



KEMENTERIAN LINGKUNGAN HIDUP DAN KEHUTANAN
REPUBLIK INDONESIA

CURRENT STATUS OF DEVELOPMENT OF THE TMDL GUIDELINE AND THE IMPROVEMENT OF WATER QUALITY IN THE CITARUM RIVER

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MINISTRY OF ENVIRONMENT AND FORESTRY OF REPUBLIC OF INDONESIA**

BACKGROUND

- The Memorandum of Cooperation on Environmental Cooperation between The Ministry of the Environment of Japan and the Ministry of Environment and Forestry of the Republic of Indonesia was signed in Tokyo on 10 April 2017;
- One of the derivative forms of this collaboration is the Development of TMDLs Guideline;
- This project was implemented jointly by IGES (Japanese representation) and the Directorate of Water Pollution Control of the Ministry of Environment and Forestry (Representation of Indonesia) with the implementer is PSLH ITB

WHY DEVELOPING TMDLS GUIDELINE? **OUTLINE PRESENTATION**

- **Introduction**-Indonesia's Policy on Water Quality Management and Pollution Control;
- **Current Situation**- Water Quality in Indonesia;
- **Importance of TMDLs Guidelines for Indonesia;**
- **Progress on TMDLs Guidelines Development**
- **Conclusion**

INTRODUCTION

Government Regulation Of The Republic of Indonesia Number 82 Year 2001 Concerning with Water Quality Management And Water Pollution Control

- To maintain and achieve water quality so that it can be used sustainably in accordance with the desired water quality level, it is necessary to conserve and or control efforts.
- Conservation of water quality is carried out at water sources found in protected forests (undisturbed areas).
- The management of water quality in water sources outside protected forests is carried out by controlling water pollution, namely efforts to maintain water functions so that the water quality meets water quality standards.

Water Quality Classification

- a. First class, water which the designation of can be used for drinking water raw water, and or other designation requiring the same water quality as the said use;
- b. Second class, water the designation of which can be used for water recreation infrastructure / facilities, freshwater fish farming, animal husbandry, water for irrigating crops, and / or other designations requiring the same water quality as the said use;
- c. Class three, water the designation of which can be used for the cultivation of freshwater fish, animal husbandry, water for irrigating crops, and or other designations requiring the same water as the said use;
- d. Class four, water whose designation can be used for irrigation, planting and / or other uses which require the same water quality as the said use.

AUTHORITIES IN THE CONTEXT OF WATER POLLUTION CONTROL REGULATION IN INDONESIA

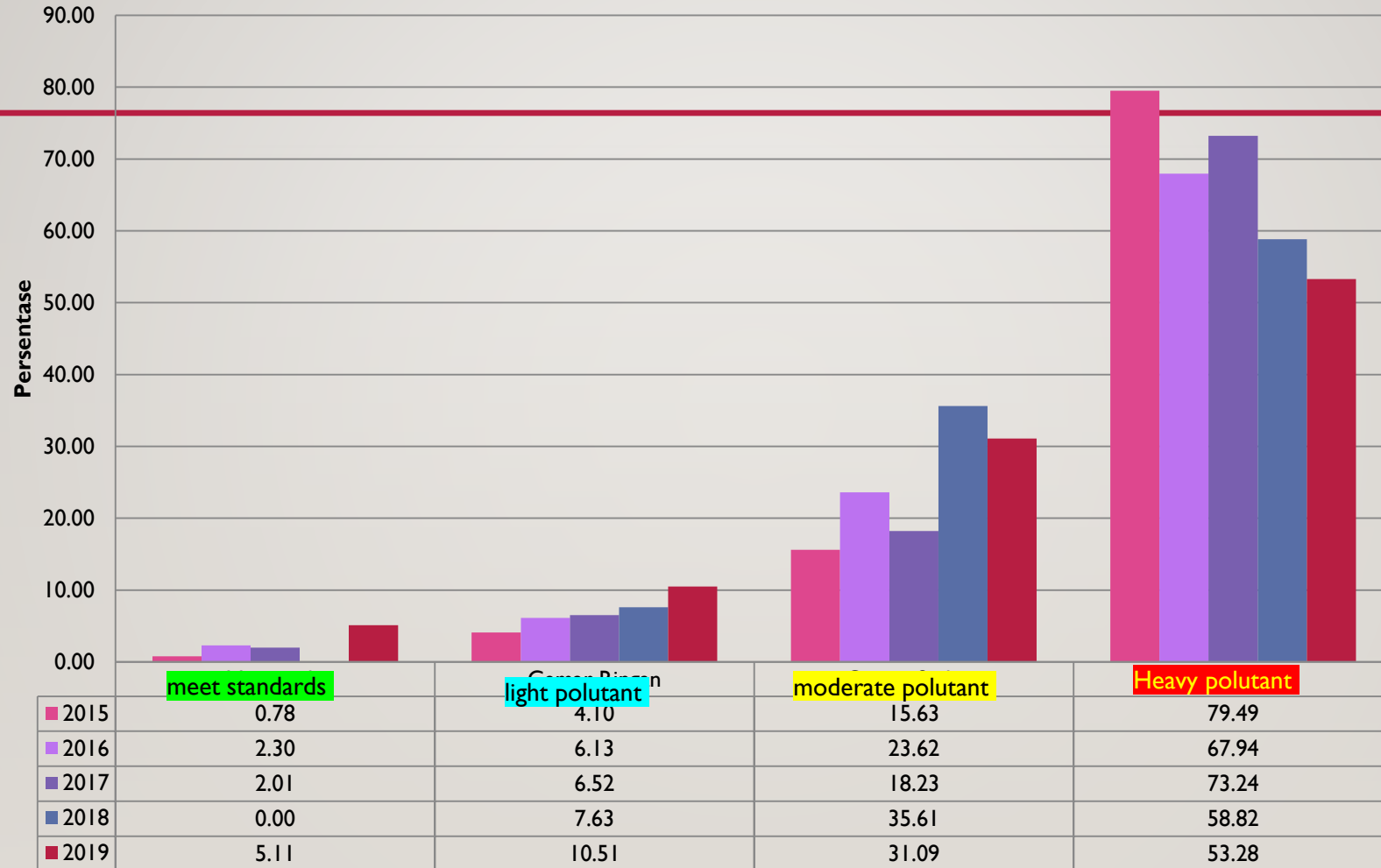
- (1). The government shall carry out management of water quality across provinces and or across national borders.
- (2). The Provincial Government coordinates the management of water quality across regencies/cities.
- (3). The Regency/City Government manages the water quality in the Regency / City.

