

WATER QUALITY STANDAR, EFFLUENT STANDARD, AND MONITORING SYSTEM IN INDONESIA

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PRESENTATION OUTLINE

- Water Quality and Effluent Standard System In Indonesia
- Water Quality and Effluent Monitoring System in Indonesia

WATER QUALITY STANDARD AND EFFLUENT STANDARD

- *Water quality standard* → Surface water (river, lake), groundwater, seawater → GR (PP) 22/2021

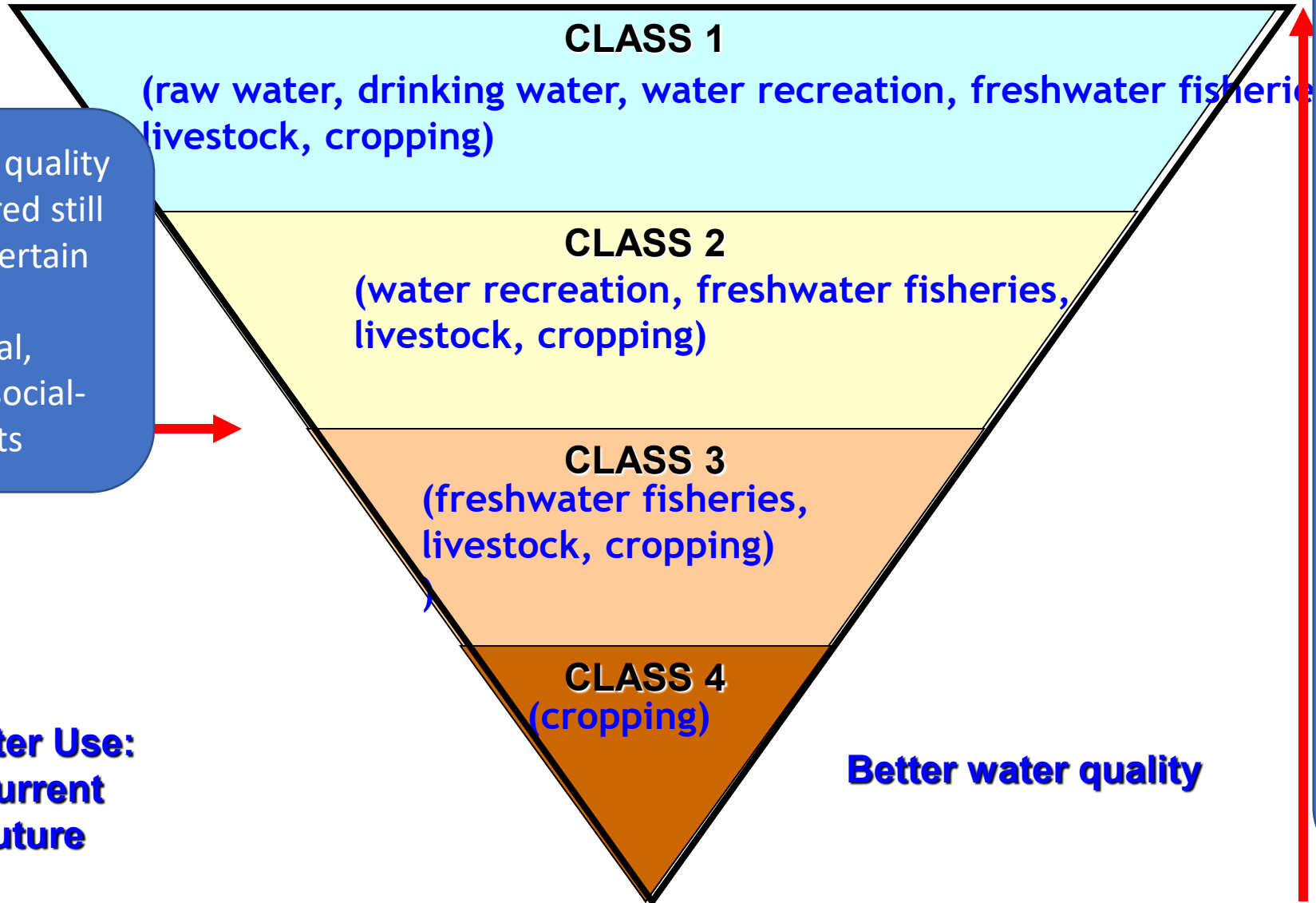
- *Effluent standard* → Industry and Domestic, Examples: MD (Kepmen) LH No.15/2014, MR (Permen) LHK No.68/2016, Permen LHK No.16/2019 dll



- Pollutant Parameters
- Concentration each pollutant parameters
- Discharge rate
- Discharge Load

- Effluent concentration are concentrations of pollutants expressed in terms of parts per million for waste water discharged through outlet pipes from publicly owned sewage treatment plants industrial plants and other types of effluents.
- An effluent standard sets the degree of reduction of a pollutant that can be achieved through the application of various levels of technology. An effluent limitation is a restriction on the amount of a pollutant that can be released from a point source into a water body.

Water Classes



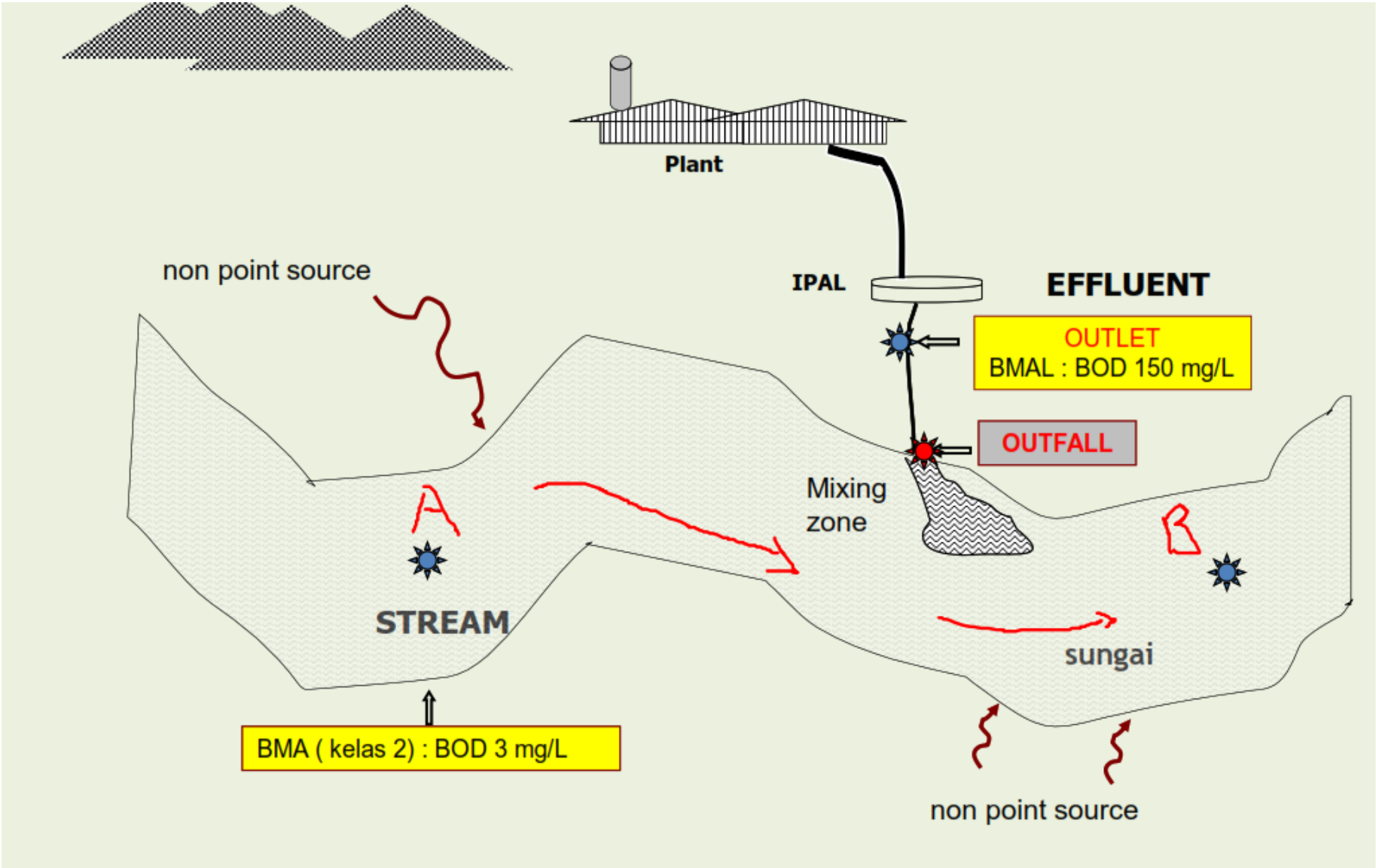
• Water class is a water quality rating that is considered still suitable for use for certain purposes

- Consider technical, environmental and social-economic aspects

Water quality criteria are water quality benchmarks for each water class; Water quality criteria are based only on scientific data and expert opinion regarding the relationship between pollutant concentrations and effects on the environment and human health; manusia;

- Water Use:**
- Current
 - Future

STREAM STANDARD (BMA), EFFLUENT STANDARD (BMAL), OUTLET, OUTFALL



Comparison Between Stream Standard and National Uniform Effluent Standard

Parameter	Kelas 1	Kelas 2	Kelas 3	Kelas 4	BMAL Tapioka
TSS	40	50	100	400	100
pH	6 - 9	6 - 9	6 - 9	6 - 9	6-9
BOD	2	3	6	12	150
COD	10	25	50	80	300
DO	6	4	3	1	-
Pb	0,03	0,03	0,03	1	-
Sianida	0,02	0,02	0,02	-	0,3
Fecal-coli	100	1.000	2.000	2.000	-
Total Coli	1.000	5.000	10.000	10.000	-

National Uniform Effluent Standards of Coal Mining And CPO

Lampiran I :
Keputusan Menteri Negara
Lingkungan Hidup
Nomor : 113 Tahun 2003
Tanggal : 10 Juli 2003

BAKU MUTU AIR LIMBAH KEGIATAN PENAMBANGAN BATU BA

Parameter	Satuan	Kadar Maksimum
pH		6-9
Residu Tersuspensi	mg/l	400
Besi (Fe) Total	mg/l	7
Mangan (Mn) Total	mg/l	4

LAMPIRAN III
PERATURAN MENTERI LINGKUNGAN HIDUP
REPUBLIK INDONESIA
NOMOR 5 TAHUN 2014
TENTANG
BAKU MUTU AIR LIMBAH

BAKU MUTU AIR LIMBAH BAGI USAHA DAN/ATAU KEGIATAN INDUSTRI MINYAK SAWIT

Parameter	Kadar Paling Tinggi (mg/L)	Beban Pencemaran Paling Tinggi (kg/ton)
BOD ₅	100	0,25
COD	350	0,88
TSS	250	0,63
Minyak dan Lemak	25	0,063
Nitrogen Total (sebagai N)	50	0,125
pH	6,0 - 9,0	
Debit limbah paling tinggi	2,5 m ³ per ton produk minyak sawit (CPO)	

Catatan:

1. Kadar paling tinggi untuk setiap parameter pada tabel di atas dinyatakan dalam miligram parameter per liter air limbah.
2. Beban pencemaran paling tinggi untuk setiap parameter pada tabel di atas dinyatakan dalam kg parameter per ton produk minyak sawit (CPO).
3. Nitrogen Total = Nitrogen Organik + Amonia Total + NO₃ + NO₂.

