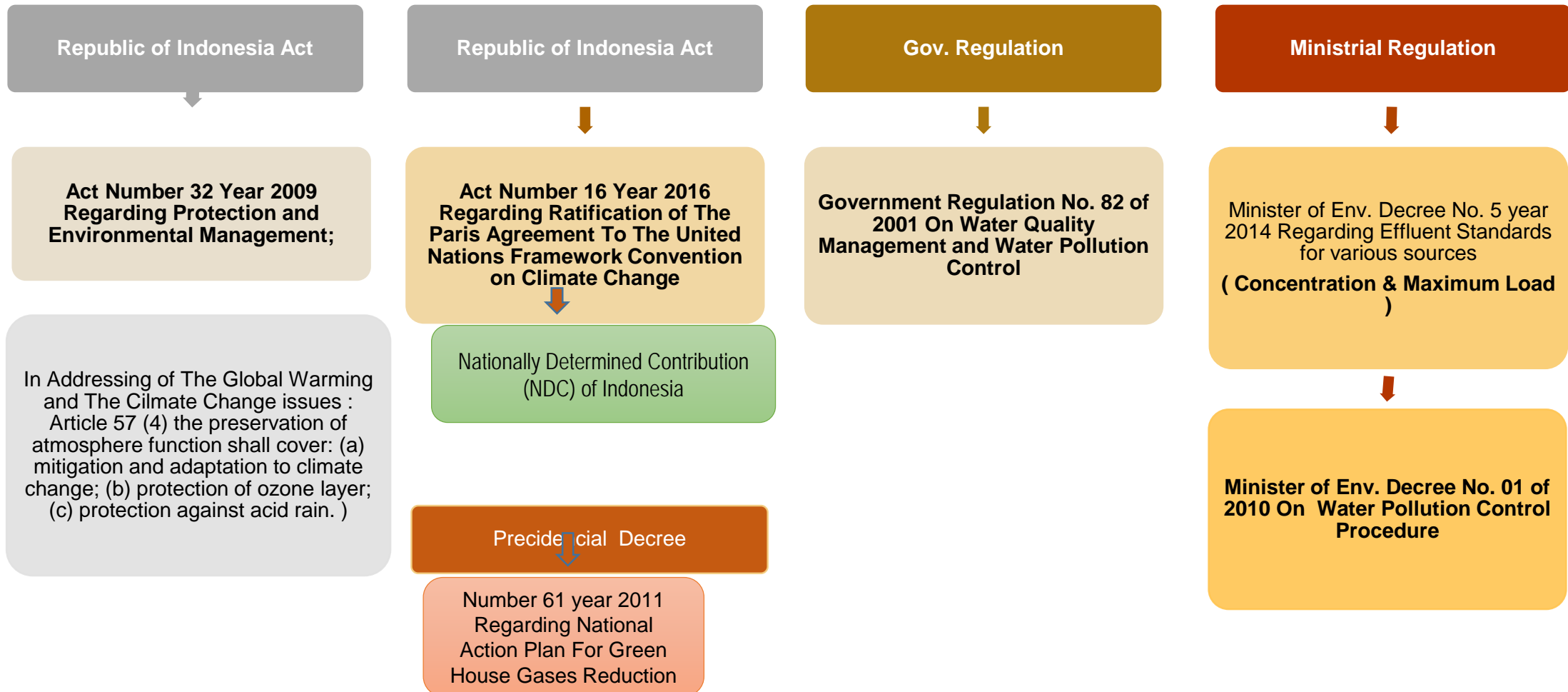
<sup>a</sup>International Institute for Applied Systems Analysis - IIASA. Laxenburg-Austria

