

Country Name	<b>Project for Urban Water Environment Improvement in Vientiane Capital</b>
Lao People's Democratic Republic	

**I. Project Outline**

Background	In Vientiane Capital (VC), Laos, there had been a concern about deterioration of river water quality in urban areas due to an increase in untreated wastewater caused by the recent rapid economic development, which had led to a higher standard of living and population growth. In addition, due to development of large-scale infrastructures such as industrial parks and commercial facilities, the amount of wastewater from business establishments containing chemical substances was increasing, and the increase in the amount of pollutants (generated pollution load) was expected to become an issue in the future. Therefore, it had become important to improve the sewage management system by formulating an appropriate sewage management plan for the future taking measures against pollution sources such as industrial effluents, establishing a system for monitoring water quality in rivers, etc., and developing and operating related laws and regulations after identification of pollution sources and loads.										
Objectives of the Project	Through (i) strengthening capacity for planning and designing of structural and ecological measures for wastewater treatment, (ii) strengthening the operation of legal and regulatory framework for septic tanks and decentralized wastewater treatment facilities, (iii) strengthening the operational capacity of legal and regulatory framework for industrial wastewater, and (iv) raising people's awareness, the project aimed at strengthening the institutional framework and organizations for wastewater management in Vientiane capital and thereby contributing to the continuous implementation of water environmental management.										
	<ol style="list-style-type: none"> <li>Overall Goal: Water environmental management is continuously implemented.</li> <li>Project Purpose: The institutional framework and organizations are strengthened for wastewater treatment in Vientiane capital through participatory approach.</li> </ol>										
Activities of the project	<ol style="list-style-type: none"> <li>Project site: Vientiane Capital</li> <li>Main activities: (i) strengthening capacity for planning and designing of structural and ecological measures for wastewater treatment, (ii) strengthening the operation of legal and regulatory framework for septic tanks and decentralized wastewater treatment facilities, (iii) strengthening the operational capacity of legal and regulatory framework for industrial wastewater, and (iv) raising people's awareness</li> <li>Inputs (to carry out above activities) <table border="0" style="width: 100%;"> <tr> <td style="width: 50%;">Japanese Side</td> <td style="width: 50%;">Lao Side</td> </tr> <tr> <td>1) Experts: 7 persons</td> <td>1) Staff allocated: 22 persons</td> </tr> <tr> <td>2) Trainees received: 14 persons</td> <td>2) Land and facilities: Project office</td> </tr> <tr> <td>3) Equipment: Water Sampler with Stick, Dissolved Oxygen Meter, Heating &amp; Drying Oven, etc.</td> <td>3) Operating expenses: travel expenses for the counterparts, utility for the project office</td> </tr> </table> </li> </ol>			Japanese Side	Lao Side	1) Experts: 7 persons	1) Staff allocated: 22 persons	2) Trainees received: 14 persons	2) Land and facilities: Project office	3) Equipment: Water Sampler with Stick, Dissolved Oxygen Meter, Heating & Drying Oven, etc.	3) Operating expenses: travel expenses for the counterparts, utility for the project office
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Project Period	(ex-ante) July 2014-June 2017 (actual) October 2014-October 2017	Project Cost	(ex-ante) 258 million yen, (actual) 343 million yen								
Implementing Agency	Department of Public Works and Transport, VC (DPWT), Department of Natural Resources and Environment, VC (DoNRE) and others										
Cooperation Agency in Japan	NIHON SUIDO CONSULTANTS CO., LTD.										