Effluent Standard of Upstream Petrochemical Industry and Petroleum Processing

LAMPIRAN XXVII
 PERATURAN MENTERI LINGKUNGAN HIDUP
 REPUBLIK INDONESIA
 NOMOR 5 TAHUN 2014
 TENTANG
 BAKU MUTU AIR LIMBAH

BAKU MUTU AIR LIMBAH BAGI USAHA DAN/ATAU KEGIATAN PENGOLAHAN MINYAK BUMI

A. Baku Mutu Pembuangan Air Limbah Proses dari Kegiatan Pengolahan Minyak Bumi.

PARAMETER	KADAR MAKSIMUM (mg/L)	BEBAN PENCEMARAN MAKSIMUM (gram/m ³) ⁽¹⁾	METODE PEN
BOD 5	80	80	SNI 06-250
COD	160	160	SNI 06-6989:2 SNI 06-6989:1 APHA 5
Minyak dan Lemak	20	20	SNI 06-6989
Sulfida Terlarut (sebagai H ₂ S)	0,5	0,5	SNI 06-2470-19 4500-
Amonia (sebagai NH ₃ -N)	8	8	SNI 06-6989.30 APHA 4500-NH3
Phenol Total	0,8	0,8	SNI 06-6989.21-2005
Temperatur	45 ° C		SNI 06-6989.23-2005
pH	6 - 9		SNI 06-6989.11-2004
Volume Air Limbah per satuan volume bahan baku maksimum	1000 m ³ per 1000 m ³ bahan baku minyak		

BAKU MUTU AIR LIMBAH BAGI USAHA DAN/ATAU KEGIATAN INDUSTRI PETROKIMIA HULU

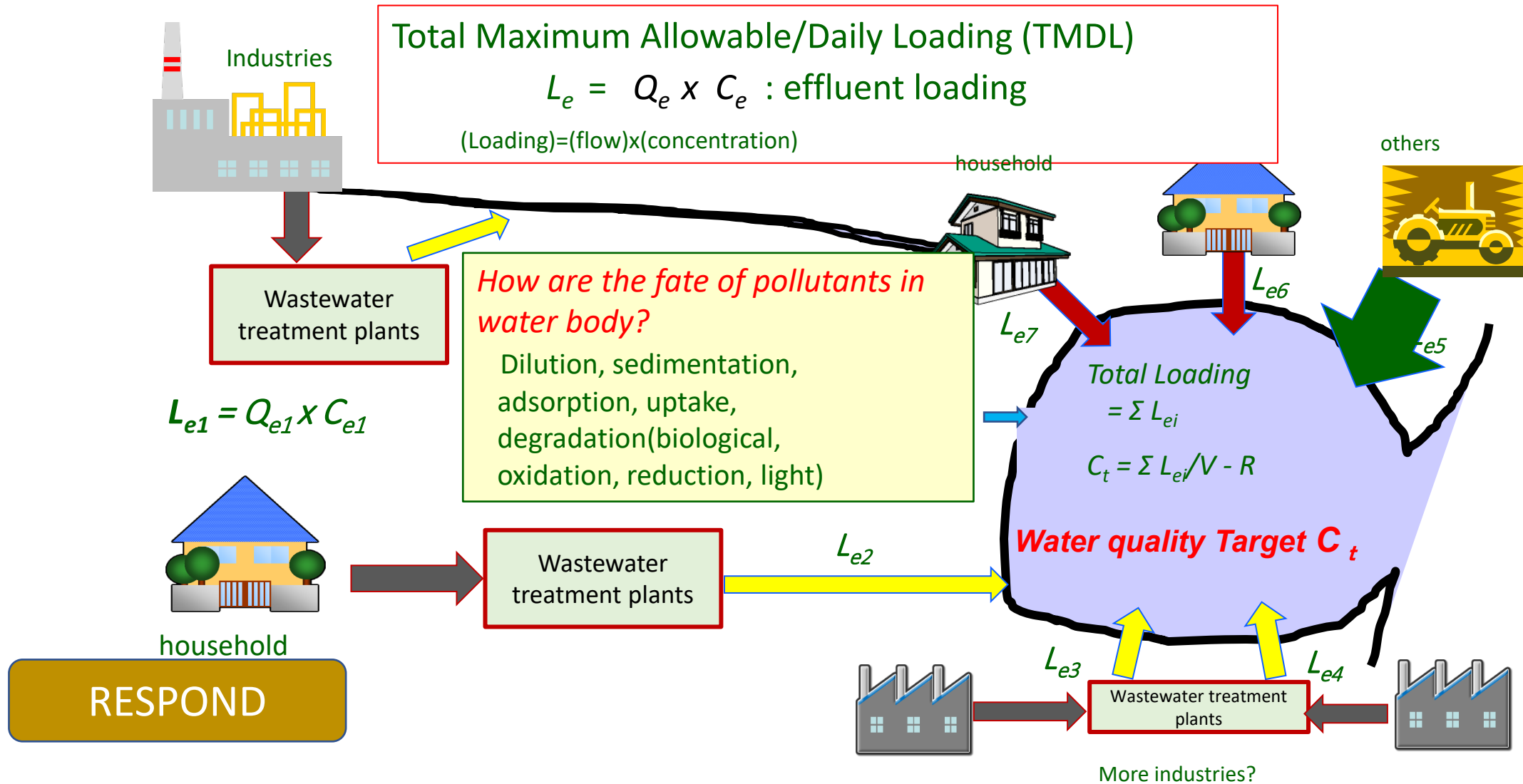
Parameter	Satuan	Kadar Paling Tinggi
pH	-	6 - 9
BOD	mg/l	100
COD	mg/l	200
TSS	mg/l	150
Minyak dan Lemak	mg/l	15
Fenol	mg/l	1
Cr	mg/l	1
Cu	mg/l	3
Zn	mg/l	10
Ni	mg/l	0,5
Kuantitas Air Limbah Paling Tinggi	m ³ /ton bahan baku	0,6

MENTERI LINGKUNGAN HIDUP
 REPUBLIK INDONESIA,

BALTHASAR KAMBUAYA

How to satisfy with the WQS: C_t ?

How to control pollution loads *Equally and Effectively*? Who is discharging pollutants? What kind of pollutants? How much?

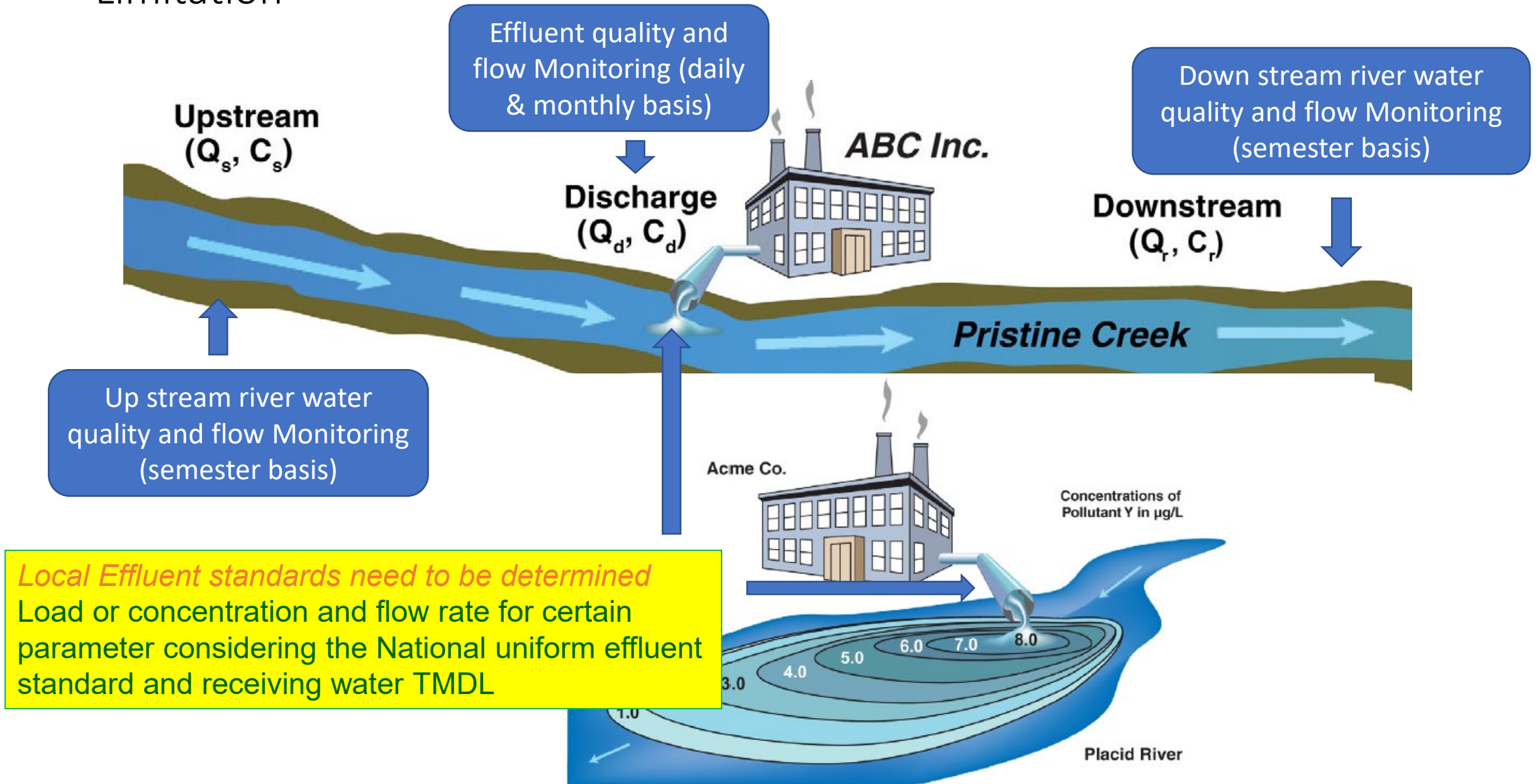


Implementation of GR (PP) 22/2021 Chapter 116, 133, 134, 148 dan MR of MOEF (Permen LHK) No.5/2021 (Annex II)

- Discharge permit for New Discharger
 - Stipulating Local Effluent Standard based on TMDLs
 - Stipulating Local Effluent Standard based on water quality standard
 - If water quality standard of the receiving water body has been exceeded, then should conduct reducing water pollution load from other sources (Compensation)
- Discharge permit for Existing Discharger
 - Revise of the existing effluent standard based on the new TMDLs

if a waterbody can provide significant dilution/biodegradation then the water quality standard can be set lower, thus resulting in a looser effluent standard or vice versa..
The stream standard is often set relative to the 'assimilative capacity' of a waterbody.

Effluent Discharge Permit: Water Quality Based Effluent Discharge Limitation



NATIONAL EFFLUENT STANDARD FOR TEXTILE INDUSTRY PERMEN LHK NO.16 TAHUN 2019

- 7 -

Consideration:

- TMDLs of River
- Discharge/flow rate of Industries
- Economic factor

LAMPIRAN II

PERATURAN MENTERI LINGKUNGAN HIDUP DAN KEHUTANAN REPUBLIK INDONESIA
NOMOR P.16/MENLHK/SETJEN/KUM.1/4/2019

TENTANG

PERUBAHAN KEDUA ATAS PERATURAN MENTERI LINGKUNGAN HIDUP NOMOR 5 TAHUN 2014
TENTANG BAKU MUTU AIR LIMBAH

BAKU MUTU AIR LIMBAH BAGI USAHA DAN/ATAU KEGIATAN INDUSTRI TEKSTIL

Debit	BOD	COD	TSS	Fenol Total	Krom Total	Amonia Total	Sulfida	Minyak Lemak	pH	Warna	Suhu	Debit Maksimum
≤100	60	150	50	0,5	1	8	0,3	3	6 - 9	200	Deviasi 2*	100
100 < x < 1000	45	125	40	0,5	1	8	0,3	3	6 - 9	200	Deviasi 2*	100
≥1.000	35	115	30	0,5	1	8	0,3	3	6 - 9	200	Deviasi 2*	100
m ³ /hari	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L		Pt-Co	°C	m ³ /ton produk

Keterangan:

Pt-Co: *true colour*

*: temperatur udara sekitar

Salinan sesuai dengan aslinya
KEPALA BIRO HUKUM,

ttd.

KRISNA RYA

MENTERI LINGKUNGAN HIDUP DAN
KEHUTANAN REPUBLIK INDONESIA,

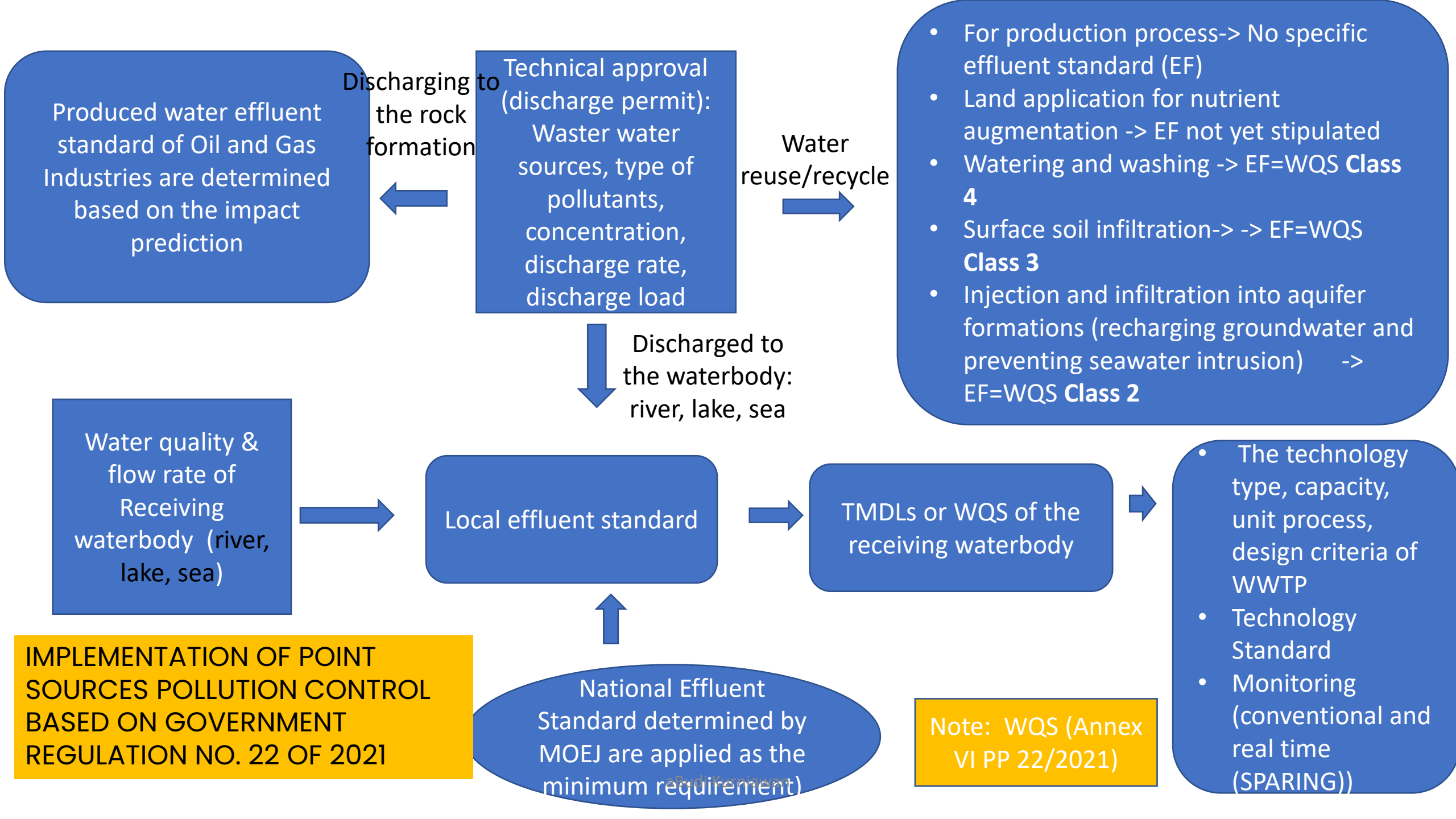
ttd.