<sup>b</sup>Institute for Global Environmental Strategies - IGES. Hayama-Japan

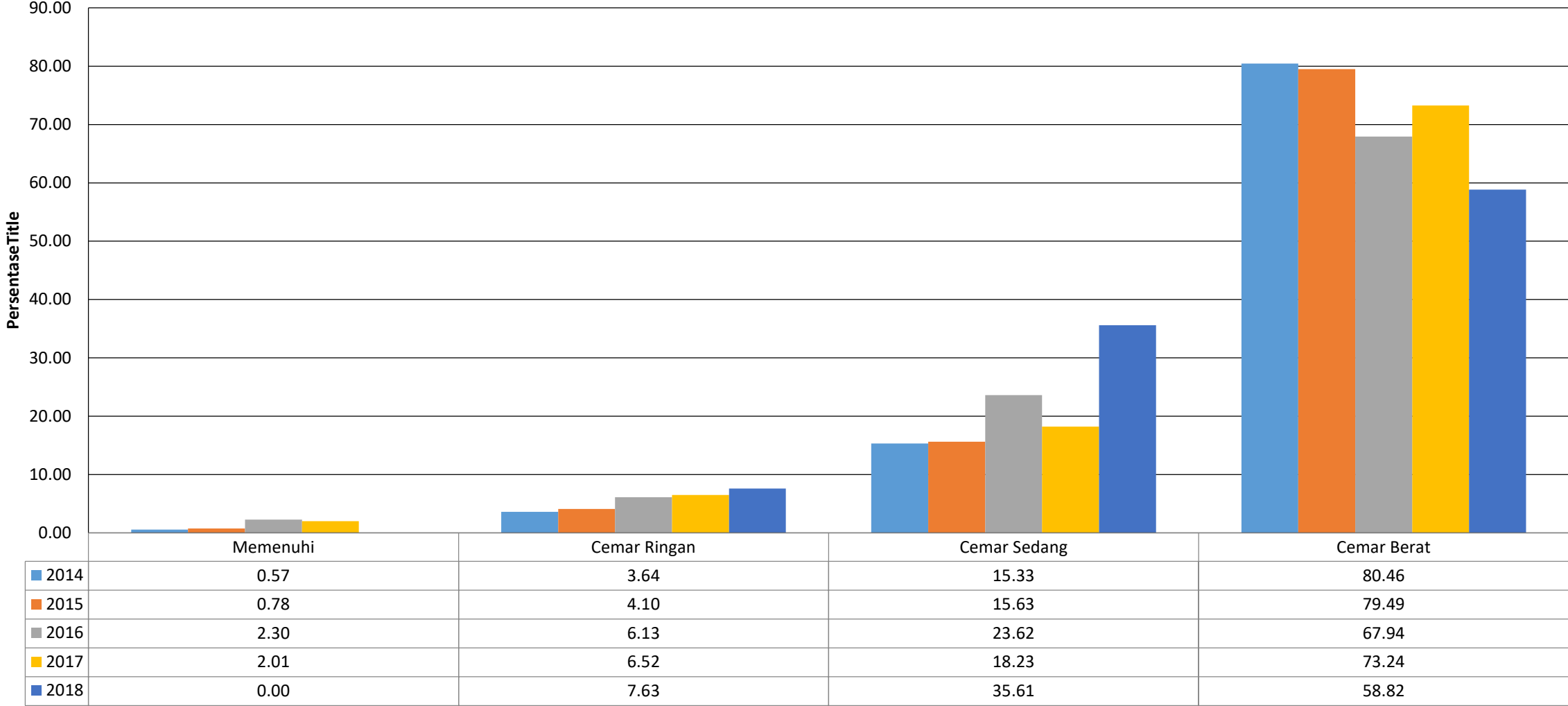
<sup>c</sup>Inter/Transdisciplinary Energy Research, Kyushu University, Fukuoka-Japan

<sup>d</sup>Interdisciplinary Graduate School of Engineering Sciences, Kyushu University, Fukuoka-Japan

# REGULATORY BACKGROUND



# TRENDS OF WATER RIVER QUALITY 2014-2018





# Map 15 Priority River in Indonesia



**Act Number 32 Year 2009  
Regarding Protection And  
Environmental Management**

**Article 36 Point 1**

*Any of the undertaking and/or activities that are required to possess AMDAL or UKL-UPL shall be obliged to obtain an environmental permit.*

**Article 20 Point 3**

*Everyone shall be allowed to dispose wastes into the environment with the following requirements:*

- a. To meet the standard quality of environment; and*
- b. To obtain a permit from Minister, Governor or Regent/Mayor based on the authority*