OBLIGATIONS OF AUTHORITIES

1. Monitoring & Pollution Control;
2. Determine carrying capacity of pollutant loads, and reviewed it at least every 5 years
3. Carrying capacity of pollutant loads might be used for among others:
 - Issuing of wastewater discharge permits;
 - Determination of target water quality and work program for water pollution control
4. **Only regency/city has authority to issue permit for wastewater discharge**

TREND OF WATER QUALITY STATUS IN INDONESIA 2015-2019

Compared to 2nd Class of II PP 82/2001



The main objective of water pollution control is to achieve the water quality standard or if it has passed the quality standard, the temporary objective is to achieve the target water quality.

Is the wastewater discharge permit processed properly?

- TMDLs are the approach required by regulations to ensure the maintenance of water quality
- Only regency/city might issue permit to discharge wastewater to environment;
- In the past, local environment institution carried out the process. But in current regulation in, all necessary permits are processing by administrative institution;
- It is very **important that TMDLs guidelines be available;**

Objective:

- Giving the standard procedure on how to develop the TMDL for national, provincial and local governments in order to achieve the water quality standard
- Providing the standard procedure on how to implement the stipulated TMDL for the related stakeholders in the level of national, provincial and local in the development of water pollution control WPC's strategy, program, action plan and water quality-based effluent standard

REGULATIONS OF TMDL (DTBP)

1. Act No.32/2009 Concerning with Environmental Protection and Management
2. Government Regulation No.82/2001 Concerning with Water Quality Management and Water Pollution Control
3. Ministry of Environment Decree No.110/2003 Concerning with Technical Guideline of TMDL assessment
4. Ministry of Environment Regulation No.01/2010 Concerning with Implementation Guideline of Water Pollution Control

DEVELOPMENT OF TMDLS IN 15 PROPRITY WATERSHEDS (20015-2020)

STIPULATED TMDL(DTBP DAN ALOKASI BEBAN) 2017-2020 by The Decrees of Minister of Environment and Forestry

1. Citarum River
2. Ciliwung River
3. Cisadane River
4. Bengawan Solo River
5. Brantas River
6. Kapuas River
7. Siak River
8. Asahan River
9. Way Sekampung River
10. Serayu River
11. Saddang River