SITI NURBAYA

Effluent Standard for Domestic Waster Water MOEF Regulation No.68/2016

Parameter	unit	Max Concentration *
pH	-	6 – 9
BOD	mg/L	30
COD	mg/L	100
TSS	mg/L	30
Oil & Greece	mg/L	5
Amoniak	mg/L	10
Total Coliform	jumlah/ 100mL	3000
Flow rate	L/orang/hari	100

- Domestic waste water is defined as waste water generated from: apartments, accommodation, dormitories, health services, offices, commerce, markets, restaurants, meeting halls, recreation arenas, settlements, industry, regional WWTP, residential WWTP, urban WWTP, ports, airports, train stations, terminals and prisons
- The coverage, quantity and quality of domestic WWTP are far from adequate
- There is no wastewater quality monitoring and performance's O/M program for WWTP provided by the government?
- Regulations requiring the treatment and compliance of domestic wastewater quality standards are in place but no monitoring and supervision has been carried out
- However, since the enactment of the Regulation of the Minister of Environment and Forestry No. 5 of 2021, businesses/activities that generate domestic wastewater are required to have an effluent discharge permit from domestic wastewater



WATER QUALITY AND EFFLUENT DISCHARGE MONITORING SYSTEM

Water Quality Monitoring in Indonesia

Objective of Water quality Monitoring

- Meet the needs of delivering environmental information to the public
- Determine and convey the status of environmental quality including the index of water quality
- Measuring the performance of environmental pollution control
- Risk assessment and evidence of environmental pollution case
- Determining other environmental pollution control policies (for example: total maximum allowable of pollution loads, water quality classes and standards, etc.).

Component of Water Quality Monitoring

- Determination of location (sampling points),
- Time and Frequency (seasonal variability),
- Monitored water quality parameters (At least 21 parameters in the Annex of GR:82/2001),
- Procedures and methods of conducting sampling (SNI 6987.57:2008)
- Water sample testing in the laboratory (Sample analysis, data verification and validation),
- Analysis and interpretation of water quality data,
- Reporting

Water Quality Monitoring System in Indonesia

Monitoring of water quality

- Using the conventional method, applied for surface water (river, lake) and groundwater
- Using telemetry system (automatic, continue and online method), applied for hotspot areas and intake of drinking water sources as an early warning instrument
- As of 2022 there are more than 200 online monitoring stations installed
- The effluent discharger should monitor the receiving waterbody in the semester basis (once in 6 months)

Monitoring of effluent discharge

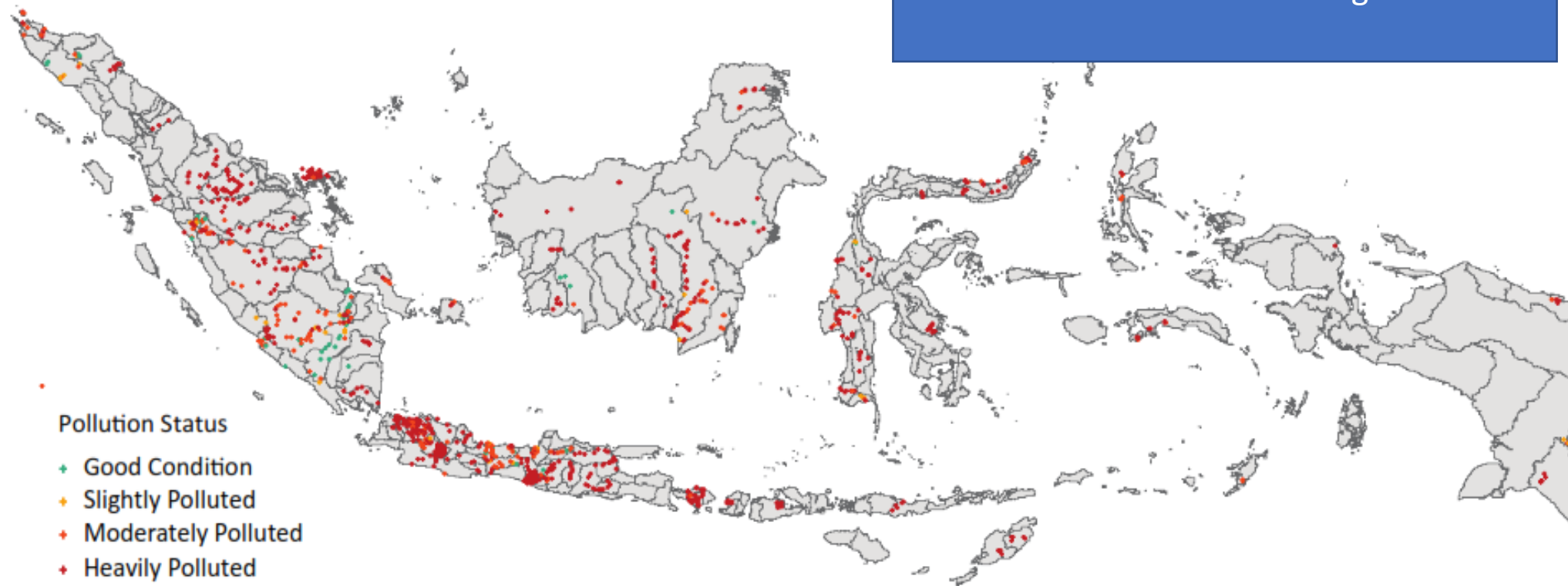
- Using the conventional method, applied for all industries which have discharge permit
- Using telemetry system (automatic, continue and online method), applied for only 12 type of industries (textile, oil refinery, oil & gas exploration, nickel mining, coal mining, gold & copper mining, pulp & paper, palm oil, basic oleochemical, up-stream petrochemicals, rayon, industrial estate) as of 2020
- **Parameter depending on the type of industry: COD, TSS, NH₄-N, NO₃, Flow in one hour basis**

Water and Sediment Quality in National Priority Rivers

- Citarum, Ciliwung, Cisadane, Brantas, Musi, Mahakam and Barito Rivers 2020: BOD, COD, Fecal Coliform and Total Coliform exceeded water quality class 2
- Citarum, Ciliwung, Cisadane, Brantas, Musi, Mahakam and Barito Rivers 2021-2022: Fecal Coliform and Total Coliform exceeded BMA, while other parameters generally meet class 2 water quality
- Bengawan Solo 2021-2022: BOD, COD, Fecal Coliform and Total Coliform exceeded water quality class 2
- The research results of Mochamad Adi Septiono and Dwina Rosmini showed that Cd, Cu, Cr were found in high concentrations in sediments and catfish in upstream Citarum.
- The results of research by Nurul Fatimah et al in 2020 regarding the quality of heavy metals in water in the Citarum River Estuary show that Cd is still good, Pb and Cu are lightly polluted and Zn is moderately polluted. Meanwhile, the sediment shows that Cd is heavily polluted, Pb and Zn are moderately polluted, while Cu is still good.

Figure 15: Surface water pollution status across Indonesia

Result of MOEF Monitoring in 2019



The majority of Indonesia's population is exposed to water pollution. About 85 percent of the population living within a 5 km radius of water quality monitoring stations are exposed to fecal and total coliform levels above thresholds. About three-quarters (73 percent) of this population are exposed to nitrogen and nitrogen derivatives beyond thresholds, while 5 percent are exposed to mercury beyond thresholds. High levels of coliform, biochemical oxygen demand (BOD), and chemical oxygen demand (COD) reflect a lack of adequate wastewater management in densely populated and More than 70 percent of national GDP is generated in river basins in which the majority of sampling locations are found to be 'heavily polluted'. (World Bank, 2021)

WASTEWATER TREATMENT

Table 1 State of wastewater treatment in each country (year of data in brackets)

Country	Service Coverage Rate of Centralized wastewater Treatment System	Service Coverage Rate of Decentralized/On-Site System	No Wastewater Treatment
Indonesia	0.5% (2017)	76.4% (2017)	23.1% ^a
Japan	75.8% (2018)	24.1% (2018)	0.1% (2018)
Vietnam	12.5% (2019)	50% (2012)	37.5% ^a

Source: Takeda et al, 2021

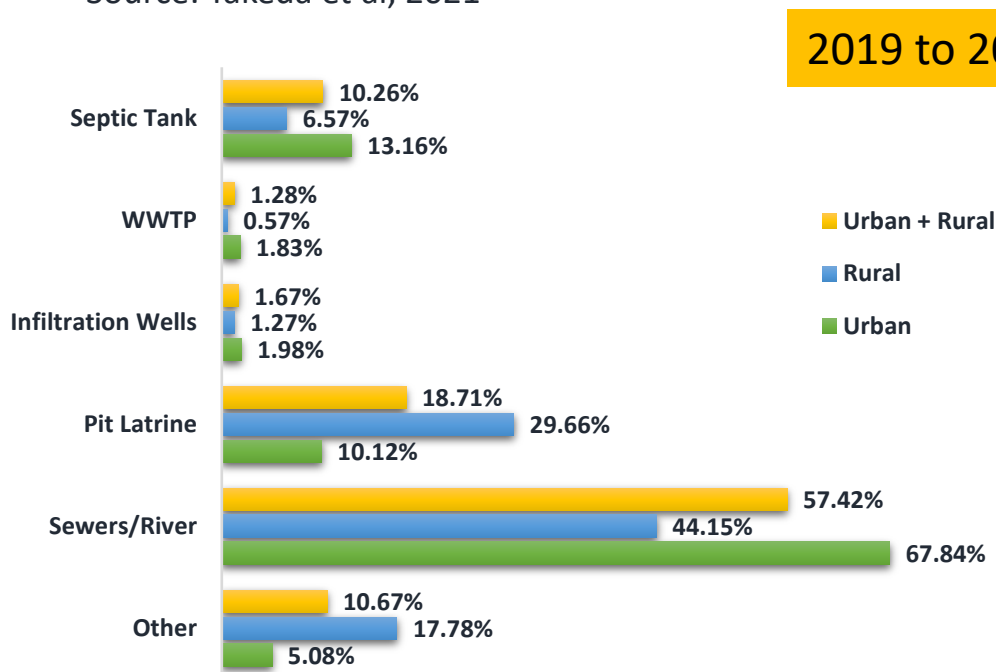


Figure 4 Percentage of households by wastewater disposal site (WDS) in Indonesia (BPS, 2019)

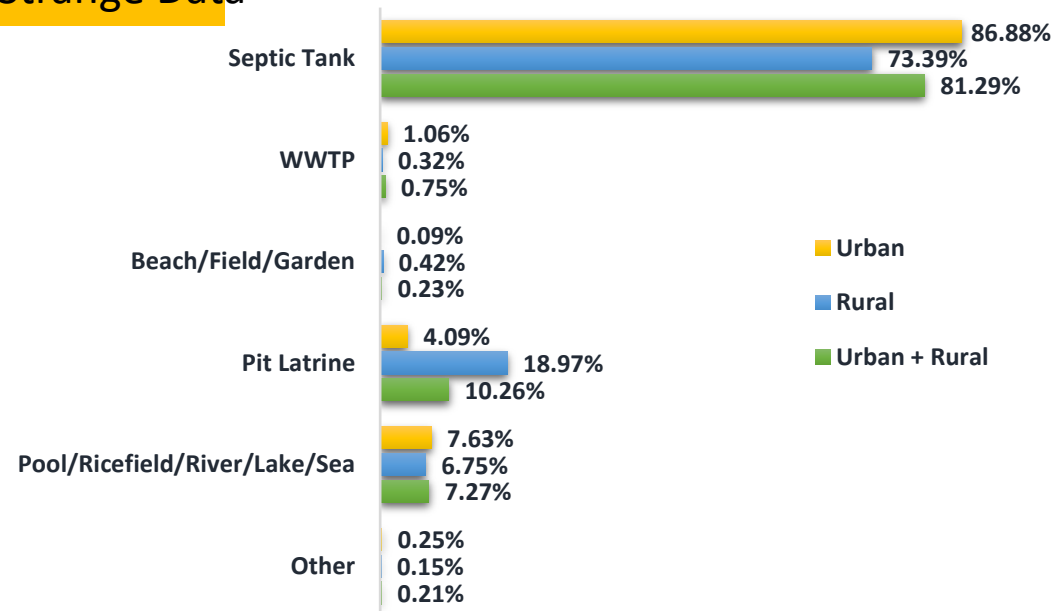


Figure 5 Percentage of households by wastewater disposal site (WDS) in Indonesia (BPS, National Social Economic Survey 2020)