**II. Result of the Evaluation**

1 Relevance
<p>&lt;Consistency with the Development Policy of Laos at the Time of Ex-Ante Evaluation &gt;</p> <p>The project was consistent with the development policy of Laos. The government formulated a national environmental strategy with a target year of 2020 to achieve appropriate conservation and environmental management of the natural environment. The strategy identified eight priority areas, and water environment management was one of them under "implementation of measures for sustainable development".</p> <p>&lt;Consistency with the Development Needs of Laos at the Time of Ex-Ante Evaluation &gt;</p> <p>The project was consistent with the development needs of Laos for wastewater management. As mentioned above ("Background"), deterioration of river water quality in VC and the increase in the amount of pollutants were issues.</p> <p>&lt;Consistency with Japan's ODA Policy at the Time of Ex-Ante Evaluation&gt;</p> <p>The project was also consistent with "Country Assistance Policy for the People's Democratic Republic of Laos" (April, 2012). Under one of the priority areas "Development of social and economic infrastructure", Japan was going to provide support to help build a comfortable society in harmony with the environment (environmental management, water treatment plants, urban planning, etc.) in order to achieve balanced economic development.</p> <p>&lt;Evaluation Result&gt;</p> <p>In light of the above, the relevance of the project is high.</p>
2 Effectiveness/Impact

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

The Project Purpose was partially achieved. Counterparts applied skills/knowledge learned (Indicator 1), roles of the relevant authorities for water environmental management were identified and active participation of the citizens in water environment improvement continued (Indicator 2), and the final draft of “Strategy of Wastewater Management in Vientiane Capital” was discussed in public hearing, though not endorsed by the Assembly of VC nor confirmed by relevant Ministries (Indicator 3).

<Continuation Status of Project Effects at the time of Ex-post Evaluation>

As mentioned above, the continuation status of the project effects was analyzed as factors to achieve the Overall Goal. Skills and technologies acquired under the project have been continuously utilized, which has contributed to the Overall Goal.

At the pilot project site, the introduced Decentralized Wastewater Treatment System (DEWAT System) has been well maintained as it is desludged regularly and the maintenance fee has been regularly collected in accordance with the management guidance by DPWT-VC, thus far. As for environmental awareness activities, the school plastic waste separation and community canal cleaning have still been carried on. On the other hand, environmental education in primary schools and communities with side reader, poster, and card game did not continue after the project completion as primary schools have their own environmental textbook providing basic environmental education. It also indirectly contribute to the project output.

<Status of Achievement for Overall Goal at the time of Ex-post Evaluation>

The Overall Goal has been partially achieved, as water environmental management has been continuously implemented.

First, a water environmental management committee has been working as a mechanism to discuss and exchange the information on wastewater.

Second, the technologies/models introduced under the project have been continuously utilized. Based on the “Standard Designs and Guidelines for the Proper Installation and Maintenance of Decentralized Wastewater Treatment Facilities” developed under the project, DEWAT System has been replicated in 13 slaughterhouses and some small-scale noodle factories in Vientiane Capital. The “Inspection Guideline” have been fully utilized by Department of Industry and Commerce, VC (DoIC-VC) and DoNRE-VC in term of water quality inspection and monitoring. DPWT-VC submitted the financial proposal to Department of Planning and Investment of VC for promoting the construction of septic tanks to be applied at Engineering Faculty of National University of Lao (NOUL) in Sokpaluang village by using technology and design developed by the project. This septic tank will be a model standard in near future.

Third, based on the “Inspection Guideline” mentioned above, DoNRE-VC and DoIC-VC have conducted inspections regularly. However, citizen participation (environmental education and community cleaning) has been somewhat limited due to community budget constraint.

As for the “Strategy for Wastewater Treatment in Vientiane Capital” which formulation was supported by the project, DPWT-VC has revised and improved it: however, the authorization of the said strategy has been suspended due to the change in environmental improvement direction of Vientiane Capital. The Government of Laos obtained the non-interest loan from the Government of Hungary for a development project for construction of a wastewater treatment plant with DWPT-VC as an implementing agency. The Feasibility Study (F/S) on wastewater management regulation, centralized wastewater development plan and the centralized wastewater treatment plant was conducted, and has just endorsed by the Government Office and Vientiane Capital. This non-interest loan project will be implemented mostly in line with the draft “Strategy on Wastewater Management in Vientiane Capital”, maximizes the use of data and information analyzed by the project though some information on the action plans in the strategy was reconsidered and redirected.

<Other Impacts at the time of Ex-post Evaluation>

No negative impacts on the natural environment are observed. There have been no land acquisition and resettlement.

