conducted by Sri Lanka Office: February 2022

Country Name	
Democratic Socialist Republic	The Project for Monitoring of the Water Quality of Major Water Bodies
of Sri Lanka	

I. Project Outline

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Background	The Democratic Socialist Republic of Sri Lanka aimed to improve living standards in a sustainable manner in the process to achieve economic growth in the 2010s, and environmental protection was one of the key issues. The Central Environmental Authority (CEA) under the Ministry of Mahaweli Development and Environment is the agency responsible for the environmental protection. CEA issues the Environmental Protection License (EPL) to the prescribed activities to permit discharge of industrial effluent, etc. At the time of ex-ante evaluation, the percentage of compliance monitoring with the condition of EPL regarding wastewater was around 50%. The results of water quality monitoring of Kelani river, the water source of Colombo, showed variation of the concentration of the pollutants at the downstream of the river due to the disposal of treated and untreated wastewater from factories. It was urged to establish a system of appropriate water quality monitoring and inspection of factories on the river basin for the environmental protection.					
Objectives of the Project	The project aimed to enforce capacity of CEA in water quality management through the introduction of water categorization, capacity enforcement in water quality analysis and monitoring, and development of informat management system of water quality monitoring data, and thereby contributing to the appropriate implement.					
Activities of the Project	 Project site: Whole area of Sri Lanka. Ke Main activities: To develop and introduce water body cate To enforce capacity in water quality analytequipment and development of the Standard 	gorization. sis of the laboratori Operating Procedu toring of relevant o	ies including operation and maintenance of the res (SOP). organizations by supporting planning, sampling,			
Project Period	(ex-ante) February 2015-January 2018 (actual)March 2015-February 2018	Project Cost	(ex-ante) 314 million yen (actual) 254 million yen			
Implementing Agency	Central Environmental Authority (CEA)					
Cooperation Agency in Japan	CTI Engineering International Co. Ltd., Oriental Consultants Global Co. Ltd.					

II. Result of the Evaluation

1 Relevance

<Consistency with the Development Policy of Sri Lanka at the Time of Ex-Ante Evaluation >

This project was consistent with Sri Lanka's national development policy "Mahinda Chintana" (2010), which aimed to increase the percentage of population with access to safe drinking water to 94% by 2015 and 100% by 2020 and to improve the quality of water of Kelani river as the water source for Colombo.

<Consistency with the Development Needs of Sri Lanka at the Time of Ex-Ante Evaluation >

This project was consistent with the needs for capacity development in water quality management as mentioned in "Background" above. <Consistency with Japan's ODA Policy at the Time of Ex-Ante Evaluation>

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The promotion of economic growth was among the priority areas of Japan's Country Assistance Policy for Sri Lanka (2012). This project was in line with the Country Assistance Policy because it aimed to improve capacity for environmental management and to contribute to the improvement of environment in urban areas which was to deteriorate with economic growth.

<Evaluation Result>

In light of the above, the relevance of the project is high.

2 Effectiveness/Impact

<Status of Achievement of the Project Purpose at the Time of Project Completion>

The Project Purpose, "Enforcement capacity of CEA and its regional offices of the Kelani river basin on water quality management is strengthened" was achieved at the time of project completion as five indicators out of seven were achieved. CEA's divisions and regional offices enhanced their enforcement capacity of water quality management (Indicator 2). Guidelines and materials were developed under the project and they were utilized by all concerned divisions and regional offices of CEA (Indicator 3 and 5). Zoning and categorization were done for the Kelani River based on the water quality data (Indicator 4). Fifteen seminars, workshops and training were conducted (Indicator

6). There was no information to show that "CEA conducts self-evaluation on policy and system making capacity" (Indicator 1) or that on the percentage of staff who could explain how to use the guidelines at the time of project completion (Indicator 7).

<Continuation Status of Project Effects at the Time of Ex-Post Evaluation>

The project effects have been continued till the time of ex-post evaluation. CEA divisions and regional offices conduct evaluation of the capacity in water quality management, and the achievement of Overall Goal shows the enhancement of their capacity. All guidelines and manuals prepared under the project are being utilized by all CEA laboratories and regional offices. In 2020, 22 water bodies were assessed under the improved methods. Seminars, workshops and training have been held since the project completion. All relevant staff can explain how to use the guidelines.