WASTEWATER TREATMENT APPROACH

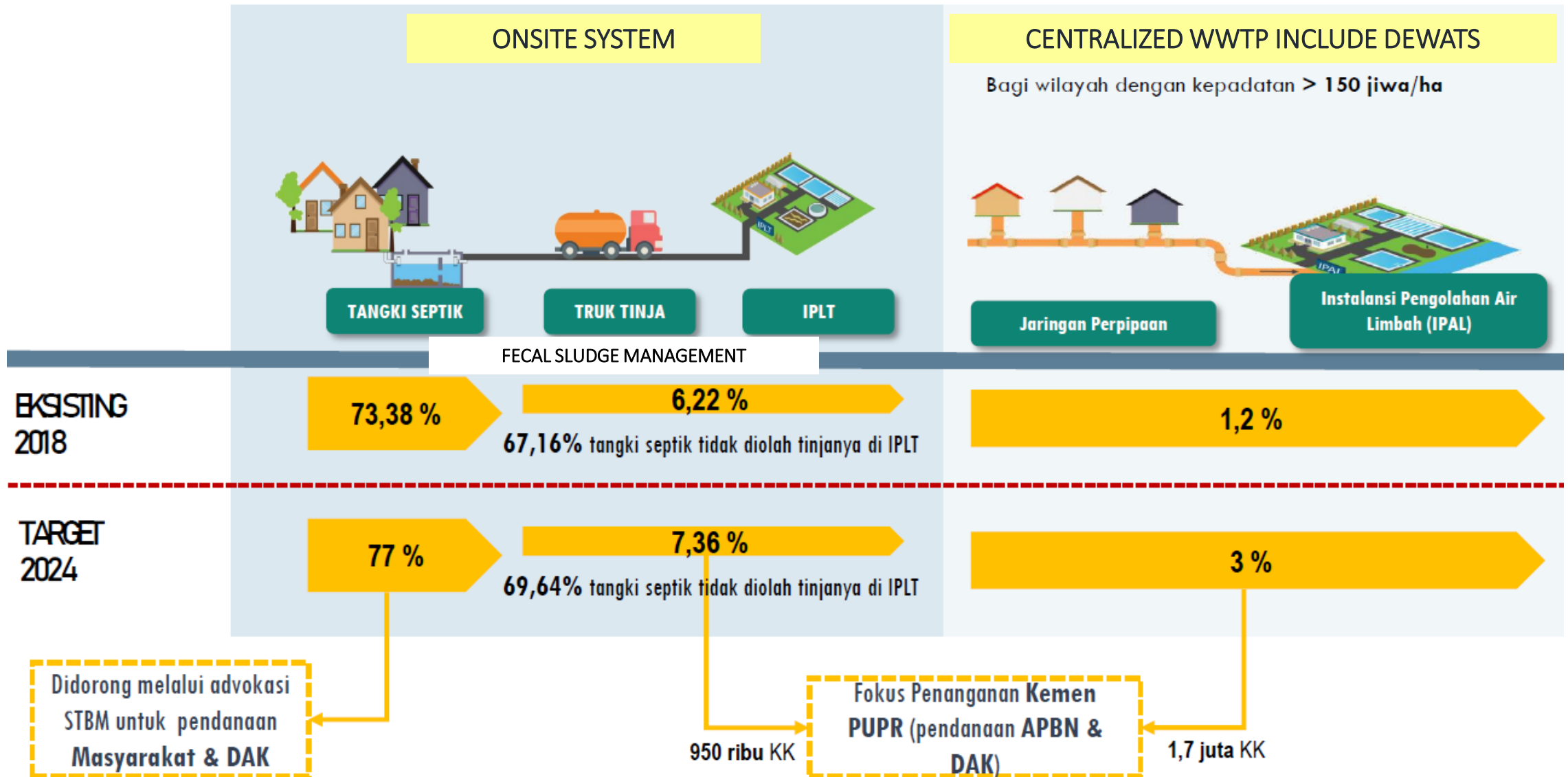


Figure 6 Wastewater treatment approach 2020-2024
(Prasetyo, 2020)

URBAN WASTEWATER MANAGEMENT SYSTEM

- A sewerage connection is available to less than 2 percent of the population—and 17 percent of rural people still practice open defecation.
- Nationwide only 7.4 percent of municipal wastewater is safely collected and treated; there remaining 92.6 percent is discharged untreated to water bodies.
- Yet existing systems have unutilized capacity due to low rates of household connections.

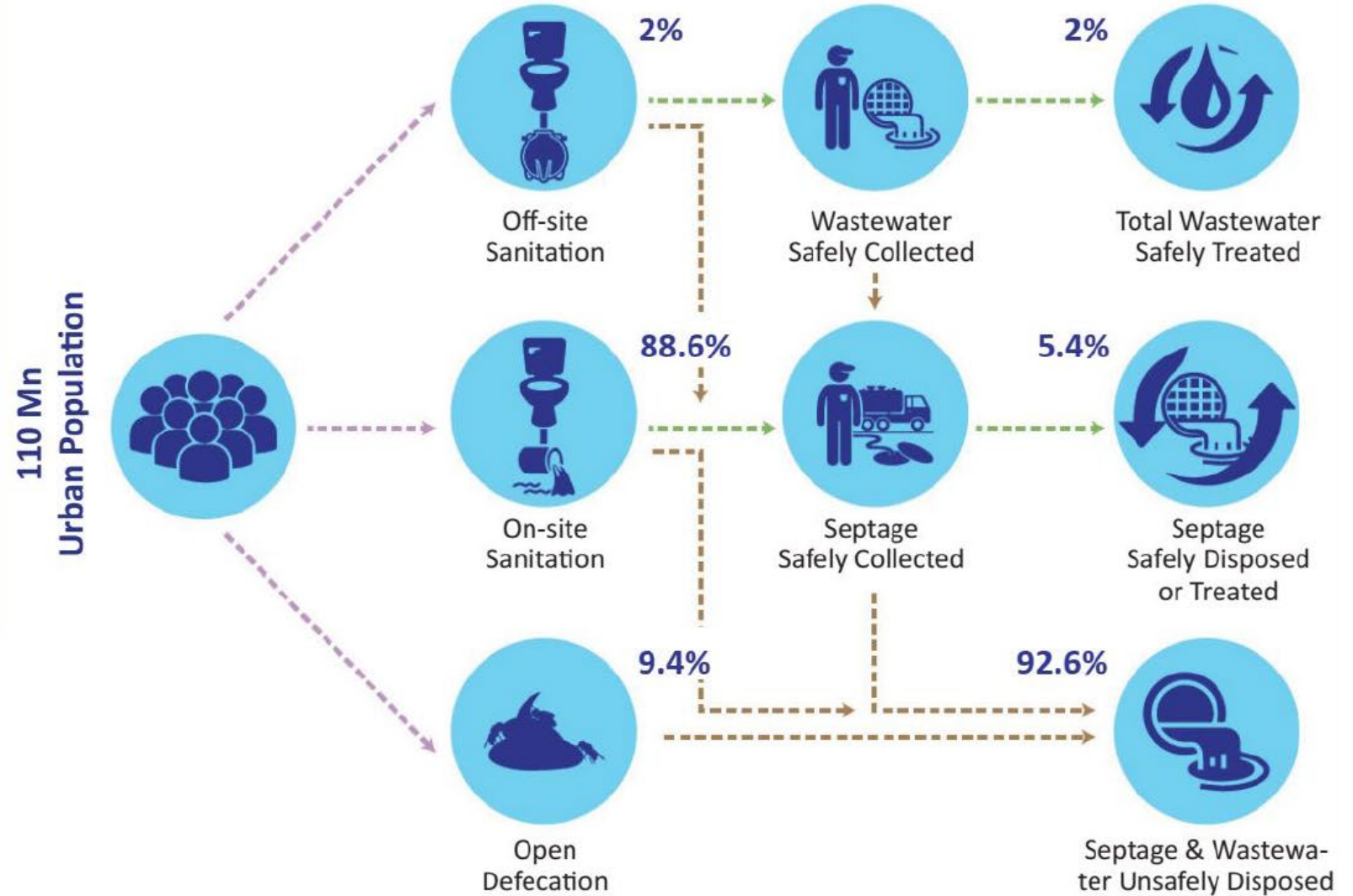


Figure 7 Wastewater and septage flow in urban Indonesia (BAPPENAS, 2019)

