

Updates of Water Environment Governance in Lao PDR

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1. Goals of water environment

National Water Strategy 2030

- **Vision:** “Managing and utilizing water and water resources based on Integrated Water Resources Management (IWRM) principles to ensure the availability and health of water for sustainable development and the reduction of disaster risk”
- **National Environment Standards 2017** (*Replaced from National Environment Standards 2009*)
- National environmental standards have been adopted based on the Environmental Protection Law, the Decree on National Environment Standard No. 81/GL, dated 21 Feb. 2017
- **The main national water standards in the agreement for water quality are indicated in Article 10 Surface Water Quality Standards, which applied for surface water quality classification (category 1-5)**

1. Goals of water environment

Category of Surface Water Quality

Parameter	Symbol	standard value of each category					Unit	Methodology
		1	2	3	4	5		
Color, Oder and Taste	None	n	n'	n'	n'	None	Not define	Not define
Temperature	t°C	n	n'	n'	n'	Not define	°C	Thermometer
potential of Hydrogen	pH	6-8	6-8	5-9	5-9	Not define	Not define	Electrometric pH Meter
Dissolved Oxygen	DO	>7	6.0	4.0	2.0	< 2	mg/L	Azide Modification
Electro-conductivity	Ec	< 500	≤ 1000	≤ 2000	≤ 4000	>4000	μS/cm	Ec meter
chemical oxygen demand	COD	<5	5-7	7-10	10-12	>12	mg/L	Potassium Dichromate Digestion; Open Reflux or Closed Reflux
Total coliform bacteria	Not define	n	5,000	20,000	Not define	Not define	MPN/100 ml	Multiple Tube Fermentation Technique
Fecal coliform bacteria	Not define	n	1,000	4,000	Not define	Not define	MPN/100 ml	Multiple Tube Fermentation Technique
Total Suspended Solid	TSS	<10	≤ 25	≤ 40	≤ 60	>60	mg/L	Glass Fiber Filter Disc
Phosphate	PO ₄	< 0.1	0.5	1	2	>2	mg/L	Ascorbic acid
Ammonium ion	NH ₄ ⁺	< 0.5	≤ 1.5	≤ 3	≤ 4	>4	mg/L	Kjeldahl
Nitrate-Nitrogen	NO ₃ -N	n	5.0			Not define	mg/L	Cadmium Reduction
Ammonia-Nitrogen	NH ₃ -N	n	0.5			Not define	mg/L	Distillation Nesslerization
Phenol	C ₆ H ₅ OH	n	0.005			Not define	mg/L	Distillation,4-Amino antipyrène
Copper	Cu	n	1.5			Not define	mg/L	AA-Direct

1. Goals of water environment

Nickel	Ni	n	0.1	Not define	mg/L	Aspiration
Manganese	Mn	n	1.0	Not define	mg/L	
Zinc	Zn	n	1.0	Not define	mg/L	
Cadmium	Cd	n	0.003	Not define	mg/L	
Chromium Hexavalent	Cr ⁺⁶	n	0.05	Not define	mg/L	
Lead	Pb	n	0.01	Not define	mg/L	
Mercury	Hg	n	0.001	Not define	mg/L	AA-Cold Vapour Technique
Arsenic	As	n	0.01	Not define	mg/L	AA -Direct Aspiration, ICP
Cyanide	CN ⁻	n	0.07	Not define	mg/L	Pyridine-Barbituric Acid
Radioactive - alfa - beta	Radioactive - α - β	n	0.1 1.0	Not define	Becquerel/L	GC
Organochlorine pesticide		n	0.05	Not define	mg/L	
Dichlorodiphenyltrichloroethane	DDT	n	1.0	Not define	μ g/L	
alpha-Benzene hexachloride	α -BHC (C ₆ H ₆ Cl ₆)	n	0.02	Not define	μ g/L	GC
Dieldrin	C ₁₂ H ₈ Cl ₆ O	n	0.1	Not define	μ g/L	
Aldrin	C ₁₂ H ₈ Cl ₆	n	0.1	Not define	μ g/L	
heptachlor and heptachlor epoxide	C ₁₀ H ₅ Cl ₇ And C ₁₀ H ₅ Cl ₇ O	n	0.2	Not define	μ g/L	
Endrin	C ₁₂ H ₈ Cl ₆ O	n	Must be not found	Not define	μ g/L	

Note:

Category 1 is a natural source of good quality water, does not go through any production process or chemical additives and is free from wastewater from all kinds of activities.

Category 2 is a source of water that is used and consumed but must be disinfected. This type of water is suitable for the conservation of aquatic animals, fisheries, water sports and so on.

Category 3 It is a source of water for consumption and must be sterilized, this type of water is suitable for agriculture, animal husbandry and so on.

Category 4 A source of water that is used and consumed but must be sterilized, this type of water is suitable for industry, as a place to treat wastewater from the city or community and so on.