CALCULATION/ASSESSMENT WERE COMPLETED IN 2020

1. Jeneberang River
2. Limboto River
3. Moyo River
4. Musi River

The Decree of Minister of
Environmental and Forestry
No.300/2017

RESULT OF TMDL CALCULATION IN CITARUM RIVER

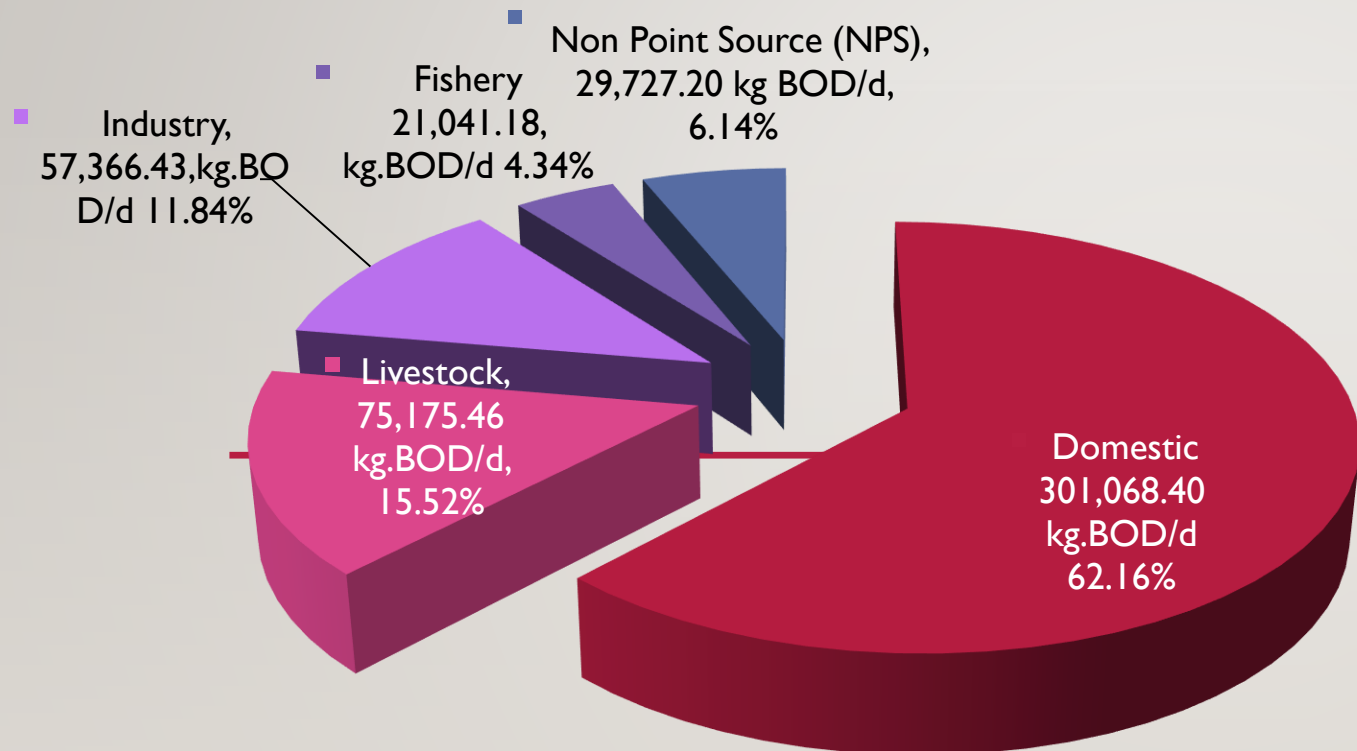
RESULT OF TMDLs MODEL DEVELOPMENT FOR CITARUM RIVER

(SK.300/Menlhk/Setjen/PKL.1/6/2017

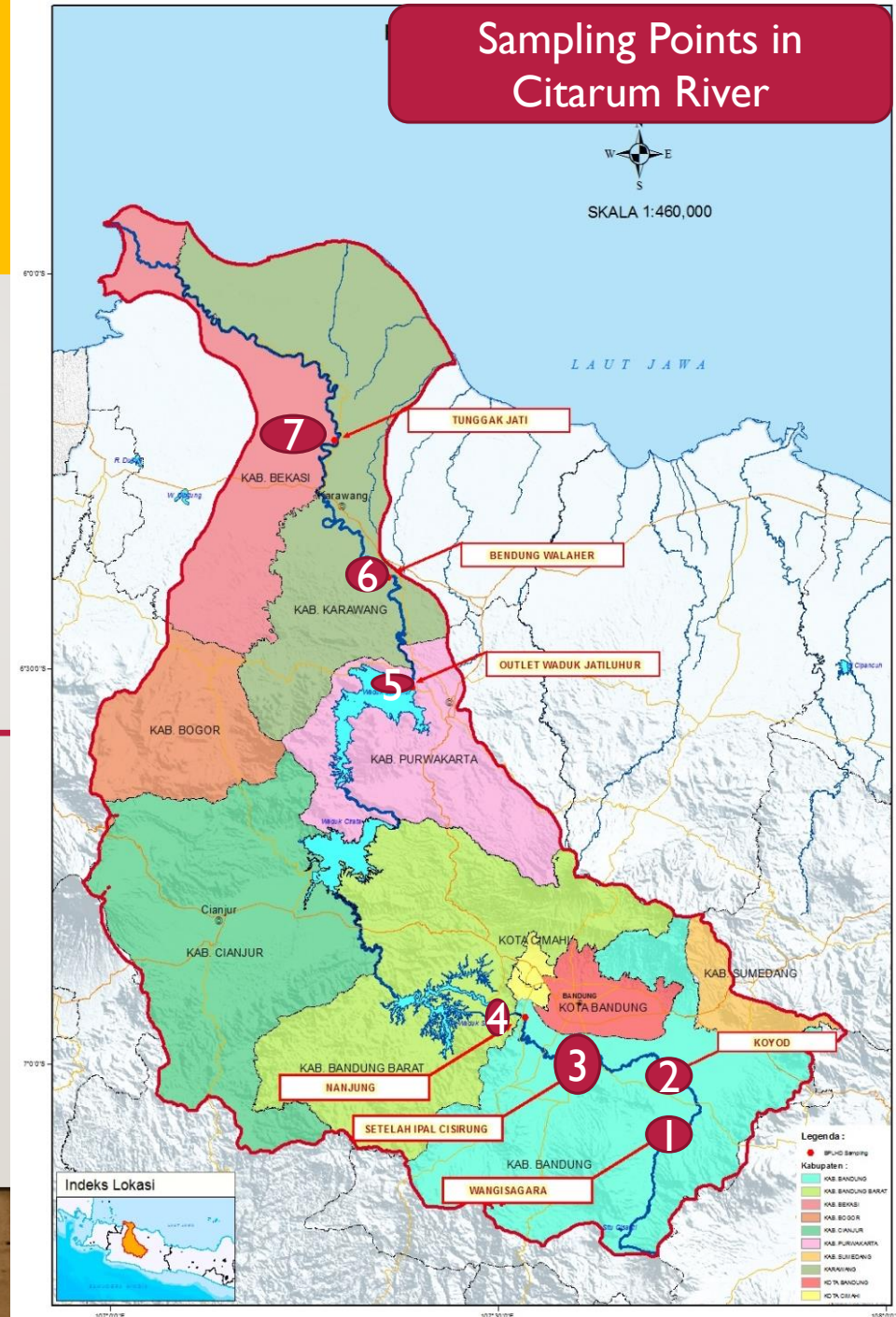
regarding Citarum River Assimilative Capacity and Total Maximum Daily Load)

Segment	Regency	Sub-Watershed	Actual Pollution Load (kg BOD/day)	TMDLs (kg BOD/day)	Load Reduction needed (kg BOD/day)	Pollution Load for each Segment (kg BOD/day)	Pollution Load for each Segment on (%)
1	Bandung – District	Cirasea	22.873,91	5.718,48	17.155,43	218.683,85	50,74
	Sumedang - District	Citarik	20.382,82	5.095,71	15.287,12		
	Bandung – City	Cikeruh	24.788,34	6.197,08	18.591,25		
	Bandung – District	Cisangkuy	19.482,94	4.870,73	14.612,20		
	Bandung - City	Cikapundung	77.341,19	19.335,30	58.005,89		
	Bandung – District	Ciwidey	8.282,60	2.070,65	6.211,95		
	Cimahi – District	Cihaur	45.532,04	11.383,01	34.149,03		
2	Bandung Barat - District	Ciminyak	10.929,27	5.464,64	5.464,64	53.225,76	12,35
	Bandung Barat- District	Cimeta	10.076,68	5.038,34	5.038,34		
	Cianjur- District	Cisokan	32.219,81	16.109,91	16.109,91		
3	Cianjur- District	Cikundul	7.803,99	3.901,99	3.901,99	25.553,31	5,93
	Purwakarta- District	DTA Jatiluhur	17.749,33	8.874,66	8.874,66		
4	Purwakarta- District	Cikao	13.985,97	3.496,49	10.489,48	133.533,17	30,98
	Bogor & Karawang District	Cibeet	39.452,75	9.863,19	29.589,56		
	Karawang & Bekasi District	Citarum Hilir	80.094,45	20.023,61	60.070,84		
			430.996,09	127.443,79	303.552,30	430.996,09	100,00