ESTIMATION OF WATER CONSUMPTION-GENERATION

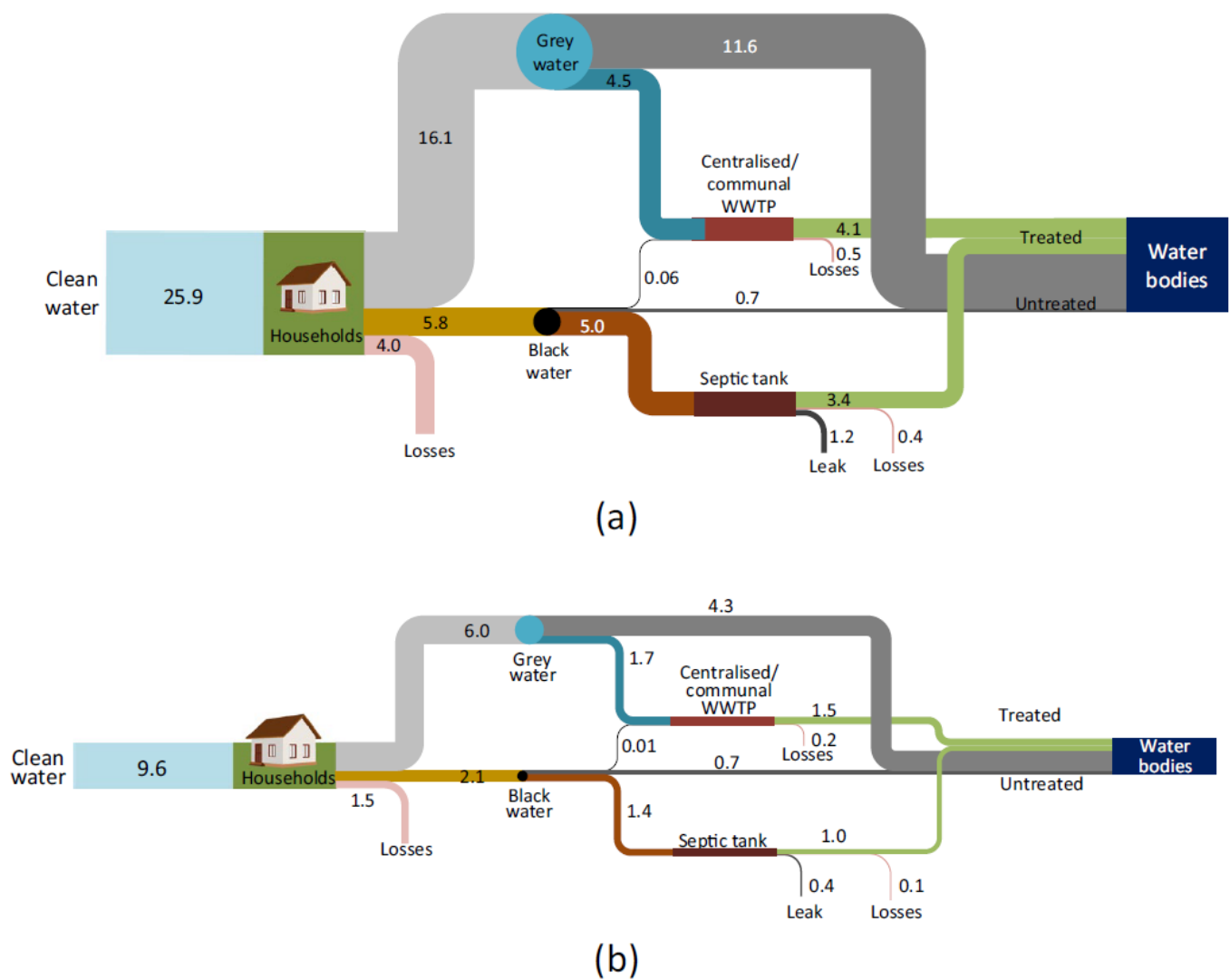
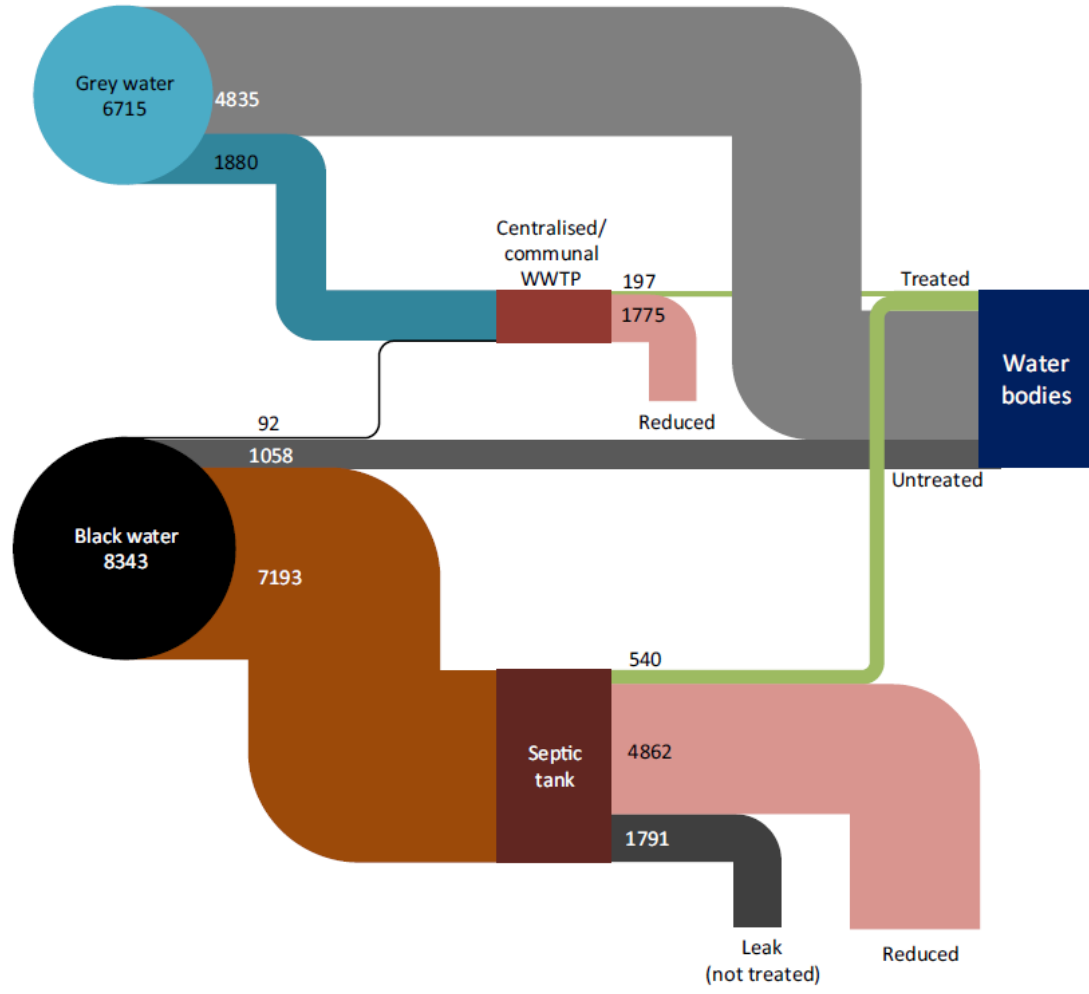
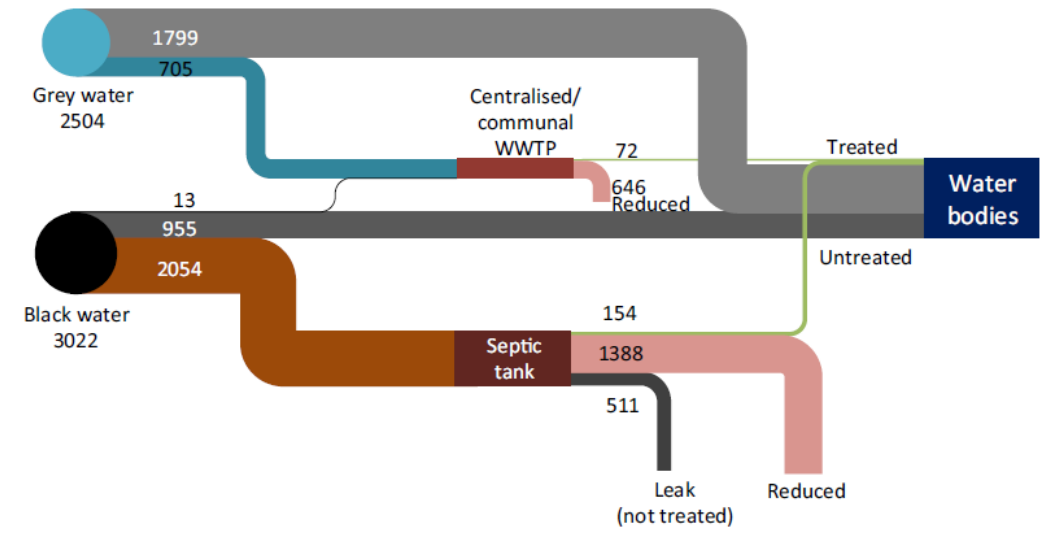


Figure 8 Estimation of clean water consumption, grey water and black water generations and discharge into water bodies in urban (a) and rural areas (b). Numbers in m³/day (Widyarani et al, 2022)

ESTIMATION OF COD DISCHARGE



(a)



(b)

Figure 9 Estimation of COD discharge from grey water and black water in urban area (a) and rural area (b). Numbers in t/day (Widyarani et al, 2022)

Table 1 Characteristics of domestic wastewater in Indonesia and neighbouring countries

Parameter	Unit	WQS ^a	Grey water		Mixed (grey water and black water)				Black water	
			Indonesia ^b	Thailand ^c	Indonesia ^d	Malaysia ^e	Thailand ^f	Singapore ^g	Vietnam ^h	Indonesia ⁱ
pH	–	6–9	6.5–8.6 (7.2 ± 0.8)	7.2 ± 0.4	6.7–7.5 (7.1 ± 0.3)	6.4 ± 0.4	6.7–7.4 (7.0)	6.8–7.6 (7.2)	8.2	6.2–7.4 (6.8 ± 0.8)
TSS	mg/l	30	77–382 (189 ± 115)	69 ± 31	25–1148 (462 ± 357)	14 ± 3	15–243 (58)	58–5900 (771)	36	184–482 (333 ± 211)
TDS	mg/l	–	152–376 (264 ± 159)				124–430 (256)			652–840 (746 ± 133)
BOD	mg/l	30	125–401 (225 ± 96)	90 ± 44	135–480 (271 ± 147)	118 ± 14	12–52 (30)			206–850 (528 ± 455)
COD	mg/l	100	232–780 (418 ± 219)	160 ± 64	148–472 (311 ± 144)	234 ± 20	40–160 (100)	100–4590 (809)	116	509–2361 (1435 ± 1310)
BOD/COD	%	–	29–95 (57 ± 24)		46–149 (89 ± 47)					36–41 (38 ± 3)
Oil and grease	mg/l	5	24–87 (49 ± 33)		2–163 (61 ± 89)		5.3–29 (14)			14
Ammonia (NH ₃ -N)	mg/l	10	0.7–20 (7.5 ± 8.6)		0.1–259 (45 ± 87)	12 ± 0.2			36	112
Total nitrogen	mg/l	–	59–226 (142 ± 119)		35–192 (113 ± 110)		5–20 (10)			19–653 (336 ± 448)
Phosphate (PO ₄ ³⁻ -P)	mg/l	–	10–16 (13 ± 4)		0.4–1.3 (0.8 ± 0.6)	5.0 ± 0.2				
Total phosphorus	mg/l	–	24	1.5 ± 0.9	3–12 (6 ± 5)				6.2	
Faecal coliform	MPN/100 ml	–	2.4 × 10 ³ –1.2 × 10 ⁹ (4.0 ± 6.9 × 10 ⁸)				9.3 × 10 ³ –4.6 × 10 ⁶ (9.1 × 10 ⁵)			9.8 × 10 ⁵
Total coliform	MPN/100 ml	3000			2.6 × 10 ² –1.3 × 10 ⁴ (4.5 ± 7.3 × 10 ³)		3.3 × 10 ⁴ –2.1 × 10 ⁸ (3.2 × 10 ⁷)			
MBAS	mg/l	–	0.2–22 (11 ± 11)	5 ± 4.8						0.1

Empty columns indicate data not available. Numbers within parentheses indicate mean values. Single values indicate results from one study

^aWater quality standard for domestic wastewater (MoEF 2016)

^bKalsum et al. 2014; Firdayati et al. 2015; Suoth and Nazir 2016; Astika and Zaman 2017; Rahmadyanti and Wiyono 2017; Hafiza et al. 2019; Marleni et al. 2020

^cJiawkok et al. 2013

^dLim et al. 2013; Machdar et al. 2014; Astika and Zaman 2017; Wijaya et al. 2017; Rahmawati et al. 2019; Yulistyorini et al. 2019a, b; Nagu and Lessy 2020; Oktiawan et al. 2021; Nur and Komala 2021; Ratnawati and Sugito 2021

^eAl-Ajaln et al. 2020

^fSemsayun et al. 2015

^gWu et al. 2017

^hTra et al. 2021

ⁱRochmadi et al. 2010; Hafiza et al. 2019

– = Not applicable

Widyarani, et al 2022

Table 3 Performance of decentralised wastewater treatment plant

Time of study	Location	Number of units	WWTP system	Effluent concentration (mg/l)	Removal efficiency (%)	References
2011	Sleman, Yogyakarta, Surakarta, Blitar	9	ABR-AF (5), AD-ABR-AF (3), AS (1)	BOD: 30–50 COD: 80–131 TSS: 22–44 Ammonia: 35–57 Total nitrogen: 59–88	NA	(Kerstens et al. 2012)
2011	Yogyakarta	2	RBC (1), CA (1)	BOD: 7.5–88 (36) COD: 14–134 (62) TSS: 8–37 (19) Ammonia: 0–1.4 (0.6) Total nitrogen: 173–211 (216)	BOD: 64–96 (81) COD: 76–95 (86) TSS: 85–97 (91)	(Lim et al. 2013)
2016	Semarang	6	ABR + AF (6)	COD: 15–92 (41) TSS: 8–78 (32) Ammonia: 0.01–0.8 (0.4)	COD: 62–93 (85) TSS: 80–95 (87)	(Astika and Zaman 2017)
2018	Yogyakarta	9	ABR (8), RBC (1)	BOD: 12–105 (62) COD: 123–375 (242) TSS: 17–483 (193) Ammonia: 3–38 (20)	BOD: 23–97 (68) COD: 8–77 (52) TSS: 28–79 (53) Ammonia: 3–30 (12)	(Rahmawati et al. 2019)
2018	Malang	89	ABR (89)	BOD: 67	BOD: 74 TSS: 66 Ammonia: 43	(Yulistiyorini et al. 2019a)
NA	Yogyakarta	1	AD + ABR (1)	BOD: 22 COD: 61 TSS: 60 Total nitrogen: 4.7	BOD: 88 COD: 97 TSS: 97 Total nitrogen: 75	(Rochmadi et al. 2010)
NA	Padang	5	ABR (5)	BOD: 29–207 (83) COD: 5–106 (18) TSS: 80–724 (128) Ammonia: 46–112 (76)	BOD: 10–72 (24) COD: 45–91 (85) TSS: 17–71 (58) Ammonia: 35–83 (69)	(Nur and Komala 2021)

Numbers within parentheses indicate mean values

NA=data not available, ABR=anaerobic baffled reactor, AD=anaerobic digester, AF=anaerobic filter, AS=activated sludge, CA=contact aeration, RBC=rotating biological contactor

Water quality and Stunting

- Stunting, a long-term nutritional issue in toddlers, is indicated by a shorter height than other kids their age (Ernawati et al., 2014). When adults are at risk for having degenerative diseases, children who are stunted will be more sensitive to two diseases (Djauhari, 2017).
- Infectious disorders like diarrhea, Environmental Enteric Dysfunction (EED), and intestinal worms are on the rise in part due to factors of poor environmental sanitation, such as limited access to clean water, improper latrine use, and poor handwashing hygiene behavior. The syndrome can result in problems of linear growth and raise infant mortality rates (Headey & Palloni, 2019). Based on data from WHO in 2018, one of the nations with a high prevalence of stunting is Indonesia.
- In Indonesia, the average rate of stunting in children under five between 2005 and 2017 was 36.4%. Stunting can result from a variety of reasons, not just inadequate nutrition encountered by pregnant women and young children (Putri et al., 2015).
- Poor parenting techniques, a lack of ANC (Ante Natal Care) services, quality post-partum care, and quality early learning, a family's inability to get nourishing food, clean water, and sanitary facilities are a few of these problems (Tim Nasional Percepatan Penanggulangan Kemiskinan, 2017).
- Stunting is more common in households without access to clean water (59.3%) and in those that do not treat or heat their drinking water (93.2%). According to the history of toddler diarrhea, stunting is more common in toddlers who have experienced diarrhea frequently (66.1%) (Ahmad & Nurdin, 2019). Infectious disorders like diarrhea, Environmental Enteric Dysfunction (EED), and intestinal worms are on the rise in part due to factors of poor environmental sanitation, such as limited access to clean water, improper latrine use, and poor handwashing hygiene behavior. The syndrome can result in problems of linear growth and raise infant mortality rates (Olo et al., 2021).
- The availability of water and sanitation facilities, as well as environmental factors including contaminated water and poor hygiene habits, all contribute to stunting. Stunting in Indonesia is also linked to subpar maintenance techniques, insufficient sanitation and water supply, and lack of access to food and water (Beal et al., 2018). 60% of all diarrhea-related deaths occur in low- and middle-income countries, where around 827,000 people per year pass away from poor access to water, sanitation, and hygiene. 432,000 deaths each year are primarily caused by poor sanitation. The deaths of 297,000 children under the age of five each year could be prevented with better access to water, sanitation, and hygiene (WHO, 2019).