<Evaluation Result>

Therefore, the effectiveness/impact of the project is fair

Achievement of Project Purpose and Overall Goal

Aim	Indicators	Results	Source
(Project Purpose) The institutional framework and organizations are strengthened for wastewater treatment in Vientiane capital through participatory approach.	Indicator 1: At least 80% of trainees are applying skills/knowledge learned during the training organized by the project.	Status of the Achievement: partially achieved/(continued) (Project Completion) - It was observed that water analysis, industrial wastewater management and environmental education activities had been practiced continuously. - For instance, the teachers who participated in the training of trainers now teach environmental education to their students with tools such as posters and card games introduced by the Project in the designated 10 environmental education model schools. - DPWT-VC also apply the knowledge from the Project to prepare the guidelines for DEWATS and septic tanks. (Ex-post Evaluation) - The counterparts involved in the project activities and training have mostly utilized their knowledge, experiences, and lessons learnt obtained during the project implementation in their routine works, for instance, DoIC-VC officers have developed their own factory monitoring checklist, and DoNRE-VC also have conducted the factory wastewater quality tests in regular basis. - The introduced DEWAT System constructed in Ban Thongkhantham Village has been still used properly by 23 households as it is well maintained in regular basis. In addition, village authority based on the suggestion by the project team formulated its own management regulation and has hired a village worker to operate the system. According to the regulation, the maintenance fee of 5,000 LAK per month per household or 60,000 LAK per year per household has been also regularly collected and utilized for operation and maintenance purposes and worker salary.	JICA documents and interviews at the time of ex-post evaluation with DPWT, DoIC and DoNRE of Vientiane Capital
	Indicator 2:	Status of the Achievement: achieved/ (partially continued)	