**Government Regulation No. 82 of  
2001 On Water Quality Management  
and Water Pollution Control**

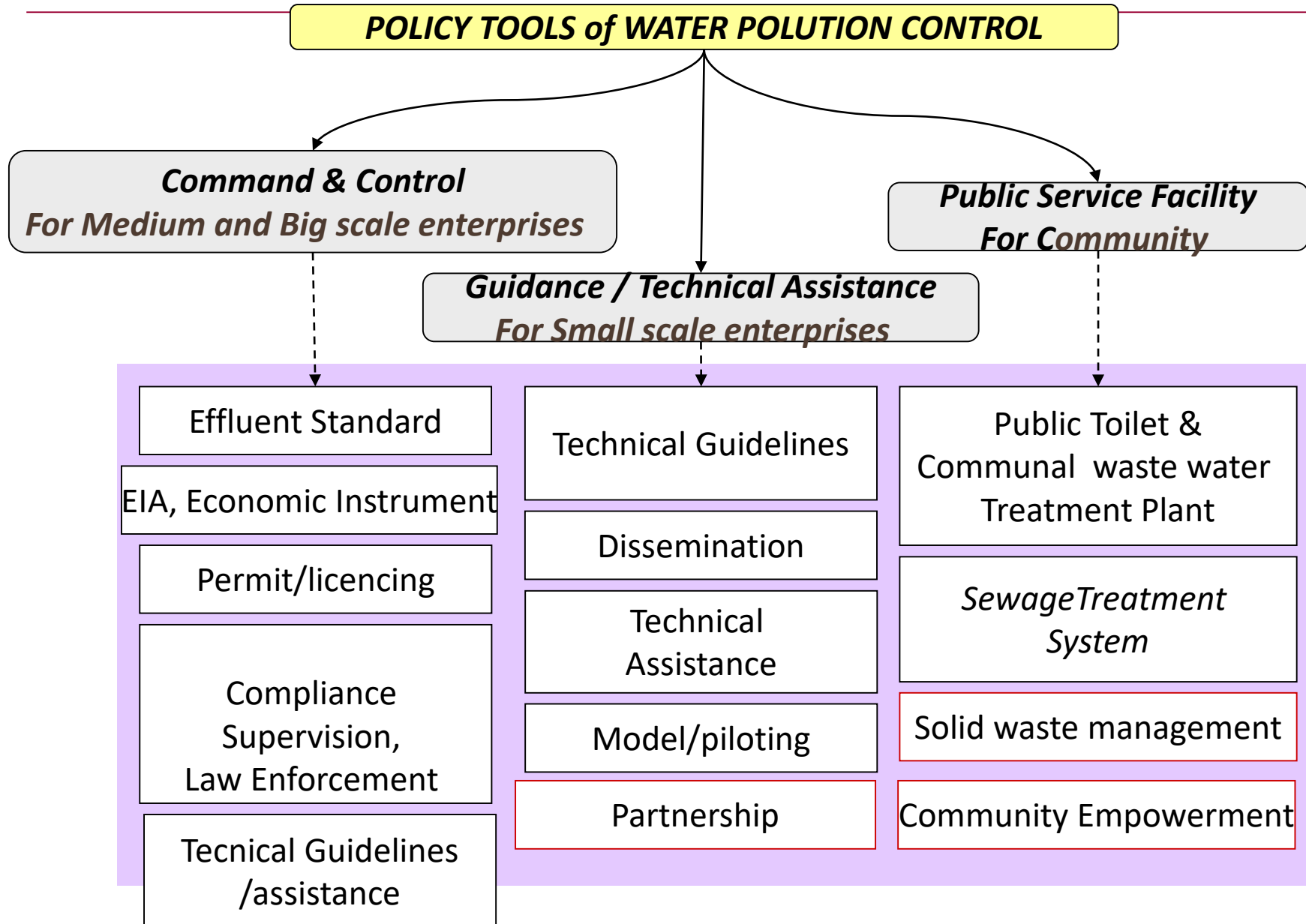
***Article 37***

*Person who are in charge of the undertakings and / or activities that discharges wastewater into water or water sources must prevent and mitigate water pollution. "*