LIST OF CENTRALIZED WWTPs IN INDONESIA

The domestic wastewater management system is regulated in Regulation of The Minister of Public Works and Public Housing Number 4 of 2017

Table 2 List of Centralized WWTPs in Indonesia built by the Ministry of Public Works and Housing (MPWH)

No.	City	Unit Number	House Connection	Capacity (m ³ /day)	Technology
1	Medan	1	20,480	10,000	UASB
2	Parapat	1	307	2,000	Aerated Ponds
3	Batam	1	4,000	2,852	Oxidation Ditch
4	Jakarta Zone 0	1	2,602	38,880	MBBR
5	Tangerang	1	2,758	2,800	Aerated Ponds
6	Bandung	1	116,000	80,835	Lagoons
7	Cirebon	4	8,136	20,500	Lagoons
8	Surakarta	3	15,549	14,000	Biofilter & Lagoons
9	Special Region of Yogyakarta	1	23,189	15,500	Aerated Ponds
10	Denpasar & Badung	1	14,546	51,000	Aerated Ponds
11	Balikpapan	1	2,076	800	Aerated Ponds
12	Banjarmasin	7	6,978	18,000	RBC
13	Manado	1	100	2,000	RBC

Source: Prasetyo, 2020

LIST OF CENTRALIZED WWTPs IN INDONESIA

Table 3 List of Centralized WWTPs in Indonesia built by MPWH

No.	City	Population	Water Consumption	Domestic Wastewater (m ³ /day)	Capacity (m ³ /day)		Service Coverage (%)
					Installed	Used	
1	Medan	2,279,894	150	273,587	10,000	5,650	2.1
2	Parapat	180,694	105	15,178	2,000	115	0.8
3	DKI Jakarta	10,557,810	150	1,266,937	42,000	5,195	0.4
4	Bandung	1,263,916	150	151,670	80,835	49,769	33
5	Cirebon	333,303	105	27,997	20,547	9,667	35
6	Yogyakarta	431,939	105	36,283	15,500	14,260	39
7	Surakarta	517,887	135	55,932	9,504	6,325	11
8	Denpasar	463,400	105	38,926	51,000	35,000	90
9	Batam	1,196,396	150	143,568	2,852	150	0,1
10	Banjarmasin	708,606	135	76,529	12,000	3,480	4'5
11	Balikpapan	688,318	135	74,338	800	800	1.1
12	Tangerang	1,771,092	150	212,531	2,700	600	0.3

Source: Widayani et al, 2022

LIST OF DEWATS IN JAVA MONITORED BY MoEF

Table 4 List of Communal (Decentralized) WWTPs in Java monitored by MoEF in 2022

No.	Communal WWTP (DEWATS)	Regency/City	Capacity (m ³ /day)	Technology	Parameters that Do Not Meet the Quality Standards of Treated Water
1	Malela Village WWTP	Depok City	17.5	Anaerobic Baffled Reactor (ABR)	Ammonia and Total Coliforms
2	Bekasi Jati WWTP	Bekasi City	15	ABR	Ammonia and Total Coliforms
3	Bersama WWTP	Bekasi City	-	Anaerobic, Aerobic, Advanced Oxidation Process (AOP) and Filtration (Belt Press)	-
4	Joglo WWTP	West Jakarta City	22	Anaerobic, Aerobic and MLSS	-
5	Setu Babakan WWTP	South Jakarta City	100	Aerobic	-
6	Cipeucang Landfill WWTP	South Tangerang City	-	Anaerobic and Filtration	COD, TSS and Total Nitrogen
7	Summarecon Serpong WWTP	Tangerang Regency	83	Anaerobic, Aerobic and Filtration	-
8	Markisa Village WWTP	Tangerang City	60	ABR	-
9	Sukaseneng Communal WWTP	Pandeglang Regency	15	-	BOD, COD, Ammonia and Total Coliforms
10	Community Based Sanitation Program (SANIMAS) of Satu Hati Community Self-Help Groups (KSM)	Serang City	25	ABR	Ammonia and Total Coliforms
11	Bersatu WWTP	Bogor Regency	25	Anaerobic Filter (AF)	BOD, COD, TSS, Ammonia and Total Coliforms
12	Cibabat WWTP	Cimahi City	83.5	ABR	Ammonia and Total Coliforms
13	Buninagara Communal WWTP	Bandung Regency	95	ABR and AF	BOD, COD, TSS, Ammonia and Total Coliforms
14	Zero One Park Communal WWTP	Bandung City	72	ABR	BOD, COD, TSS, Ammonia and Total Coliforms

Source: MoEF (Ministry of Environment and Forestry), 2022

LIST OF DEWATS IN JAVA MONITORED BY MoEF

GHGi - wastewater

Table 4 List of Communal WWTPs in Java monitored by MoEF in 2022 (continued data)

No.	Communal WWTP (DEWATS)	Regency/City	Capacity (m ³ /hari)	Technology	Parameters that Do Not Meet the Quality Standards of Treated Water
15	Semper WWTP	North Jakarta City	183.5	Anaerobic, Aerobic, MLSS and Disinfection Using Ozone	BOD, COD, Ammonia and Total Coliforms
16	Kismorejo Communal WWTP	Karanganyar Regency	20	ABR	Ammonia and Total Coliforms
17	Mojosongo WWTP	Surakarta City	216.8	Aerated Fluctuative Lagoon	-
18	Tangkil Communal WWTP	Sragen Regency	57.5	ABR	BOD, COD, Ammonia and Total Coliforms
19	Karanglo Communal WWTP	Klaten Regency	22	ABR and AF	Total Coliform
20	Environmental Sanitation Park Communal WWTP	Boyolali Regency	80	ABR	Ammonia and Total Coliforms
21	Ngentak Gumpang WWTP	Sukoharjo Regency	30	ABR	BOD and COD
22	Ngentak Communal WWTP	Bantul Regency	60	ABR	Ammonia and Total Coliforms
23	DEWATS Domestic Communal WWTP	Yogyakarta City	38	ABR	Ammonia
24	Kaweron Communal WWTP	Magelang City	114	ABR	-
25	Kupang Communal WWTP	Semarang Regency	35	ABR and AF	COD, COD, Ammonia and Total Coliforms
26	Pulutan Communal WWTP	Salatiga City	25	ABR	TSS and Ammonia
27	Jaranan Sehat Communal WWTP	Bantul Regency	45	ABR	BOD, COD, Ammonia and Total Coliforms
28	Cucung Berbinar Community Self-Help Groups (KSM) Community Based Sanitation Program (SANIMAS)	Sidoarjo Regency	68.5	ABR and AF	BOD, COD, Ammonia and Total Coliforms

LIST OF DEWATS IN JAVA MONITORED BY MoEF

Table 4 List of Communal WWTPs in Java monitored by MoEF in 2022 (continued data)

No.	Communal WWTP (DEWATS)	Regency/City	Capacity (m ³ /hari)	Technology	Parameters that Do Not Meet the Quality Standards of Treated Water
29	Benowo Landfill WWTP	Surabaya City	-	AOP	-
30	Ngemplak Rejo Community Base Sanitation Program (SANIMAS)	Pasuruan City	50	ABR and AF	Ammonia
31	Kertowongso Sejahtera Ngemplak Rejo Community Base Sanitation Program (SANIMAS)	Mojokerto City	20	ABR and AF	BOD, COD, Ammonia and Total Coliforms
32	Bina Sehat Ngemplak Rejo Community Base Sanitation Program (SANIMAS)	Mojokerto Regency	54	ABR and AF	BOD, COD, Ammonia and Total Coliforms
33	Supit Urang Landfill WWTP	Malang City	300	Anaerobic dan Aerobic	Ammonia
34	Langgar At-Taqwa Ngemplak Rejo Community Base Sanitation Program (SANIMAS)	Malang Regency	30	ABR and AF	-
35	Lingkungan Beru Ngemplak Rejo Community Base Sanitation Program (SANIMAS)	Blitar Regency	22.5	ABR and AF	Ammonia and Total Coliforms
36	Jamberejo Community Self-Help Groups (KSM) Communal WWTP	Batu City	42.5	ABR and AF	BOD and COD
37	Higiens 2 Tlogopojok Communal WWTP	Gresik Regency	20.5	ABR and AF	BOD, COD, TSS, Ammonia and Total Coliforms
38	Sandang Asri Ngemplak Rejo Community Base Sanitation Program (SANIMAS)	Kediri City	10	ABR and AF	Total Coliform
39	Makmur Tlumpu WWTP	Blitar City	20	ABR and AF	BOD, COD, TSS and Total Coliform
40	Kedungrejo Communal WWTP	Banyuwangi Regency	20	ABR and AF	BOD, COD and Total Coliform

TERIMAKASIH
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THANK YOU VERY MUCH

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Table 5 List of WWTPs built by MPWH

LIST OF COMMUNAL WWTPs IN INDONESIA

No.	Province	Regency/City	Infrastructure	No.	Province	Regency/City	Infrastructure
1	Aceh	Central Aceh Regency	Bebesen Blang Gele WWTP	23	Riau	Kampar Regency	Kampar Regency Area WWTP
2		Banda Aceh City	Banda Aceh Area WWTP	24		Indragiri Hulu	Indragiri Hulu WWTP
3		Sabang City	Sabang City WWTP	25		Bengkalis	Lembah Sari Housing District Scale WWTP
4		Langsa City	Langsa City WWTP	26		Pekanbaru City	Kertama Raya Housing District Scale WWTP
5		Lhokseumawe City	Lhokseumawe City WWTP	27		Pekanbaru City	Lembah Sari Housing District Scale WWTP
6	North Sumatera	Simalungun Regency	Parapat WWTP	28		Dumai City	Fajar Indah Lestari Housing District Scale WWTP
7		Karo Regency	Karo WWTP	29		Dumai City	Bukit Nanas Regency Housing District Scale WWTP
8		Deli Serdang Regency	Deli Serdang Area WWTP	30		Dumai City	Dumai City WWTP
9		Deli Serdang Regency	Taman Putri Deli Serdang Housing District	31		Batam City	Batam City WWTP
10		Samosir Regency	Samosir WWTP	32		Riau Islands	Tanjung Pinang City Housing District Scale WWTP
11		Pematang Siantar City	Pematang Siantar Area WWTP	33	Jambi	Merangin Regency	Merangin Housing District Scale WWTP
12		Tebing Tinggi City	Tebing Tinggi Sub-District Area WWTP	34		Batang Hari Regency	Desa Batin Housing District Scale WWTP
13	Binjai City	Binjai Area WWTP	35	Batang Hari Regency		Sungai Lingkar Housing District Scale WWTP	
14	West Sumatera	Dharmasraya Regency	Ranah Tibarau Housing District WWTP	36		Jambi City	Jambi City WWTP
15		Padang City	Puus Area WWTP	37		Sungai Penuh City	Sungai Penuh Housing District Scale WWTP
16		Padang City	Lubuk Kolang Area WWTP				
17		Padang City	Banda Buek WWTP				
18		Padang City	Cimpago Lake WWTP				
19		Solok City	Laing Gelanggang Batuang WWTP				
20		Bukittinggi City	WWTP of District Belakang Kota Bukittinggi				
21		Payakumbuh City	Tanjung Pauh WWTP				
22	Pariaman City	Taluak Village WWTP					

Source: MPWH (Ministry of Public Work and Housing)

LIST OF COMMUNAL WWTPs IN INDONESIA

Table 5 List of WWTPs built by MPWH (continued data)