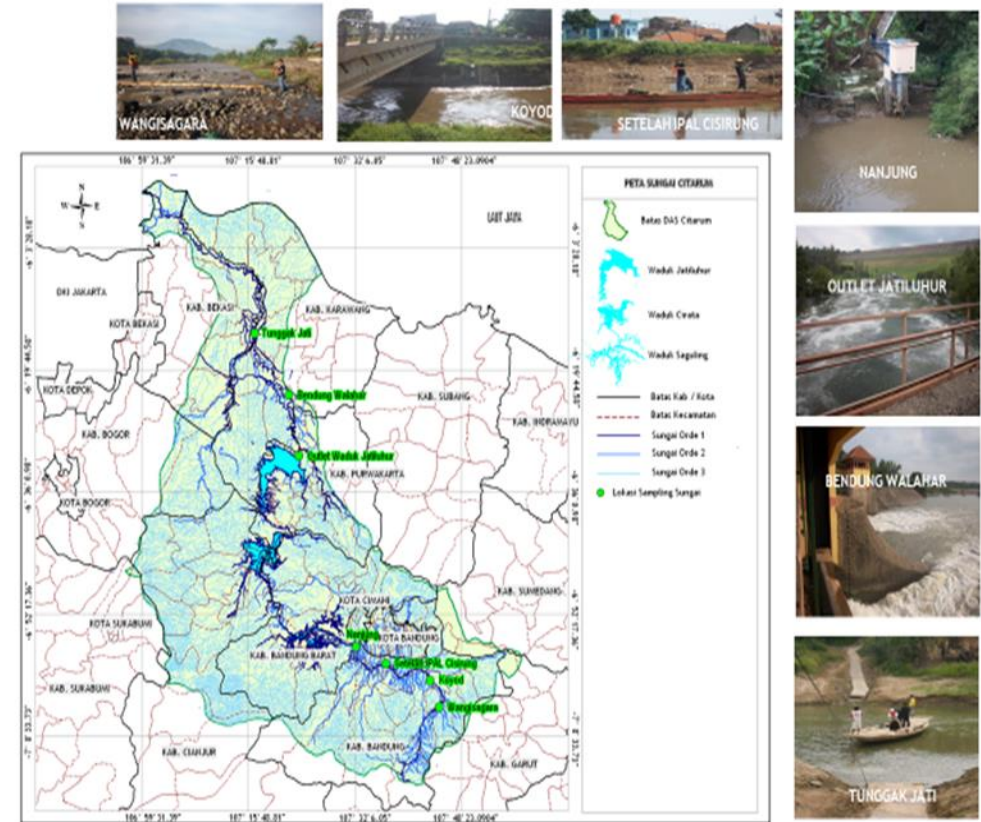
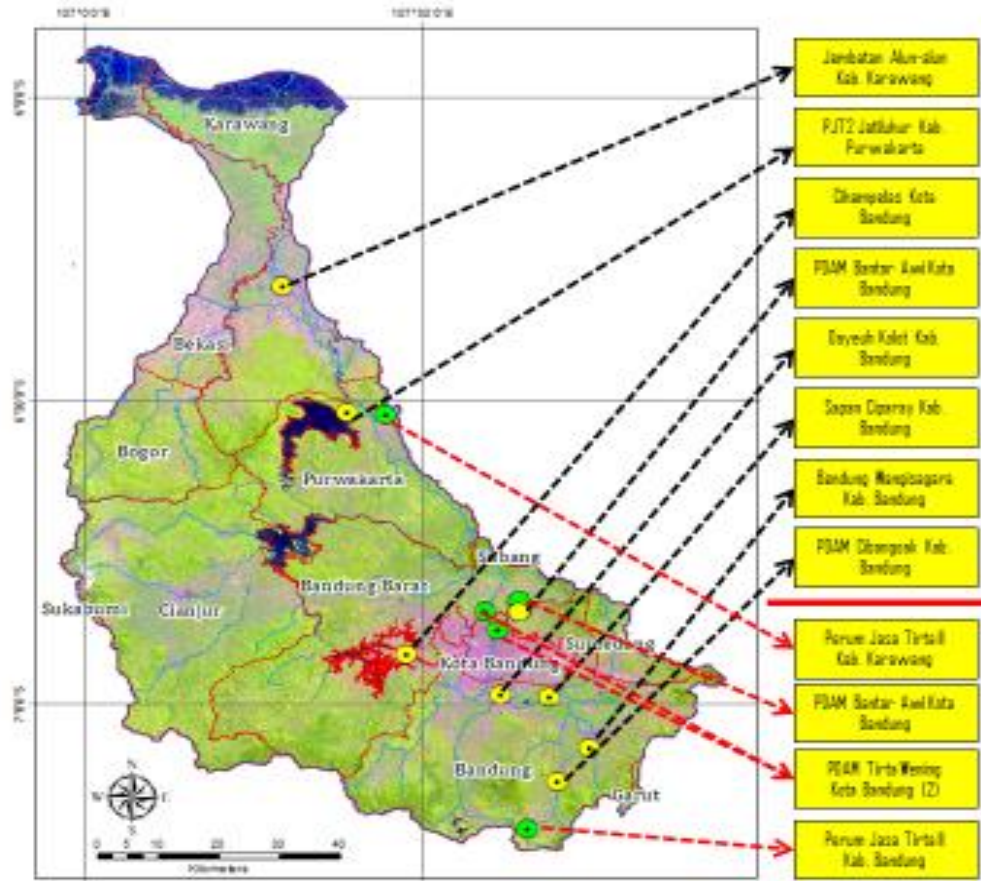
Water pollution control approach in Citarum River