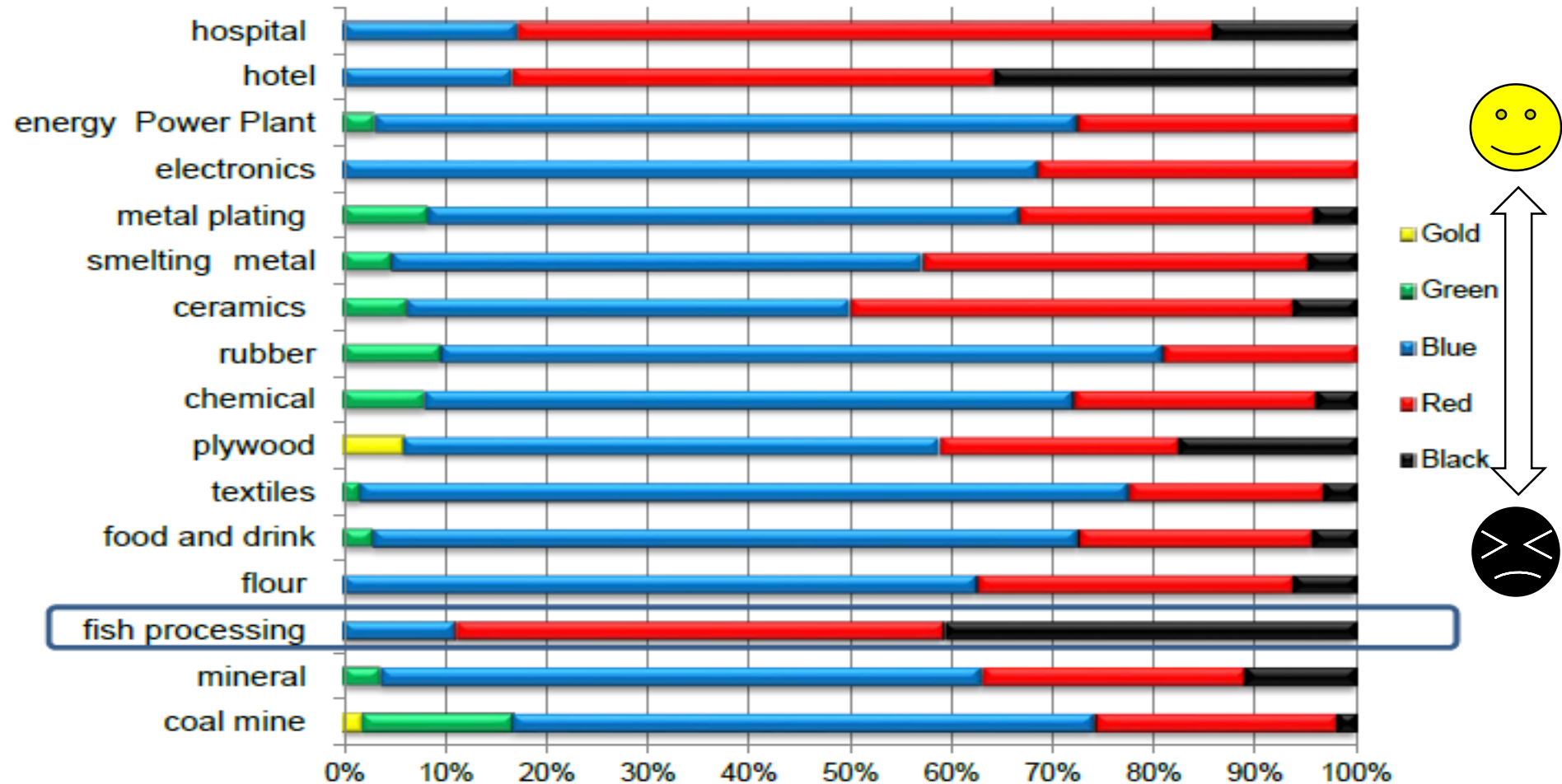
***Article 40 Point 1***

*Any of the undertaking and / or activities that discharge wastewater into water or water source must obtain permission from the Regent / Mayor "*