<Status of Achievement of the Overall Goal at the Time of Ex-Post Evaluation>

The Overall Goal, "Water quality management in major water bodies is appropriately implemented by CEA," has been achieved. In addition to the existing Effluent Discharge Standards (2008), Regulations for Issuing Environmental Protection License and Hazardous Waste Management License (2008) and Prescribed Activity List (2008), drafted ambient water quality standards were reviewed and finalized by the project and gazette in 2019 (Indicator 1). Out of the main 103 water bodies in Sri Lanka, 15 were selected in 2019 to apply the water quality environmental management system developed under the project. Twenty-two water bodies were selected in 2020. It was a comparable increase from 4 in 2014 (Indicator 2 and 3).

<Other Impacts at the Time of Ex-Post Evaluation>

No negative impacts have been observed.

<Evaluation Result>

Therefore, the effectiveness/impact of the project is high.

Achievement of Project Purpose and Overall Goal						
Aim	Indicators	Results	Source			
(Project Purpose)	Indicator 1	Status of the Achievement (Status of the Continuation): Not verifiable (Partially				
Enforcement	CEA conducts	achieved and continued)				
apacity of CEA	self-evaluation on their own	(Project Completion)				
nd its regional	capacity of policy and	As of January 2017, the project team was considering the following three				
ranch offices of	system making regarding	sub-indicators for this indicator, by before-after comparison of the project.				
ne Kelani river	water quality management	1) Number of proposals relevant to water quality improvement				
asin on water	such as nos. of proposals	2) Number of proposals on categorization/classification of water bodies over the				
uality	related to gazetting ambient					
nanagement is	water quality standards,	3) Evidence of improved capacity of CEA on pollution sources management by				
rengthened.	introduction of ambient	using the EPL system				
	water quality zoning and	Project completion report does not mention how this plan was finalized or				
	categorization system,	whether CEA's self-evaluation on policy and system making capacity was				
	improvement of current	conducted.				
	EPL system, etc. based on	(Ex-post evaluation)				
	the National Environmental	There is no information to show whether "CEA conducts self-evaluation on				
	Act (No.47 of 1980) and	policy and system making capacity." There are no data on the "number of				
	other related by-laws, and	proposals," but CEA's capacity on pollution sources management by EPL system				
	its evaluation results show	is confirmed by its activities mentioned in Indicator 2 below.	source : JICA			
	improvement, compared		documents,			
	with the initial stage of the		questionnaire and			
	Project.		interviews of CEA			
	Indicator 2	Status of the Achievement (Status of the Continuation): Achieved (Continued)				
	CEA, concerned	(Project Completion)				
	departments, and regional	An evaluation on the testing capacity for achieving reliable analytical results was				
	branch offices conduct	done through an international performance evaluation program funded by the				
	self-evaluation on their own	project. Eighteen testing parameters were performed, and the laboratory got				
	enforcement capacity of	satisfactory results for this program. The analysis capacity was evaluated through				
	water quality management	inter laboratory performance evaluation, using the Certified Reference Material				
	such as nos. of guidance to	(CRM) on an annual basis.				
	EPL holders (factories),	The units, including regional offices, were assigned to the related activities				
	nos. of penalty case, etc.	including monitoring and inspection after evaluating their capacity. The criteria				
	based on the National	considered in the evaluation included the number of staff, their level of familiarity				
	Environmental Act (No.47	with activities, and necessary resources. At the completion of the project, the				
	of 1980) and other	activities were streamlined and further guidance was given. The officers'				
	concerned by-laws, and its	performance was improved, and the units were able to handle the assigned tasks.				
	evaluation results show	All staff showed considerable improvement compared to the initial stage of the				
	improvement, compared	project.				
	with the initial stage of the	(Ex-post evaluation)				
	Project.	The laboratory participated in the interlaboratory comparison program conducted				
		by the Sri Lanka Association for Testing Laboratories in 2020 and Industrial				
		Technology Institute in 2021. Both these institutes are ISO/IEC 17043 accredited				
		Proficiency Testing (PT) providers in Sri Lanka. All staff showed considerable	source : JICA			
		improvement compared to the initial stage of the project. The progress monitoring	documents,			
		system for each unit was introduced.	questionnaire and			
		Output indicator data below show that CEA has steadily conducted water quality	interviews of CEA			