	<p>Roles of the relevant authorities for water environmental management are identified and active participation of the citizens in water environment improvement is continued.</p>	<p>(Project Completion)</p> <ul style="list-style-type: none"> <li>- Through a series of discussion on roles for water environmental management among the authorities concerned at JCC, a plan of demarcation of the roles was prepared by the Project. Discussions were held based on lectures on the experiences in Japan and other developing countries.</li> <li>- Roles of the relevant authorities for water environmental management were identified, though the documents on roles for water environmental management are necessary to be approved by the authorities concerned.</li> <li>- Regarding active participation of the citizens in improvement of environmental activities, it is observed that positive water environment management activities such as reestablishment of management system by users in Thongkhangkham Village, campaigns for cleaning canals and desludging septic tanks by local community have been observed.</li> <li>- In addition, it was confirmed that some schools which participated in the environmental education program by the Project had been continuing cleaning activities in collaboration with neighboring communities.</li> </ul> <p>(Ex-post Evaluation)</p> <p>The school plastic waste separation and community canal cleaning have still been carried on.</p>	
	<p>Indicator 3: Strategy for Wastewater Treatment in Vientiane Capital”, including proposed zoning, sewerage networks, utilization of EU Pond as a candidate site for Wastewater Treatment Plant, and management system with proper legal framework, planning, monitoring and evaluation for water environmental management in Vientiane Capital is prepared after at least one public hearing and endorsed by the competent authority.</p>	<p>Status of the Achievement: partially achieved (partially continued)</p> <p>(Project Completion)</p> <ul style="list-style-type: none"> <li>- The final draft of “Strategy of Wastewater Management in Vientiane Capital” was discussed in public hearing held on August 16, 2017.</li> <li>- “Strategy of Wastewater Management in Vientiane Capital” was expected to be endorsed by Assembly of VC and confirmed by relevant Ministries.</li> <li>- Though land of EU pond was made concession by the VC, alternative land for Wastewater Treatment Plants were set up in Sikottabong Park and That Luang Marsh and agreed by the VC as well.</li> </ul> <p>(Ex-post Evaluation)</p> <p>See the indicator 4, Overall Goal below.</p>	
<p>(Overall Goal) Water environmental management is continuously implemented.</p>	<p>Indicator 1: A collaborative coordinating body/ mechanism recommended in the project is functional continuously, holding regular meeting and making important decisions regarding water environmental management.</p>	<p>Status of achievement: achieved (Ex-post Evaluation)</p> <ul style="list-style-type: none"> <li>- A water environmental management committee, which was established under the non-interest loan project from the Government of Hungary, has been working as a mechanism to discuss and exchange the information regarding wastewater in Vientiane Capital. They have held regular meetings and made decisions on wastewater management in a timely manner.</li> <li>- In addition, the committee, based on the recommendation from the Government Office, has been promoted to the broader committee, which is comprised of representatives from line ministries and local departments. The main task for this committee has been to discuss the F/S Result, especially consideration of wastewater management regulations and the centralized wastewater development plan.</li> </ul>	<p>Questionnaire and face-to-face interview with DPWT of VC</p>
	<p>Indicator 2: The technologies/ models introduced by the project are replicated in another area/ site in Vientiane Capital.</p>	<p>Status of achievement: achieved (Ex-post Evaluation)</p> <p>Status of technologies/models:</p> <ul style="list-style-type: none"> <li>- Based on the “Standard Designs and Guidelines for the Proper Installation and Maintenance of Decentralized Wastewater Treatment Facilities”, DEWAT System has been replicated in 13 slaughterhouses out of total 23 proposed slaughterhouses, and some small-scale noodle factories in Vientiane Capital.</li> <li>- The technical standards and guidelines of on-site treatment have been utilized by DoIC-VC as the tool to control the standard of the factories and the environmental consideration. As mentioned above, small-scale factories, especially the newly-established factories, are inspected utilizing the checklist in the technical standard, and must be equipped with the small-scale DEWAT Systems.</li> <li>- The “Inspection Guideline” have been fully utilized by DoIC-VC and DoNRE-VC in term of water quality inspection and monitoring. Currently, DoIC-VC conducts the factory inspection once a year prior renewal of business license for factories.</li> <li>- Regarding the water quality monitoring, DoNRE-VC has played its important role in providing water quality test service for those factories and slaughterhouses in Vientiane Capital.</li> <li>- Based on the experience of the project, Vientiane Capital Office for Management and Services (VCOMS) (Former Vientiane Urban Development and</li> </ul>	<p>Interviews with DPWT; Deputy Director of Department oDoIC l; Site visit in Ban Thongkhangkham village (DEWAT system) and an interview with Siphonexay— Thongkhangkham’s Village Head.</p>

	<p>Administration Agency, VC), after project completion, developed the regulation on fecal sludge management in Vientiane Capital Ref. No. 0522, which was officially approved by Vientiane Capital on May 31, 2018. The regulation has already been disseminated and taken into force.</p> <p>- DPWT-VC submitted the financial proposal to Department of Planning and Investment of VC for promoting the construction of septic tanks to be applied at Engineering Faculty of National University of Lao (NOUL) in Sokpaluang village by using technology and design developed by the project. This septic tank will be a model standard in near future.</p>							
<p>Indicator 3: The number of regular inspection is increased.</p>	<p>Status of achievement: achieved (Ex-post Evaluation) Before the project, no regular inspection was conducted. Under the rapid expansion of communities in VC, DoIC-VC strictly controls the management of the factories, and renewal of business license in order to mitigate the environmentally negative impacts to communities. Therefore, DoIC-VC and DoNRE-VC work together in term of environmental monitoring and water quality inspection. The proper inspection of wastewater treatment is conducted once a year or within three years depend on the duration of business license issued by DoIC-VC; all budget for these inspections remunerated by business/enterprise owners. As another outstanding case of DoIC-VC, one of considerations for issuing manufacture/business license is using DEWAT System based on the project's design guideline.</p> <table border="1"> <thead> <tr> <th>Organization</th> <th>Outline of actual practice</th> </tr> </thead> <tbody> <tr> <td>DoIC</td> <td>Inspection of wastewater treatment facility and monitoring of environmental conditions, and renewal of business licenses.</td> </tr> <tr> <td>DoNRE</td> <td>Factory wastewater inspection and water quality test services</td> </tr> </tbody> </table>	Organization	Outline of actual practice	DoIC	Inspection of wastewater treatment facility and monitoring of environmental conditions, and renewal of business licenses.	DoNRE	Factory wastewater inspection and water quality test services	Interviews with DoIC of VC
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<p>Indicator 4: There is clear evidence that "Strategy for Wastewater Treatment in Vientiane Capital" is referred to during important decision-making discussions among policy makers."</p>	<p>(Ex-post Evaluation) partially achieved DPWT-VC has revised and improved the draft "Strategy of Wastewater Management in Vientiane Capital". However, the authorization of the said strategy has been suspended due to the change in environmental improvement direction of Vientiane Capital. The Government of Laos got the non-interest loan from the Government of Hungary for a development project for construction of a wastewater treatment plant with DWPT-VC as an implementing agency, and Feasibility Study (F/S) on wastewater management regulation, centralized wastewater development plan and the centralized wastewater treatment plant was conducted and has just endorsed by the Government Office and Vientiane Capital. This non-interest loan project will be implemented mostly in line with the draft "Strategy on Wastewater Management in Vientiane Capital", maximizes the use of data and information analyzed by the project though some information on the action plans in the strategy was reconsidered and redirected.</p>	Interviews with, DPWT of VC Deputy head						