# Policy Tools



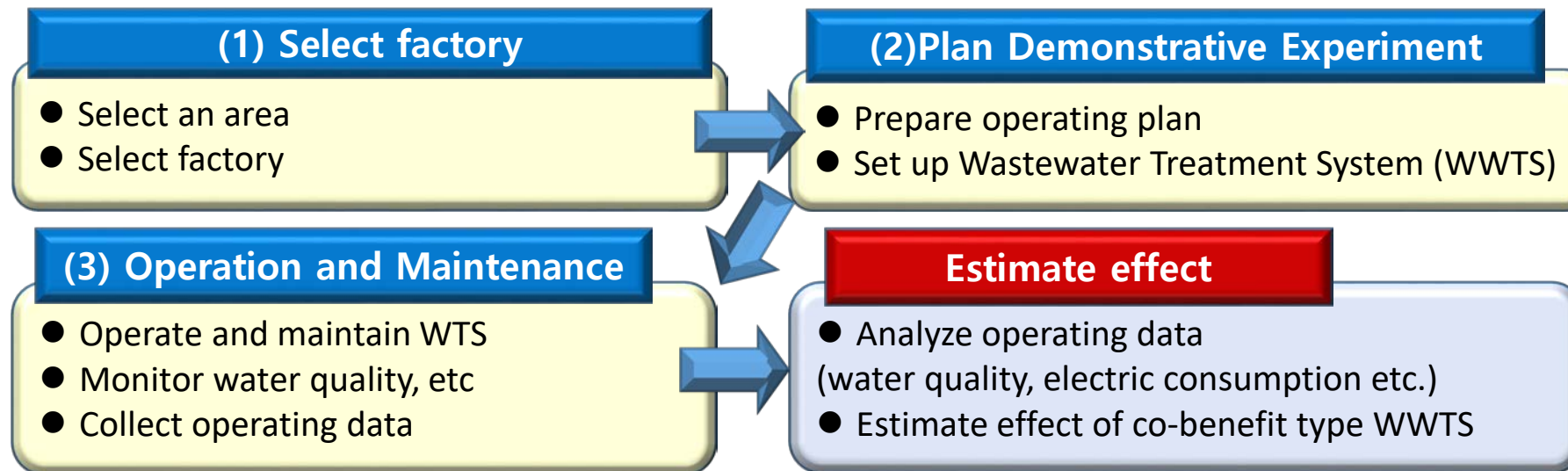
# Indonesia's PROPER rating system shows fish processing is an important contributor to poor water quality



## OBJECTIVE OF THE PROJECT

- ❑ Reduce pollution load to public waters by introducing excellent wastewater treatment technology ( Co-benefit type ) in order to promote measures for wastewater treatment in Indonesian fish processing industry(FPI).
- ❑ At the same time, contribute to the prevention of global warming by reducing the generation of greenhouse gas from wastewater that is drained untreated and by introducing a treatment method which consumes less energy than the usual method

## OUTLINE





## Water Quality Concentration Of Influent Of Fish Processing Factory In Indonesia

Type	CODcr		NH <sub>4</sub> -N		TSS		BOD	
	average	sample	average	sample	average	sample	average	sample
Frozen	544	10	33	10	117	4	296	6
Boiling	1,582	2	8	1	-	0	688	1
Smoking	2,760	5	313	5	459	5	1,966	5
Canning	1,058	11	69	10	298	9	522	10
Fish meal	63,020	3	760	3	5,267	3	29,500	3

Reference: Report of co-benefit project regarding fish processing industry, fiscal year 2018.

## GHG emission estimation and energy consumption in Indonesia

Item	value
Number of factories	61,802
Raw fish material	1,914,149 t/year
GHG emission	604,200 kgCO <sub>2</sub> /day
	220,500 tCO <sub>2</sub> /year
energy consumption	248,200 kWh/day
	90,600MWh/year

Reference: Report of co-benefit project regarding fish processing industry, fiscal year 2018.