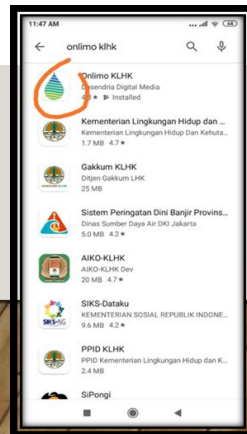
Contribution of various pollution sources in Citarum Watershed



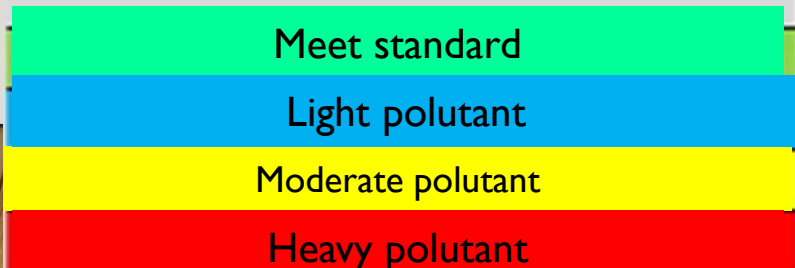
Monitoring and Status of Citarum River Water Quality 2016-2019



<http://ppkl.menlhk.go.id/onlimo-2018/>



Status of water quality



Persentase (%)

	2016	2017	2018	2019
Meet standard	2.9	2.9	14.3	0.0
Light pollutant	20.0	25.7	11.4	47.6
Moderate pollutant	25.7	17.1	5.7	23.8
Heavy pollutant	51.4	54.3	68.6	28.6