Category 5 is a source of water that is used for transportation and be reservoir for treatment of wastewater from cities or communities, and so on.

n: Is a natural water source

n': is a natural water source but does not change $\pm 3^{\circ}\text{C}$ in temperature

2. Assess the status of water environment

Provincials level is Local Government

Department of Natural Resources and Environment (DONRE)

Implementation for water quality monitoring plan follows Initial Environment Examination (IEE) collaboration with the investment projects for water quality monitoring



Reporting the result to

Ministry of Natural Resources and Environment (MORE)

- Department of water resources compiling of water quality and assessing the status of the water environment;
- Department of Environment reviewing existing policies , strategy, law, regulation on management work and environment protection including work on environment protection and issues Environmental Impact Assessment (EIA) certificate permits;
- Natural Resources And Environment Research Institute provides service for analysis of water quality following national standard of Lao PDR;
- Dept of Natural Resources and Environment Inspection to inspection of the implementation of environmental duty (tariff) of investment project and business according to the environmental management and monitoring plan

3. Identify pollution sources

In general the water quality of rivers in Lao PDR is still in good quality.

However, there are also several incident that cause the adverse effect to water quality such as the effect of water discharged by various sources, including industrial activities, mining activities, leak chemicals from the construction dam, chemicals used in agriculture all contribute to water pollution;

Lack of data and information of water quality compiling nationwide systems and continues WQ monitoring program.

The government is taking steps to regulate and control water pollution through legislation and enforcement, as well as promoting sustainable practices.

4. Implement measures to address issues

To address issues of water pollution implement following measures were implemented/strengthened at local and central government

Environment protection law (2012)

The basic environmental law of Lao PDR is the Environmental Protection Law, which was promulgated in 1999 and revised in 2012. It is the main legal document supporting environmental protection

Article 35 Pollution Control Measures (revised)

Article 41 Environmental Certification (new)

Article 42 Permission on Pollution Emission (new)

Article 43 Environmental Compliance Certificate and Pollution Permit (new)

Water and water resources law (2017)

Lao PDR's National Assembly approved the updated water and water resources law in 2017, which aims to improve the sustainability of Lao's water resources.

Article 30 Water Quality Standards and Wastewater Discharge Standards(revised)

Article 31 Wastewater discharge Permission (New)

4. Implement measures to address issues

Environment Impact Assessment Decree (2022)

- The Lao government issued Environment Impact Assessment Decree No. 389/GL on Environmental and Social Impact Assessment (ESIA) and Initial Environmental Examination (IEE) of Investment Projects (2023) Implementation and extending the provisions prescribed under Article 21 of the Law on Environmental Protection

Effluent Standards (National Environmental Standard 2017)

- 10 Surface Water Quality Standards, which establishes surface water quality classifications (category 1-5)
- Article 14 describes water pollution control standards that indicate the highest concentration level allowed in treated wastewater and dilution discharged to public canals or natural water resources.

The 2019 National Policy on Water Supply, Sanitation and Hygiene provides the principles, guidelines, and roles for all actors. It sets out 16 policy statements and clarifies institutional roles and responsibilities.

5. Evaluating outcomes and revising policies

Evaluating outcomes :

- Lacking of water quality monitoring quality monitoring systems and capacity technical knowledge to enforcement of national environmental standard;
- Illegal discharge wastewater from various sectors activities into public water body

(New) MoNRE created an agreement under the water and water resources law as The Ministerial Agreement on water used No. 6118/MoNRE

The Ministerial Agreement on water quality management and wastewater discharge No. 1430/MoNRE

6. Challenges and future plans

- 1) Coordination among various Lao government ministries and departments needs to be improved in order to more effectively address water environment issues and limited data has been collected regarding water environment;
- 2) Some water environment policies, regulations and action plans have not been implemented due to lack of personnel and capacity as Presidential Decree on registration and service fee No. 2 (dated 17 June 2021) **for wastewater discharges and fees for the restoration of water resources from investment projects and other activities.**
- 3) Enforcement of national environmental standard for industry effluent and wastewater discharge from the toilet (BOD5 30mg¥L) is difficult by anaerobic treatment only such as septic tank;
- 4) Lack of technical knowledge, training and understanding of water environment concepts among Lao government staff members, especially those in MONRE / DNEI;
- 5) Lack of public understanding and appreciation for water environment issues, especially at the community level.

6. Challenges and future plans

Future plan

1. Formulate/update and implement legislations – such as NES, related regulations, technical guidelines;
2. Wastewater discharges and fees for the restoration of water resources from investment projects and other activities according to Presidential Decree on registration and service fee No. 2 (dated 17 June 2021) ;
3. Revising National Environmental Standards (NES) add some parameters as BOD5 in the surface water quality standards, and adapt volume of BOD5 discharge from toilet.
4. Conduct Water quality monitoring program and continue to develop water resources/water quality database systems;
5. Capacity building and awareness raising with gender mainstreaming and participation of all stakeholders and; Regional and international cooperation.

Thank for your attention