# Selection of Demonstration Site

## Site selected for demonstration

- Conducted on-site survey for 3 sites (as below) proposed by Ministry of Environment in Indonesia
- Selected target area and factory in Jembrana regency

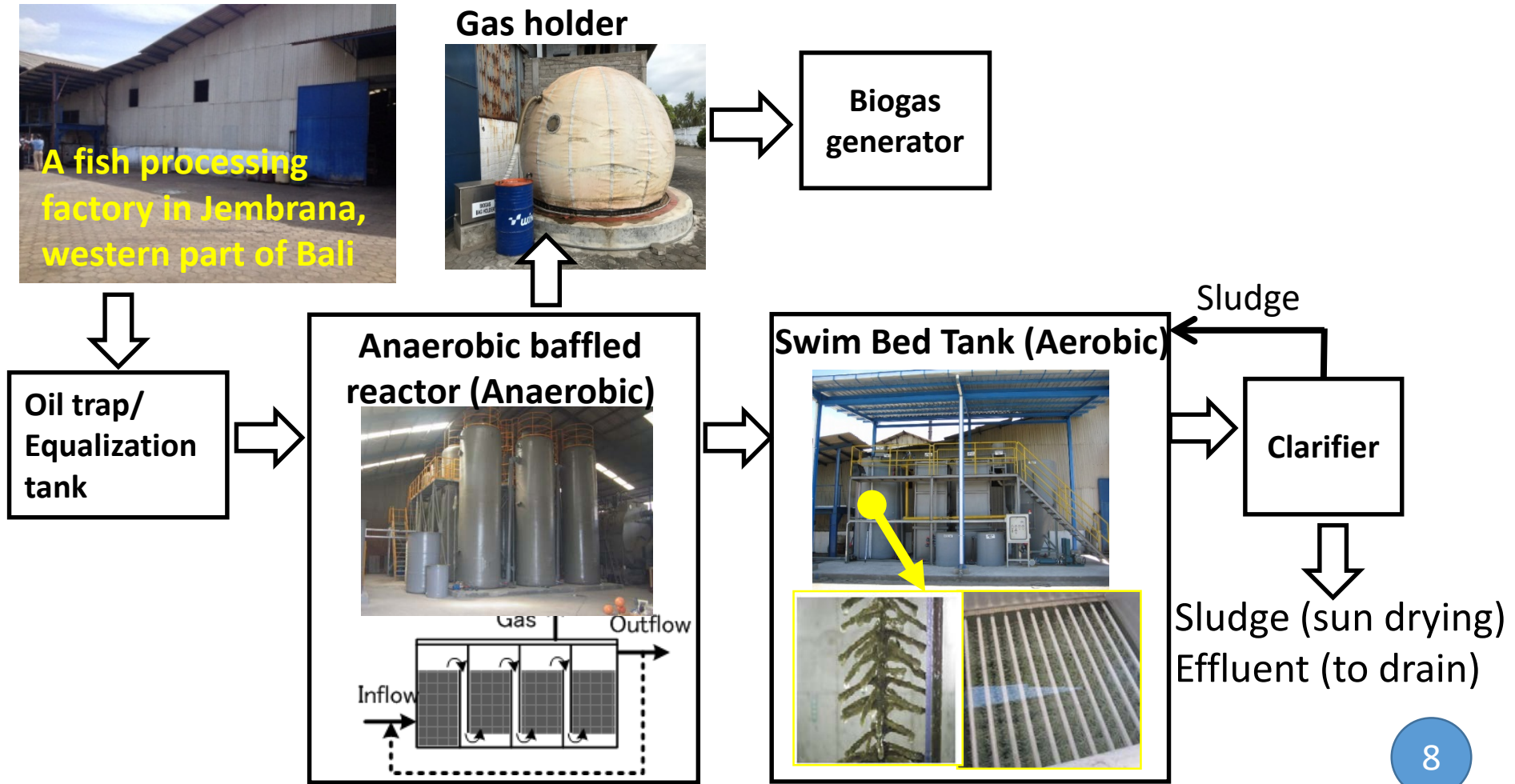
	Muara Angke	Bitung	Jembrana
Province, area	Muara Angke, Special Capital Province of Jakarta	Bitung, North Sulawesi Province	Jembrana Department, Bali Province
Fish catch (t)	About 20,000	About 850,000	About 25,000
Population	10,000	178,000	37,800
Adoption			<b>Fish meal factory</b>