### 3 Efficiency

Both project cost and project period exceeded the plan (the ratio against the plan: 133%, 103%). Outputs were produced as planned. Therefore, the efficiency of the project is fair.

### 4 Sustainability

#### <Policy Aspect>

There has been policy support to sustain the project effects. Under the Department of Water Supply and Sanitation, Ministry of Public Works and Transport (MPWT), "The vision till 2035, strategy for water supply and sanitation development 2021-2030 and development plan 2021-2025" has been formulated and adopted by the Government Office. DoIC-VC formulated the strategy for developing of green manufacture cum-environmental friendly in combination of proper minimize of pollution as well as treatment of released wastewater.

#### < Institutional/Organizational Aspect>

Though sanitation sector was moved to the new department called the Department of Water Supply in MPWT at national level, the reform has not been reflected to the provincial level yet. So, DPWT-VC, the key counterpart of the project, still carries on its mandate in term of wastewater management with existing human resources. DPWT-VC has been responsible for the construction and maintenance of equipment, facilities, structures, and systems related to sewage treatment. DoNRE-VC has been in charge of water resource development and environmental management and was responsible for water pollution monitoring and environmental education during the project implementation. There has been no change regarding institutional aspect for DoNRE-VC and DoIC-VC.

The number of staff has not been sufficient at DPWT-VC, DoNRE-VC and DoIC-VC. As those counterpart organizations made reshuffle in April 2019 and some of the officials were retired, the replacement of the retired officials has not been recruited. It is the government policy to decrease the number of government official staff. However, DPWC-VC managed to keep their capacity and function as before by their effort.

#### <Technical Aspect>

According to DoNRE and DWPT of VC, most of the staff have been promoted to higher positions in their respective offices and departments, and they have had sufficient capacity to promote and disseminate the techniques and models developed by the project in their routine works and the management of water environment in Vientiane Capital. In addition, they have been capable to provide the guidance and direction in project implementation toward the sustainable management of the sector.

DoNRE-VC has organized laboratory O&M orientation and conducted on the job training to new staff once a year.

The most of manual/guidelines/material developed under the project have been still utilized and replicated to DPWT-VC development

projects on construction of wastewater treatment system in Vientiane Capital. At DoNRE-VC, all manual/guideline/material developed and introduced by the project were minor adapted and produced official application form for site inspection certify of wastewater release. This application form will be part of wastewater sample analysis in DoNRE's laboratory and issue business license for manufacturers and/or businesses.