DEVELOPMENT OF TMDLs GUIDELINE



WEPA Action Program in Indonesia

Technical Support Work to Assist in Developing a TMDL Guideline



WEPA

IGES
Institute for Global
Environmental Strategies

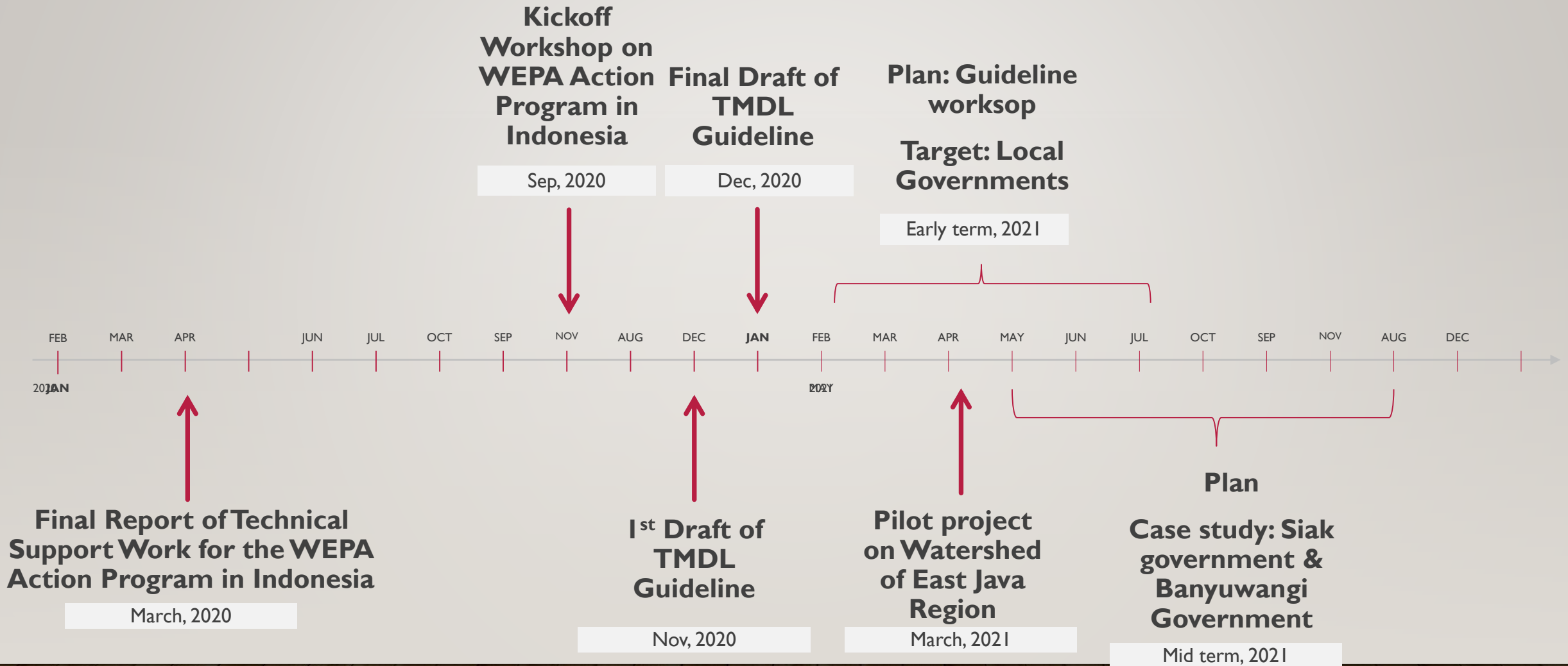


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環境省
Ministry of the Environment

16 September 2020

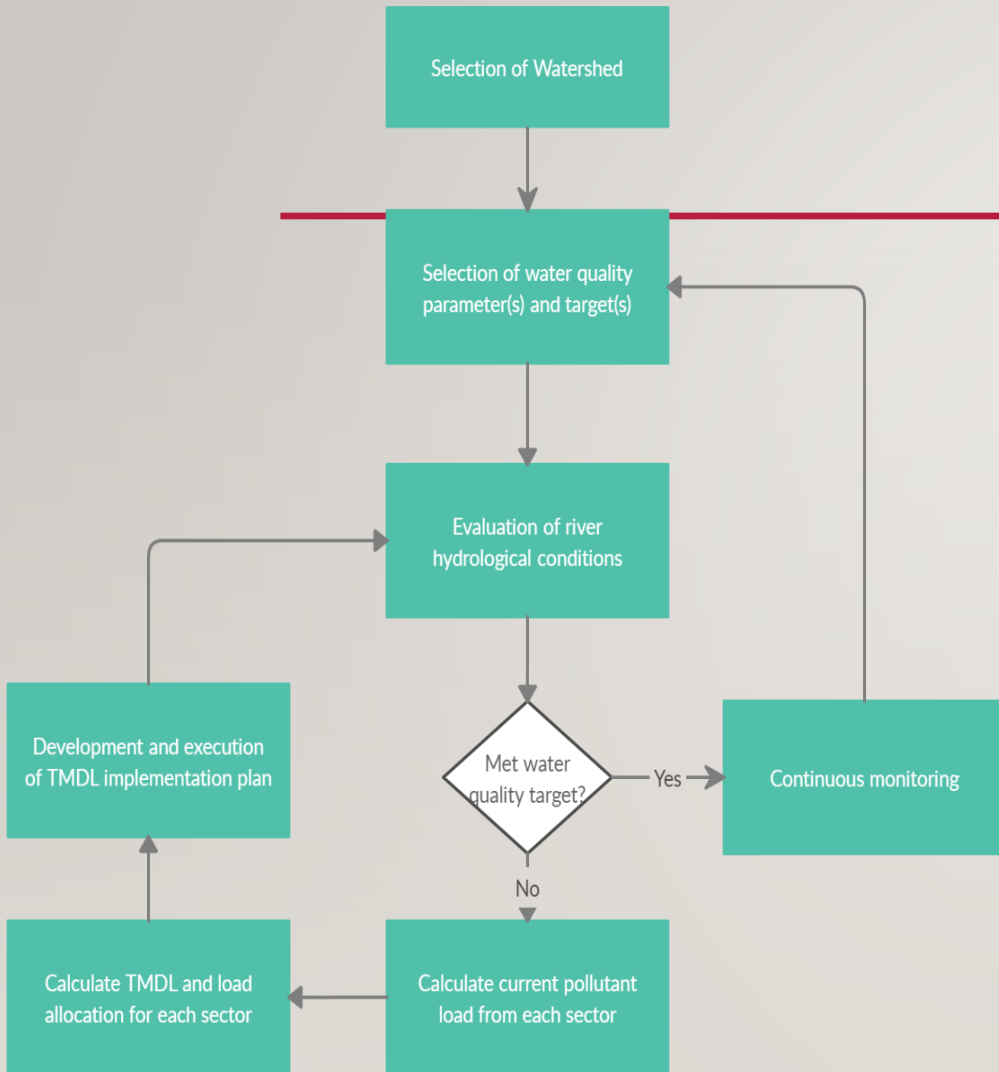
TMDL GUIDELINE DEVELOPMENT IN TIME FRAME