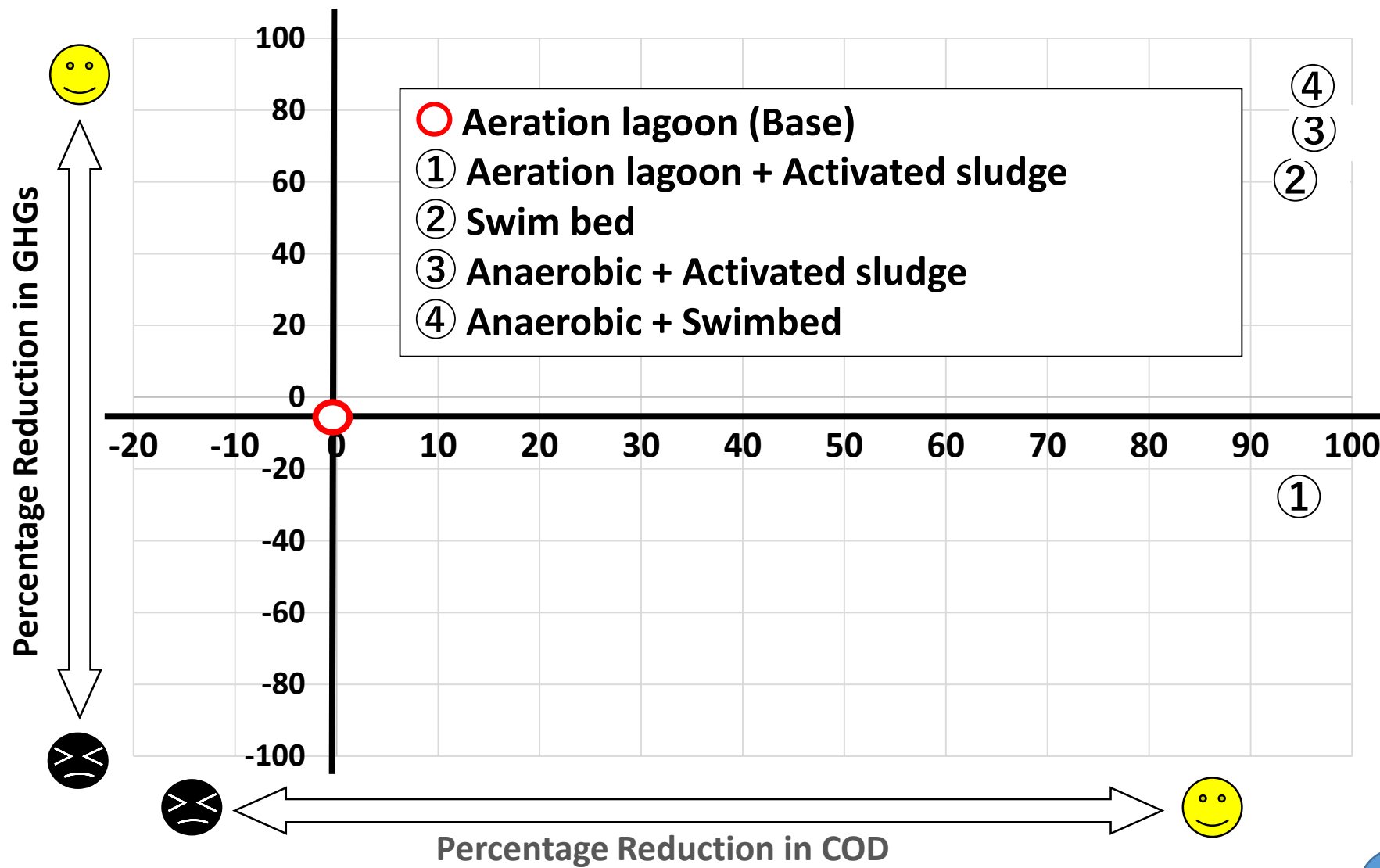
# Co-benefits approach cooperation with Indonesia