<Financial Aspect>

Although the approved budget has been limited at DWPT, DoNRE and DoIC of VC, they have also tried its best effort to manage the limited budget to continue their activities, and for promoting/dissemination of the technologies/models introduced by the project. The main source of budget for these purposes has been business license extension fee collection by DoIC. As for DPWT, they have had a kind of technical support budget for some important activities. As for DoNRE, they are now well-known for small and medium, and industrial factories in term of water quality inspection and it has become a kind of commercial services for DoNRE so that they can also generate the revenue.

<Evaluation Result>

In light of the above, slight problems have been observed in terms of the institutional/organizational and financial aspects of the implementing agencies. Therefore, the sustainability of the effectiveness through the project is fair.

5 Summary of the Evaluation

The project partially achieved the Project Purpose at the time of project completion. Counterparts applied skills/knowledge learned, roles of the relevant authorities for water environmental management were identified and active participation of the citizens in water environment improvement continued, and the final draft of "Strategy of Wastewater Management in Vientiane Capital" was discussed in public hearing, though not endorsed by the Assembly of VC nor confirmed by relevant Ministries. The Overall Goal has been partially achieved. A water environmental management committee has been working, the technologies/models introduced under the project have been continuously utilized, more inspections have been conducted. However, the authorization of the "Strategy for Wastewater Treatment in Vientiane Capital" have been on hold. As for the sustainability, slight problems have been observed in terms of the institutional/organizational and financial aspects of the implementing agencies. As for the efficiency, the project cost exceeded the plan.

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

### III. Recommendations & Lessons Learned

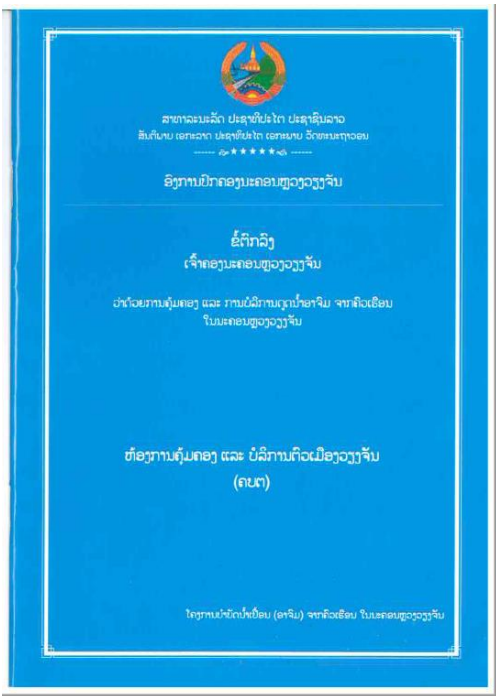
Recommendations for Implementing Agency:

Most of the outputs were achieved as planned. However, there have been some constraints, caused by institutional reform at the central level, regarding the approval of the strategic plan developed and supported under the project. To realize the importance of the strategic plan on wastewater management in Vientiane Capital and materialize the objectives of the plan, Department of Public Works and Transport of Vientiane Capital and Vientiane Capital Authority shall make their initiatives and resume the approval process once the national sanitation strategy approved by the Government of Laos.

Lessons Learned for JICA:

The project had the coordination problems. As the project had a multi-sectoral structure, it was quite difficult to coordinate and collaborate cross-sectoral in order to follow up some of the activities as well as to call for a stakeholder meeting. Since the project had the counterparts from local organizations in Vientiane Capital and MPWT, Ministry of Natural Resources and Environment (MONRE), Ministry of Industry and Commerce (MOIC) and Ministry of Education and Sports (MOES), the project needed multi-sectoral management, as there were counterparts from local organizations in Vientiane Capital and MPWT, MONRE, MOIC and MOES. It is necessary to consider carefully regarding the coordination and collaboration mechanism at the time of detail planning survey by taking the structure and relationships of central government office and local government office into account.

On the other hand, regular technical and managerial meetings have been held to update the progress of wastewater management and discuss the constraints and ways forward".



Authorized Regulation on Household Sludge Management in Vientiane Capital initiated and prepared by VCOMS



Visit to DWATS System at Ban Thongkhankham Village