No.	Province	Regency/City	Infrastructure	No.	Province	Regency/City	Infrastructure
38	South Sumatera	Ogan Komering Ilir	Griya Sipucuk Housing District Scale WWTP	53	Special Capital Region of Jakarta	Central Jakarta	Harapan Mulia WWTP
39		Musi Banyuasin	Musi Banyuasin Communal WWTP	54		East Jakarta	Dahlia WWTP
40		Banyuasin	WWTP Desa Lubuk Binti Alo Housing District Scale WWTP	55	West Java	Bogor	Bogor Area WWTP
41		Palembang City	Jakabaring Housing District WWTP	56		Sukabumi	Tenjoresmi Housing District Scale WWTP
42		Palembang City	Keramasan Housing District WWTP	57		Tasikmalaya	Tasikmalaya WWTP
43		Palembang City	Griya Interbis Indah Housing District WWTP	58		Bogor City	Tegal Gundil WWTP
44		Palembang City	Taman Palem Kencana Housing District WWTP	59		Bogor City	Bogor City Area WWTP
45		Palembang City	Pondok Palem Indah Housing District WWTP	60		Sukabumi City	Bandung City WWTP
46		Palembang City	Palembang City WWTP	61		Bandung City	Bandung City WWTP
47		Bangka Belitung Islands	Belitung Regency	Kabupaten Belitung National Housing District WWTP		62	Cirebon City
48	Belitung Regency		Belitung Regency WWTP	63		Cirebon City	Cirebon City WWTP
49	Bangka Tengah Regency		Central Bangka Regency WWTP				
50	Bangka Tengah Regency		Central Bangka Regency WWTP				
51	Bangka Tengah Regency		Central Bangka Regency WWTP				
52	Pangkal Pinang City		Pangkal Pinang City WWTP				

Source: MPWH

Table 5 List of WWTPs built by MPWH (continued data)

No.	Province	Regency/City	Infrastructure
64	Central Java	Banyumas Regency	Griya Satria Bukit Permata Housing District Scale WWTP
65		Banyumas Regency	Bukit Kalibagor Indah Housing District Scale WWTP
66		Magelang Regency	Regency Magelang Housing District Scale WWTP
67		Boyolali Regency	Taman Sentosa Housing District Scale WWTP
68		Sukoharjo Regency	Regency Sukoharjo Housing District Scale WWTP
69		Sragen Regency	Sambirembe Housing District Scale WWTP
70		Sragen Regency	Sidoharjo Asri Housing District Scale WWTP
71		Kendal Regency	Regency Kendal Housing District Scale WWTP
72		Tegal Regency	Taman Indo Kaliwadas Housing District Scale WWTP
73		Surakarta City	Bengawan Solo Area WWTP
74		Surakarta City	Kawasan Jebres Housing District Scale WWTP
75		Surakarta City	Semanggi WWTP
76		Surakarta City	Kota Surakarta Housing District Scale WWTP
77		Semarang City	Dinar Asri Housing District Scale WWTP
78		Semarang City	Griya Utama Banjardowo Ketapang Housing District Scale WWTP
79		Semarang City	Kota Semarang Housing District Scale WWTP
80	Pekalongan City	Kota Pekalongan Housing District Scale WWTP	

Source: MPWH

LIST OF COMMUNAL WWTPs IN INDONESIA

Table 5 List of WWTPs built by MPWH (continued data)

No.	Province	Regency/City	Infrastructure
81	Special Region of Yogyakarta	Bantul Regency	Bambanglipuro WWTP
82		Sleman Regency	Depok WWTP
83		Kulon Progo Regency	Kulon Progo Regency District Housing WWTP
84		Bantul Regency	Bantul Regency District Housing WWTP
85		Gunung Kidul Regency	Gunung Kidul Regency District Housing WWTP
86		Sleman Regency	Berbah WWTP
87		Sleman Regency	Sleman Regency District Housing WWTP
88		Yogyakarta City	Kraton WWTP
89		Yogyakarta City	Yogyakarta District Housing WWTP
90		West Java	Pacitan Regency
91	Malang Regency		Sawojajar Area WWTP
92	Malang Regency		Malang Regency District Housing WWTP
93	Jombang Regency		Jombang Regency District Housing WWTP
94	Sumenep Regency		Sumenep Regency District Housing WWTP
95	Sumenep Regency		Sumenep Regency District Housing Scale WWTP
96	Malang City		Malang City District Housing Scale WWTP
97	Pasuruan City		Pasuruan City District Housing Scale WWTP
98	Surabaya City		ITS Lecturer District Housing WWTP
99	Surabaya City		Surabaya River Area WWTP
100	Surabaya City		Boezem Surabaya Area WWTP
101	Batu City		SPALD-T Kota Batu

LIST OF COMMUNAL WWTPs IN INDONESIA

Table 5 List of WWTPs built by MPWH (continued data)

No.	Province	Regency/City	Infrastructure
102	Bali	Tabanan Regency	Dauh Pala WWTP
103		Tabanan Regency	Tabanan Regency WWTP
104	West Nusa Tenggara	West Lombok Regency	West Lombok Regency Area WWTP
105		Central Lombok Regency	SPALD-T Tampar Ampar
106		Central Lombok Regency	Praya Sub-District Area WWTP
107		Central Lombok Regency	Jonggat Sub-District Area WWTP
108		Central Lombok Regency	Central Lombok Regency Area WWTP
109		East Lombok Regency	Fisherman's Area WWTP of East Lombok Regency
110		East Lombok Regency	Masbagik Area WWTP
111		Sumbawa Regency	WWTP RSH BTN Bukit Permai
112		Sumbawa Regency	Sumbawa Regency WWTP
113		West Sumbawa Regency	Brang Area WWTP
114		North Lombok Regency	Gili Trawangan Area WWTP
115		Mataram City	Mataram City Slump Housing District WWTP
116		Mataram City	Mataram City Slump Housing District WWTP
117		Mataram City	Sukarara Area WWTP
118		Mataram City	Mataram City WWTP

Source: MPWH

Table 5 List of WWTPs built by MPWH (continued data)

No.	Province	Regency/City	Infrastructure
119	East Nusa Tenggara	Belu Regency	Military District Commander Dormitory Area WWTP
120		Belu Regency	Belu Regency WWTP
121		Rote Ndao Regency	WWTP in Ndana and Oeseli Island
122		Southwest Sumba Regency	Tambolaka City Southwest Sumba Regency Area WWTP
123		East Manggarai Regency	East Manggarai Regency WWTP
124	North Sulawesi	Manado City	Manado City WWTP
125		Bitung City	Bitung City WWTP
126	Gorontalo	Pohuwato Regency	South Marisa Village WWTP
127		Gorontalo City	Gorontalo City WWTP
128		Gorontalo City	Gorontalo City Area WWTP
129	Central Sulawesi	Palu City	Huntap Duyu Area WWTP
130		Sigi Regency	Huntap Pombewe Area WWTP
131		Parigi Moutong	Parigi Moutong Regency WWTP
132		Palu City	Palu City Area WWTP
133		Palu City	Palu City WWTP

Source: MPWH

LIST OF COMMUNAL WWTPs IN INDONESIA

Table 5 List of WWTPs built by MPWH (continued data)

No.	Province	Regency/City	Infrastructure	
134	West Sulawesi	Majene Regency	Fisherman's Area WWTP of Pamboang Sub-District	
135		Majene Regency	Banggae Sub-District Housing Area WWTP	
136		Polewali Mandar Regency	Fisherman's Area WWTP of Balanipa Sub-District	
137		Polewali Mandar Regency	NUSSP Polewali Sub-District Area WWTP	
138		Polewali Mandar Regency	Polewali Mandar Regency WWTP	
139		Mamasa Regency	Mamasa Regency WWTP	
140		Mamasa Regency	Mamasa Sub-District Housing Area WWTP	
141		Mamasa Regency	Sumarorong Sub-District Housing Area WWTP	
142		Mamuju Regency	Mamuju Regency WWTP	
143		Mamuju Regency	Legenda Garden Regency Mamuju WWTP	
144		Mamuju Regency	Fisherman's Area WWTP of Mamuju Regency	
145		Mamuju Regency	Sese Residential Area WWTP, Simkep Sub-District	
146		Mamuju Regency	Fisherman's Area WWTP of Kalukku Sub-District	
147		Mamuju Regency	Maluku Regency Area WWTP	
148		North Mamuju Regency	North Maluku Area WWTP	
149		North Mamuju Regency	Fisherman's Area WWTP of Bambaloka Sub-District	
150		North Mamuju Regency	Fisherman's Area WWTP of Pasangkayu Sub-District	
151		South Sulawesi	Gowa Regency	University of Hasanuddin WWTP

Source: MPWH

LIST OF COMMUNAL WWTPs IN INDONESIA

Table 5 List of WWTPs built by MPWH (continued data)

No.		Regency/City	Infrastructure
152	Southeast Sulawesi	Kolaka	Kolaka Regency WWTP
153		Konawe Selatan	South Konawe Area WWTP
154		Konawe Selatan	South Konawe WWTP
155		Bombana	Bombana Regency WWTP
156		Wakatobi	Tomia Area WWTP
157		Wakatobi	Wakatobi Regency WWTP
158		Kendari City	Kendari City Area WWTP
159		Kendari City	Kendari City WWTP
160		Bau-Bau City	Bau-Bau City Beach Housing Area
161		Bau-Bau City	Bau-Bau City WWTP
162		Maluku	West Southeast Maluku
163	Southeast Maluku		Langgur City WWTP
164	Southeast Maluku		Langgur City Local Government National Housing WWTP
165	Central Maluku		Masohi City District Area Scale WWTP
166	Central Maluku		Central Maluku Regency WWTP
167	Buru		Buru Regency : Namlea – Military District Commander WWTP
168	West Seram		Benteng WWTP
169	West Seram		West Seram WWTP
170	Ambon City		Kate Kate Ambon WWTP
171	Ambon City		Kayu Tiga Ambon WWTP

Source: MPWH

LIST OF COMMUNAL WWTPs IN INDONESIA

Table 5 List of WWTPs built by MPWH (continued data)

No.	Province	Regency/City	Infrastructure
172	Maluku	Ambon City	Passo WWTP
173		Ambon City	Benteng Settlement WWTP
174		Tual City	BTN Housing WWTP, Tual City
175		Tual City	Tual City Settlement Scale WWTP
176	North Maluku	Central Halmahera	Weda City Civil Servant Housing Complex Domestic Wastewater Treatment System (SPALD-T)
177		Sula Islands	Sula Island Regency Centralized Domestic Wastewater Treatment System (SPALD-T)
178		East Halmahera	Halmahera Regency Centralized Domestic Wastewater Treatment System (SPALD-T)
179		Morotai Island	SPALD Morotai Area Scale Domestic Wastewater Treatment System (SPALD)
180		Ternate City	Ternate City Area Scale Domestic Wastewater Treatment System (SPALD)
181		Tidore City Islands	Sofifi City Balbar Area Area Scale Domestic Wastewater Treatment System (SPALD)
182	Papua	Jayapura City	Jayapura City Settlement Scale WWTP
183	West Papua	Teluk Wondama	Wondiboy Zone A WWTP
184		Teluk Wondama	Wondiboy Zone B WWTP
185		Manokwari	Manokwati WWTP
186		Raja Ampat	Raja Ampat WWTP
187		Raja Ampat	Raja Ampat Settlement Scale WWTP
188		Sorong City	Victory WWTP

Source: MPWH

Table 6 List of Fecal Sludge Treatment Plant (FSTP) built by MPWH

LIST OF FSTPs IN INDONESIA

No.	Province	Regency/City	Infrastructure
1	Aceh	Sabang City	Cot Abeuk FSTP
2		West Aceh Regency	Kayu Puteh FSTP
3		Aceh Besar Regency	Aceh Besar FSTP
4		Pidie Regency	Pidie FSTP
5		Gayo Lues Regency	Gayo Lues FSTP
6		Aceh Jaya Regency	Gunung Tanggoh FSTP
7		South Aceh Regency	Pasie Raja FSTP
8		Southeast Aceh Regency	Lawe Sigala-gala
9		Bireuen Regency	Cot Buket FSTP
10		Southwest Aceh Regency	Iku Lhueng FSTP
11		Pidie Jaya Regency	Blang Awe FSTP
12		Simeulue Regency	Teupah Teungah FSTP
13		Central Aceh Regency	Mulie Jadi FSTP
14		Bener Meriah Regency	Wih Pesam FSTP
15		Langsa City	Simpang Wie FSTP
16		Lhokseumawe City	Alue Liem FSTP
17		Subulussalam City	Kuta Cepu FSTP
18		North Aceh Regency	Teupin Keubeu FSTP
19		East Aceh Regency	Julok FSTP
20		Nagan Raya Regency	Suka Makmue FSTP
21		Aceh Tamiang Regency	Aceh Tamiang FSTP