		management act	ivities,	while sta	gnation ha	s be	en observe	ed in 202	0 and	1 2021 due	е	
		to COVID-19.										
		Manifestania										
		3-3-2)	Monitoring and inspection of major pollution sources in the Kelani river (Output									
		3-3-2)	2018 2019 2020 2021									
		Number of majo		on	2,947		3,149	3,20	07	3,308		
		Number of these			2,376	-	2,500	1,50	00	750		
		monitored/inspe			2,370		2,300	1,50		730		
		Percentage			80.6%		80.3%	47		22%		
		Due to COVID-			_			-				
		monitoring active related to the po									S	
		effluent quality							_	s on the		
		Under the new r			-		-			ation of		
		rivers which star	rted in 2	2021, me	asures have	e be	en taken to	monitor	all i	ndustries		
		that discharge w			ny surface	wate	er bodies.	At presen	nt, no	t all of		
		these data have	been ga	thered.								
		EPL acquisition	(Outpu	it 3_3_/1)								
		Li L acquisition	Courpu	(+-C-2-4)	Dec.2014		Feb.201	8	20)21		
		Number of EPL	acquisit	ion	21,36	55		3,784	20	26,543		
		1.umoor of Er E	quisiti		21,30		2.	.,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,		20,010		
		Illegal or EPL-v	iolating	factorie	s (Output 3	-3-6	6)					
				2018	2019	2	2020	20	021			
		Filed cases		364	544		267 D	ata are no	ot gath	nered		
		II. 1.4 C 1.4.1.	(0		4 - 1 4 2)							
		Update of database EPL	ase (Ou	itput 3-2-	4 and 4-3)							
		LIL	20	018	2019		2020	0	2	021		
		Updated data		24,782		372	+	5,923		26,543		
		Pollution sources i	inventor	y (PSI)				•				
			20)18	2019		2020	0	2	021		
		Updated data		8,638		434	1	9,893		21,173		
	L. P 2	Note: PSI was star			1 5			.1.11	(C)	· · · · · 1		
	Indicator 3 The guidelines and other	Status of the Acl (Project Comple		eni (Stati	is of the Co	mui	nuauon): A	cmeved	(Con	unuea)		
	outputs developed through	Following manu		delines a	nd materia	ls w	ere develo	ped by th	he pro	oject and		
	the Project are properly	were utilized.	, 0							3		
	applied by all concerned	· Quality M			-							
	departments and regional				pient and E							
	offices of CEA in charge for a nationwide promotion		-	•	andards (dı in 2017 an				eview	ed and		
	of water quality				categorizat	_			Water	'S		
	management.				Water Qual			'				
		_			deline for l	•						
					on Control	Gui	delines for	Textile 1	Proce	essing		
		(reviewed		_	y Dressing	Ind	nstrv					
		· EPL Prom			y Diessing	ma	ustry					
					ry accessibl	le vi	ia internet					
		 Pollution Sources Inventory accessible via internet Pollution Source Inventory Guidelines 										
		Pages on water quality status of the Kelani River on the CEA Website										
		Draft Guideline on Information Management										
		(Ex-Post Evaluation) All guidelines and manuals prepared under the project are being utilized by all										
		CEA laboratories and provincial offices. Some guidelines and manuals were completion report, questionnaire and										
		further develope	_				-				interviews of CEA	
	Indicator 4	Status of the Achievement (Status of the Continuation): Achieved (Continued)										
	The number of major water	er (Project Completion) During the project, zoning and categorization were done for the Kelani River										
	bodies and regional				ategorizatio	on v	were done	for the K	elani	River		
	governments which propose	based on the wa (Ex-Post Evalua	_	ity data.								
l	zoning categorization of ambient water quality	Water quality m		g for for	ır maior riv	ers	(Ma Ova	Nilwala	Badı	ılu Ova	source: questionnei	
	standard is at least one (1) in										source: questionnair and interviews of Cl	EA
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Indicator 3	(Ex-Post Evaluation) Achieved	
The number of major water	All 103 water bodies are managed by the water quality environmental	
	management system. Since the inception of the EPL scheme, water quality	
	environment management has been practiced. After completing the project, more	
management system are at	organized management was set up.	
least one (1) in Sri Lanka by	CEA is implementing "Surakimu Ganga" and all major 103 rivers are included in	
2020 in accordance with the	this program. The sampling for water quality data will be implemented with the	
guidelines prepared by the	budget support from the program.	
Project.		source: Interview and
		questionnaire of CEA

3 Efficiency

The project cost was within the plan (81%) and the project period was as planned (100%). The JICA project team recognized that the project started in March 2015 when the first members were dispatched and the project continued for three years as per the original plan while the start and end dates were shifted. There was no change in the planned outputs.