Outline of the guideline

- Section 1: Introduction
 - Background, Regulations, and Goals and Objective and Scope of TMDL Guideline
- Section 2: Review of TMDL Development
 - Review of TMDL Development: USA, Japan & Korea, and Lesson Learned for Indonesia
- Section 3: Procedure to Develop TMDL
 - A to Z of TMDL calculation and development method
- Section 4: Development of Institutions and Framework for a Successful Implementation
 - Suggestions on how institutions should collaborate to implement TMDL

TMDL DEVELOPMENT PROCEDURE: OVERVIEW



TMDL-based regulation is implemented through these following steps:

1. Selection of watershed. Focus on river segment priority
2. Selection of water quality parameter(s) and target(s): conventional and or specific parameter
3. TMDL development based on water quality and current pollutant load. Pollutant sector can be classified into 5: domestic, agriculture, livestock, fisheries, and point sources (industries, hospital, etc)
4. Implementation. For point sources, the implementation of TMDL should be by **establishing water quality-based effluent standard**. For non-point sources, pollutant load reduction should be done by **implementing BMPs and then quantify it to estimate the reduction**.
5. Assessment and monitoring of implementation.
6. Re-evaluating the water quality parameter and target

SCOPE OF TMDL IMPLEMENTATION

- Indonesia's TMDL action plan will cover all pollutant sector, **including non-point sources with phase approach.**
- **Phase approach** means that **it is necessary to also plan the step for achieving the goals and evaluating the step, especially the mechanism and implementation timeline of non-point sources control.**
- If pollution reduction from non-point is impossible, then **pollution reduction from non-point sources must be assigned to point sources.**



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Indonesia-Japan Environmental Week

Friday, 15th January 2021



CITARUM RIVER – BOD QUALITY

there is an improvement in water quality

Sampling Points	BOD (mg/l)						Category	
	Overall (2014 - 2019)			2019 (Period I - 3)			Overall	2019
	Min	Max	Avg	Min	Max	Avg		
Wangisagara	2.00	25.00	6.48	2.00	3.00	2.33	IV	II
Koyod	3.00	126.11	24.34	3.00	36.00	20.67	> IV	> IV
After IPAL Cisirung	5.00	135.83	23.19	5.00	25.00	16.00	> IV	> IV
Nanjung	4.95	82.97	22.80	5.00	44.00	27.00	> IV	> IV

PURPOSE OF TMDL APPROACH

- The purpose of a TMDL approach is to establish allowable loadings of pollutants for a waterbody to meet Water Quality Standards (WQS).
- TMDLs provide a basis for determining the pollutant reductions necessary from point and nonpoint sources to restore and maintain the quality of water resources.
- Determination of capacity of water pollution load/TMDL and water pollution load allocation is part of the implementation of water pollution control using water quality approach.
- The water quality approach aims to control pollutants originating from various sources of pollutants entering the water source by considering the intrinsic conditions of water sources and water quality standards established.

IMPLEMENTATION OF THE DECREE OF MINISTER OF ENVIRONMENTAL AND FORESTRY NO.300/2017

- Development of detailed and quantitative scenarios, policies, programs for improving Citarum water quality based targeted pollution load reduction from each pollution source
- Development of stakeholders role & responsibility in the level of national, provincial and local
- Implementation, monitoring and evaluation of various planned scenarios/strategies, policy and program
- Determine the specific effluent standard required for effluent discharge permit

REASON OF THE NEED FOR IMPROVEMENTS IN THE STIPULATED TMDL APPROACH

1. The need to accelerate the recovery of water quality
2. The change of pollution sources (type, number, distribution and characteristic) and hydrology & morphology of water sources
3. The number of provinces and districts / cities that have performed TMDL/DTBP calculations is still small
4. Provinces and districts / municipalities that have calculated TMDL / DTBP have not been able to apply the calculation results for waste water discharge permits
5. It may be caused by a less obvious concept or the unavailability of a simpler method
6. It is necessary to clarify the concept and to use more simple and implementative methods



CONCLUSION

- TMDLs are the approach required by regulations to ensure the maintenance of water quality

- Even though it has been stipulated, likely there are still many local governments that have not implemented it in the process of issuing wastewater discharge permits, which is proven by the fact that the national water quality still tends to decline
- TMDLs guidelines must be available as one of the tools to ensure control of water pollution both for local environmental, and permitting institutions;
- Therefore, the preparation of TMDLs guidelines needs to be supported by providing constructive input so that it can become a workable guideline

THANK YOU