Source: MPWH

No.	Province	Regency/City	Infrastructure
22	North Sumatera	Pematang Siantar City	Pematang Siantar FSTP
23		Asahan Regency	Asahan FSTP
24		Sibolga City	Sibolga FSTP
25		Medan City	Medan FSTP
26		Dairi Regency	Dairi FSTP
27		Serdang Bedagai Regency	Serdang Bedagai FSTP
28		Tebing Tinggi City	Tebing Tinggi City FSTP
29		West Sumatera	Padang Panjang City
30	Padang Panjang City		Surau Gadang FSTP
31	Payakumbuh City		Sungai Durian FSTP
32	Dharmasraya Regency		Aur Jaya FSTP
33	Solok City		Ampang Kualo FSTP
34	Agam Regency		Sungai Jariang FSTP
35	Riau	Payakumbuh City	Payakumbuh City FSTP
36		Pekanbaru City	Muara Fajar FSTP
37		Indragiri Hulu Regency	Pematang Reba FSTP
38		Kuantan Singingi Regency	Kuantan Singingi FSTP
39		Bengkalis Regency	Duri FSTP
40		Siak Regency	Tualang FSTP
41		Kampar Regency	Kampar FSTP
42		Rokan Hulu Regency	Rokan Hulu FSTP
43		Dumai City	Dumai City FSTP
44		Bintan Regency	Bintan FSTP
45		Tanjung Pinang City	Tanjungpinang City FSTP
46		Natuna Regency	Natuna FST

Table 6 List of FSTPs built by MPWH (continued data)

No.	Province	Regency/City	Infrastructure
47	Jambi	Jambi City	Talang Bakung FSTP
48		Merangin Regency	Langling FSTP
49		Sarolangun Regency	Tembok Cino FSTP
50		Batang Hari Regency	AMD FSTP
51		East Tanjung Jabung Regency	Parit Culum FSTP
52		Bungo Regency	Gamut FSTP
53		Tebo Regency	Ladang Panjang FSTP
54		Bengkulu	Rejang Lebong Regency
55	Bengkulu Utara Regency		Bengkulu Utara FSTP
56	Lebong Regency		Lebong FSTP
57	Kaur Regency		Kaur FSTP
58	Bengkulu Selatan Regency		Manna City FSTP
59	South Sumatera		Prabumulih City
60		Muara Enim Regency	Bukit Kancil FSTP
61		Musi Banyuasin Regency	Sungai Medak FSTP
62		Ogan Komering Ulu Regency	Simpang Kadis FSTP
63		Pagar Alam City	Padang Karet Pagar Alam City FSTP
64		Musi Rawas Regency	Simpang Gegas FSTP
65		Banyu Asin Regency	Terlangu FSTP
66		Empat Lawang Regency	Lawang FSTP
67		Ogan Ilir Regency	Palem Raya FSTP

Source: MPWH

LIST OF FSTPs IN INDONESIA

No.	Province	Regency/City	Infrastructure
68	Bangka Belitung Islands	Pangkal Pinang City	Pangkalpinang City FSTP
69		Bangka Regency	Bangka FSTP
70		West Bangka Regency	West Bangka FSTP
71		East Belitung Regency	East Belitung FSTP
72		Central Bangka Regency	Central Bangka FSTP
73		South Bangka Regency	Toboali South Bangka FSTP
74		Lampung	Metro City
75	Pringsewu Regency		Bumi Ayu FSTP
76	Bandar Lampung City		Bakung FSTP
77	South Lampung Regency		Lubuk Kamal FSTP
78	Central Lampung Regency		Bandar Jaya FSTP
79	West Lampung Regency		Bahway FSTP
80	Tanggamus Regency		Kali Miring FSTP
81	North Lampung Regency		Alamkari FSTP
82	Way Kanan Regency		Way Kanan FSTP
83	West Kalimantan		Singkawang City
84		Sambas Regency	Sorat FSTP
85		Landak Regency	Landak Regency FSTP
86	Central Kalimantan	Palangka Raya City	Palangka Raya City FSTP
87		East Kotawaringin Regency	East Kotawaringin FSTP
88		West Kotawaringin Regency	West Kotawaringin FSTP
89		Sukamara Regency	Sukamara FSTP
90		Lamandau Regency	Lamandau FSTP
91		Seruyan Regency	Seruyan FSTP
92		South Barito Regency	Barito Selatan FSTP
93		Gunung Mas Regency	Gunung Mas FSTP

Table 6 List of FSTPs built by MPWH (continued data)

No.	Province	Regency/City	Infrastructure	
94	South Kalimantan	South Hulu Sungai Regency	South Hulu Sungai FSTP	
95		Tanah Laut Regency	Tanah Laut FSTP	
96		Banjar Regency	Banjar FSTP	
97		Tanah Bumbu Regency	Tanah Bumbu FSTP	
98		Banjarbaru City	Banjarbaru City FSTP	
99		Barito Kuala Regency	Barito Kuawa FSTP	
100		Balangan Regency	Balangan FSTP	
101		Tapin Regency	Tapin FSTP	
102		Central Hulu Sungai Regency	Central Hulu Sungai FSTP	
103		North Hulu Sungai Regency	North Hulu Sungai FSTP	
104		Tabalong Regency	Tanjung FSTP	
105		East Kalimantan	North Penajam Paser Regency	Buluminung FSTP
106			West Kutai Regency	Sendawar City FSTP
107			Kutai Kartanegara Regency	Kutai Kartanegara FSTP
108	North Kalimantan	Bulungan Regency	Tanjung Selor FSTP	
109		Tana Tidung Regency	Sesayap Hilir FSTP	
110	Banten	Lebak Regency	Sindang Mulya FSTP	
111		Cilegon City	Bagendung FSTP	
112	West Java	Sukabumi City	Cikundul FSTP	
113		Bekasi City	Sumur Batu FSTP	
114		Indramayu Regency	Pecuk FSTP	

LIST OF FSTPs IN INDONESIA

No.	Province	Regency/City	Infrastructure
115	West Java	Tasikmalaya City	Singkup FSTP
116		Bogor Regency	Cibinong FSTP
117		Bandung City	Kompak FSTP
118		Bekasi City	Bekasi City FSTP
119	Central Java	Regency Purworejo	Purworejo FSTP
120		Regency Pemalang	Pemalang FSTP
121		Regency Klaten	Komboran FSTP
122		Regency Kudus	Kudus FSTP
123		Regency Pati	Pati FSTP
124		Regency Jepara	Jepara FSTP
125		Regency Kebumen	Kebumen FSTP
126		Regency Boyolali	Boyolali FSTP
127		City Tegal	Muara Reja FSTP
128		Regency Karanganyar	Kaliboto FSTP
129		Regency Cilacap	Tritih FSTP
130		Regency Batang	Randu Kuning FSTP
131		Regency Rembang	Rembang FSTP
132		Regency Sukoharjo	Sukoharjo FSTP
133		City Surakarta	City Surakarta FSTP
134		City Magelang	Dumpoh FSTP
135		Regency Grobogan	Grobogan FSTP
136		City Surakarta	Putri Cempo FSTP
137		Regency Temanggung	Temanggung FSTP
138		Regency Pekalongan	Pekalongan FSTP
139	Regency Wonogiri	Wonogiri FSTP	

Source: MPWH

Table 6 List of FSTPs built by MPWH (continued data)

No.	Province	Regency/City	Infrastructure
140	Special Region of Yogyakarta	Regency Kulon Progo	Banyuroto FSTP
141		Regency Bantul	Sewon Regional FSTP
142		Regency Sleman	Madurejo FSTP
143		Regency Gunung Kidul	Wukirsari FSTP
144	East java	City Surabaya	Keputih FSTP
145		Regency Sidoarjo	Sidoarjo FSTP
146		Regency Gresik	Gresik FSTP
147		Regency Sumenep	Sumenep FSTP
148		City Batu	City Batu FSTP
149		Regency Lumajang	Lumajang FSTP
150		Regency Tulungagung	Tulungagung FSTP
151		Regency Madiun	Madiun FSTP
152		Regency Lamongan	Lamongan FSTP
153		Regency Ponorogo	Ponorogo FSTP
154		Regency Probolinggo	Probolinggo FSTP
155		City Blitar	Blitar City FSTP
156		City Malang	Supit Urang FSTP
157		City Probolinggo	Probolinggo City FSTP
158		Regency Ngawi	Ngawi FSTP
159		City Pasuruan	Pasuruan FSTP
160		Bali	Regency Badung
161	Regency Tabanan		Mandung FSTP
162	Regency Klungkung		Lepang FSTP
163	Regency Buleleng		Bengkala FSTP
164	Regency Karang Asem		Linggasana FSTP
165	City Denpasar		Suwung FSTP

LIST OF FSTPs IN INDONESIA

No.	Province	Regency/City	Infrastructure
166	West Nusa Tenggara	Regency Sumbawa Barat	Batu Putih FSTP
167		Regency Lombok Tengah	Pengangat FSTP
168		City Mataram	Kebon Kongok FSTP
169		City Bima	Bima City FSTP
170		Regency Bima	Bima FSTP
171	East Nusa Tenggara	City Kupang	Alak FSTP
172		Regency Belu	Lelowai FSTP
173		Regency Sumba Timur	Waingapu FSTP
174		Regency Flores Timur	East Flores FSTP
175	North Sulawesi	City Bitung	Bitung FSTP
176		Regency Bolaang Mongondow Selatan	South Bolaang Mongondow FSTP
177		Regency Minahasa	Minahasa FSTP
178		Regency Minahasa Utara	North Minahasa FSTP
179		Regency Citymubagu	Kotamubagu FSTP
180		Regency Kepulauan Talaud	Talaud FSTP
181		Regency Tomohon	Tomohon FSTP
182	Gorontalo	City Gorontalo	Gorontalo City FSTP
183		Regency Pahuwato	Pohuwato FSTP
184		Regency Boalemo	Boalemo FSTP
185		Regency Gorontalo	Gorontalo FSTP
186		Regency Gorontalo Utara	North Gorontalo FSTP

Source: MPWH

Table 6 List of FSTPs built by MPWH (continued data)

No.	Province	Regency/City	Infrastructure
187	Central Sulawesi	Toli-Toli Regency	Kabinuang FSTP
188		Palu City	Talise FSTP
189		Sigi Regency	Sigi FSTP
190		Tojo Una-Una Regency	Ampana FSTP
191	West Sulawesi	Polewali Mandar Regency	Binuang FSTP
192		Mamuju Regency	Mamuju FSTP
193		Majene Regency	Majene FSTP
194		Mamasa Regency	Malabo FSTP
195		Pasangkayu Regency	Pasangkayu FSTP
196	South Sulawesi	Makassar City	Nipa-Nipa FSTP
197		Makassar City	Makassar City FSTP
198		Bantaeng Regency	Batuturang FSTP
199		Pinrang Regency	Malimpung FSTP
200		Maros Regency	Bontoramba FSTP
201		Soppeng Regency	Kubba Lempa FSTP
202		Palopo City	Mancani FSTP
203		Wajo Regency	Campalangi FSTP
204		Sidenreng Rappang Regency	Patombo FSTP
205		Barru Regency	Padangloang FSTP
206		Takalar Regency	Ballang FSTP
207	Sinjai Regency	Tondong FSTP	

LIST OF FSTPs IN INDONESIA

No.	Province	Regency/City	Infrastructure
208	Southeast Sulawesi	Bau-Bau City	Walio FSTP
209		Bombana Regency	Bombana FSTP
210		Kendari City	Puulonggida FSTP
211		North Konawe Regency	North Konawe FSTP
212		Kolaka Regency	Kolaka FSTP
213		North Kolaka Regency	North Kolaka FSTP
214		Wakatobi Regency	Kawatobi FSTP
215	Maluku	Ambon City	Sirimau FSTP
216		Southeast Maluku Regency	Rewav FSTP
217		West Seram Regency	Piru City FSTP
218		Southwest Maluku Regency	Tiakur FSTP
219		Central Maluku Regency	Masohi City FSTP
220		Tual City	Tual City FSTP
221	South Maluku	Ternate City	Ternate City FSTP
222		Tidore Islands City	Tidore Islands City FSTP
223		Central Halmahera Regency	Central Halmahera FSTP
224		Sula Islands Regency	Sula Islands FSTP
225		West Halmahera Regency	West Halmahera FSTP
226		South Halmahera Regency	South Halmahera FSTP
227		East Halmahera Regency	East Halmahera FSTP
228		Morotai Island Regency	Morotai Island FSTP
229		North Halmahera Regency	North Halmahera FSTP
230		Tidore Islands Regency	Sofifi City FSTP

Source: MPWH

LIST OF FSTPs IN INDONESIA

Table 6 List of FSTPs built by MPWH (continued data)

No.	Province	Regency/City	Infrastructure
231	Papua	Jayapura City	Koya Koso FSTP
232		Jayapura Regency	Waibron FSTP
233	West Papua	Manokwari Regency	Sowi FSTP
234		Sorong City	Makbon FSTP
235		Teluk Bintuni Regency	Bintuni FSTP
236		South Sorong Regency	Wayer FSTP
237		Sorong City	Sorong FSTP
238		Raja Ampat Regency	Raja Ampat FSTP
239	South Papua	Merauke Regency	Bokem FSTP
240	Central Papua	Nabire Regency	Wanggar FSTP
241		Mimika Regency	Iwaka FSTP

Source: MPWH

Please be noted, there are several DEWATS built by NGOs, however no records of these DEWATS.

One of the NGO, Yayasan Dian Desa has built 8 DEWATS in the following cities/region:

- Tegal – 1 unit
- Pekalongan – 1 unit
- Bali – 1 unit
- Yogya – 3 units
- Pati – 1 unit
- Wonosobo – 1 unit