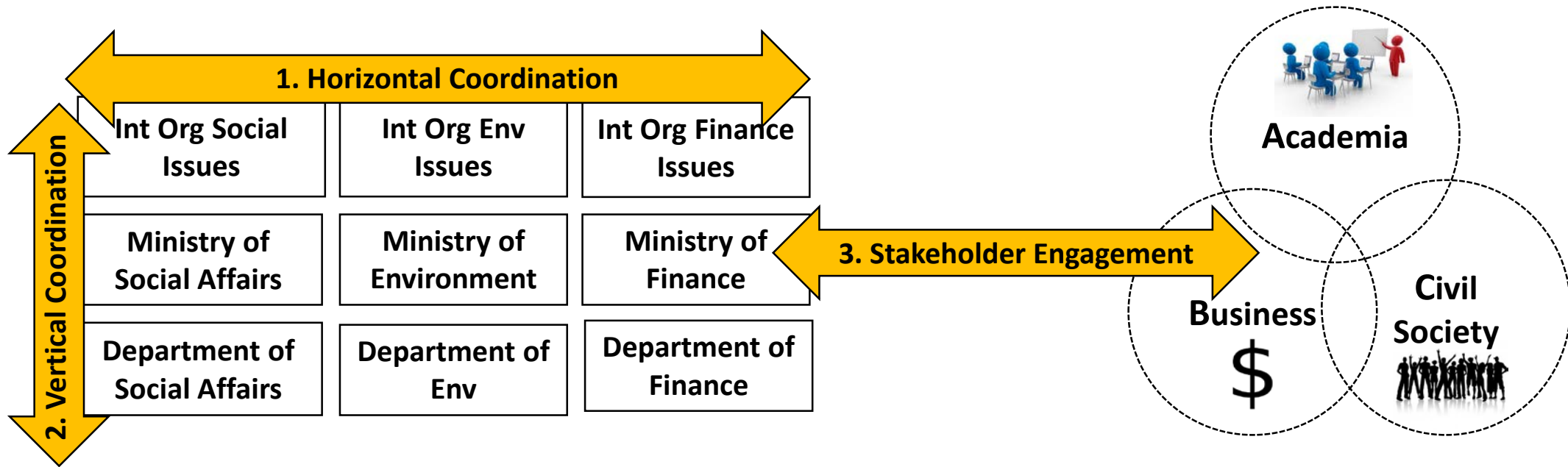
By installing an appropriate wastewater treatment system to a fish processing factory, the quality of wastewater the existing treatment system are reduced.

## Co-benefits Type Wastewater Treatment at a Fish Processing Factory



# Co-benefits type wastewater treatment will lead to significant reductions in GHG and COD





# Multilevel governance model

Scenario	Policies	Multi-level governance	Technology
<b>Business as Usual (BAU)</b>	Current situation - no further enforcement	Current situation	Untreated/anaerobic lagoons
<b>National Wastewater Policy (NWP)</b>	National wastewater policy	No coordination between wastewater and climate agencies	Aeration lagoon plus Activated sludge
<b>Climate Change Policy (CCP)</b>	Climate change policy	No coordination between wastewater and climate agencies	Swimbed
<b>Co-benefits vertical horizontal coordination (CB1vh)</b>	National wastewater policy and climate change policy	Vertical horizontal coordination	Up-flow Anaerobic Sludge Blanket (UASB) plus Activated Sludge (with gas recovery and used).
<b>Co-benefits vertical horizontal coordination (CB2vh)</b>	National wastewater policy and climate change policy	Vertical horizontal coordination	Up-flow Anaerobic Sludge Blanket (UASB) plus Swimbed (with gas recovery and used).
<b>Co-benefits multi-actor coordination (CB1)</b>	National wastewater policy and climate change policy	Multi actor coordination	Up-flow Anaerobic Sludge Blanket (UASB) plus Activated Sludge (with gas recovery and used).
<b>Co-benefits multi-actor coordination (CB2ma)</b>	National wastewater policy and climate change policy	Multi actor coordination	Up-flow Anaerobic Sludge Blanket (UASB) plus Swimbed (with gas recovery and used).

# Results of Scenario Analysis