Therefore, the efficiency of the project is high.

4 Sustainability

<Policy Aspect>

Sri Lanka's National Environmental Act No. 47 (1980), EPL and effluent discharge regulations, Ambient Water Quality Standards regulate water quality. "Surakimu Ganga" encourages local governments and related organizations as well as the general public to protect rivers. EPL system, PSI, and water quality monitoring activities promoted by the JICA project have been incorporated into this program.

<Institutional/Organizational Aspect>

CEA's organizational structure remains the same. Secretariat to implement "Surakimu Ganga" was established. Project effects have been maintained by CEA's current structure and staffing, but CEA submitted a request to the Ministry of Finance for additional staff to ensure sustainability after assessing the workload and staffing needs.

<Technical Aspect>

All relevant staff of CEA have sufficient skills and knowledge (see Project Purpose Indicator 7). All manuals prepared by the project are being used to train the new laboratory staff. At present, the inspection guidelines are distributed among the relevant divisions. CEA plans to achieve ISO 9001 quality management systems, and all documents related to each process have been gathered and included in this quality management system. All guidelines and manuals prepared by the project have been incorporated into this quality management system for the streamlining of all the processes done by CEA and for the continuation of the future usage.

<Financial Aspect>

The government provides a consolidated fund for the implementation of the activities promoted by the project. Rs 200 million has been allocated for "Surakimu Ganga." The laboratory has been given a considerable amount of funding for the implementation of the accreditation program.

<Evaluation Result>

In light of the above, no problems have been observed in policy, institutional/organizational, technical or financial aspects of the implementing agency. Therefore, the sustainability of the project effects is high.

5 Summary of the Evaluation

The project achieved the Project Purpose, "Enforcement capacity of CEA and its regional branch offices of the Kelani river basin on water quality management is strengthened" at the time of project completion, and the effects continue. Overall Goal "Water quality management in major water bodies is appropriately implemented by CEA" was achieved as all 103 major water bodies in Sri Lanka are managed under the improved method. There are no major problems in policy, institutional/organizational, technical or financial aspects of sustainability. As for the efficiency, project cost was within the plan and the project period was as planned.

Considering all of the above points, this project is evaluated to be highly satisfactory.

III. Recommendations & Lessons Learned

Recommendations for Implementing Agency:

- 1. PSI system developed under this project is still in use, and some bugs of the software have not been fixed (there are problems with editing of entries, input of industry data, entry of data beyond 2021). It is recommended to hire an IT consultant immediately to fix the program.
- 2. PSI monitoring system needs to be developed to cater the following aspects: a) Mobile (Android and Apple) app to facilitate field works; b) Interface for point source to upload and update report for CEA review; c) PSI system further be developed issue letters on recommendation, rectification, and reminders, etc. by using system itself without manual drafting.
- 3. CEA monitoring division could develop an integrated activity monitoring system for zoning and categorization of water bodies to know where they are at the given point of time.
- 4. Management services division of the Ministry of Finance shall approve additional staff requirements that CEA had forwarded with a careful need analysis.
- 5. CEA could start disseminating water quality management details for the public to engage them in the process.
- 6. With the dissemination of information, CEA could make a plan how to address non-point sources. CEA could also study other countries' approaches in this regard.

Lessons Learned for JICA:

1. It was evident that JICA consultant team had performed transformative leadership which essentially helped to adopt successful water quality Management system of Japan in Sri Lanka with untiring support from the counterpart officers. The Team had analyzed the existing systems and current levels to improve them in a participatory manner, not simply importing foreign systems. For example, the ambient water quality standards were drafted by the Sri Lankan members integrating past experiences and were finalized by the project through discussions among all members.

The Japanese project members respected the culture and practices of Sri Lanka. For example, in workshops or seminars, they intentionally included the lightening of a traditional oil lamp and arrangements of local food and snacks for participants. They actively participated in local festivals and religious functions. This nurtured a strong relationship and trust among the project members.

2.. The capacity and ownership of the counterpart were enhanced while working with the Japanese expert team, and the counterparts were able to include project activities under "Surakimu Ganga," which is a new vehicle as a project exit strategy to ensure budget and necessary management support from the government.



Testing water quality parameters at Kelani River



Sampling at Badulu Oya River



Laboratory staff doing sample test



Testing water quality parameters at Badulu Oya River