

Country Name	Project on Riverbank Protection Works Phase II
Lao People's Democratic Republic	

I. Project Outline

Background	<p>In the Mekong River basin, damages such as land collapse and runoff caused by riverbank erosion occurred, and also riverbank retreat was caused. As riverbank protection, the gabion construction method¹ had been commonly used, but, these countermeasures were not sufficient due to the high cost and difficulty of domestic procurement of necessary equipment and materials. Under these circumstances, several Japanese methods for river protection were introduced and applied as experimental construction. Then, the master plan for riverbank protection was developed by JICA (Study on Mekong Riverbank Protection around Vientiane Municipality, 2001-2004), and based on the master plan, a technical cooperation project was implemented for capacity development on riverbank protection measures using traditional methods (Technical Cooperation Project on Riverbank Protection Works, 2005-2007). However, the Ministry of Public Works and Transport (MPWT) still had needs for diffusing the developed methods nationwide, and therefore, a successor project was requested.</p>												
Objectives of the Project	<p>Through training and seminars on riverbank protection for the staff of the Department of Waterworks (DOW) of MPWT and the Department of Public Works and Transport (DPWT) in Provinces of Bokeo, Luangprabang and Bolikhamxay, development and revision of the manuals, and pilot project implementation for riverbank protection, the project aimed at capacity development of MPWT and DPWTs for low cost and environmentally friendly protection against riverbank erosion, thereby contributing to diffusion of these measures nationwide.</p> <ol style="list-style-type: none"> 1. Overall Goal: The other provincial DPWT staff, besides the Target Group, will be able to implement low cost and environmentally friendly protection measures against riverbank erosion. 2. Project Purpose: The staff of the target group (staff from DOW, DPWTs in Bokeo, Luangprabang, Bolikhamxay and Vientiane Capital) will be able to implement low cost and environmentally friendly protection measures against riverbank erosion. 												
Activities of the project	<p>Project site: Bokeo, Luangprabang, Bolikhamxay and Vientiane Capital</p> <ol style="list-style-type: none"> 1. Main activities: training and seminars for MPWT and target DPWTs on riverbank protection, development and revision of manuals, and pilot project implementation in Bokeo, Luangprabang, and Bolikhamxay, etc. 2. Inputs (to carry out above activities) <table border="0"> <tr> <td>Japanese Side</td> <td>Laotian Side</td> </tr> <tr> <td>1) Experts from Japan: 11 persons</td> <td>1) Staff allocated: 13 persons</td> </tr> <tr> <td>2) Training in Japan: 15 persons</td> <td>2) Land and facilities: Office space,</td> </tr> <tr> <td>3) Equipment: river survey equipment, tools for the Soda Technique², etc.</td> <td>3) Local cost: expenses for pilot projects, etc.</td> </tr> <tr> <td>4) Local cost: Cost for hiring local persons, travel expenses, etc.</td> <td></td> </tr> </table>			Japanese Side	Laotian Side	1) Experts from Japan: 11 persons	1) Staff allocated: 13 persons	2) Training in Japan: 15 persons	2) Land and facilities: Office space,	3) Equipment: river survey equipment, tools for the Soda Technique ² , etc.	3) Local cost: expenses for pilot projects, etc.	4) Local cost: Cost for hiring local persons, travel expenses, etc.	
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Project Period	October 2010 to September 2014	Project Cost	(ex-ante) 290 million yen, (actual) 345 million yen										
Implementing Agency	Ministry of Public Works and Transport (MPWT)												
Cooperation Agency in Japan	NEWJEC Inc., Yachiyo Engineering Co., Ltd.												

II. Result of the Evaluation

1 Relevance
<p><Consistency with the Development Policy of Lao PDR at the time of ex-ante evaluation and project completion></p> <p>The project was consistent with Laos' development policies, as programs for riverbank protection including the use of eco-friendly and cost-effective methods were included in the "Fifth Five-year Plan" (2006-2010) and "Sixth Five-year Plan" (2010-2015) of MPWT.</p> <p><Consistency with the Development Needs of Lao PDR at the time of ex-ante evaluation and project completion></p> <p>Although 166 km of the river basin was eroded in the country at the time of the ex-ante evaluation, countermeasures had been taken for 63 km. Severe riverbank erosion occurred particularly in the provinces of Bokeo, Luangprabang and Bolikhamxay. As a responsible section, DOW was newly established in 2007, and the project was consistent with needs for capacity building of DOW personnel until the time of the project completion</p> <p><Consistency with Japan's ODA Policy at the time of ex-ante evaluation></p> <p>In the "Country Assistance Program for Lao PDR" (2006), one of the six priority areas was development of socioeconomic infrastructure and effectively utilizing existing infrastructure, with a view to promoting economic growth constituting the driving force for independent, sustained growth, Japan will support foundation building for the economic growth.</p> <p><Evaluation Result></p> <p>In light of the above, the relevance of the project is high.</p>

¹ Method for riverbank protection by placing baskets made of bamboo, willow, iron wire, etc. which contain stones.

² Method for preventing riverbed erosion with combined logged twigs, wood piles and stones.

2 Effectiveness/Impact

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

The Project Purpose was achieved. As pilot projects, riverbank protection works were implemented in all of the three target provinces with the introduced Soda method. The average cost per unit of the pilot projects was 1,114-1,933 US\$/m, lower than that of other similar projects (2,530 US\$). The Soda method requires construction materials such as plants and stone that are locally available. Unlike modern construction methods, the Soda method can preserve the natural environment and also Soda mattress would serve as nursing ground for fisheries.

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

It can be judged that the project effects have partially continued. In all of the target provinces, the river protection works implemented by the project have been maintained and monitored by DPWT and villagers. Villagers have been involved in minor repair of the riverbank protection works, and local private companies have conducted outsource works. However, the project experience in pilot projects have not been extended in other areas in the target provinces. For example, DPWT of Bokeo planned and surveyed three additional sites for construction of river protection with the Soda method, among which one site was already designed. However, it was still awaiting budget approval for 2019 implementation. In Luangprabang, 2-3 sites were proposed by DPWT for slope protection works with the Soda method, but they have not been implemented due to budget shortages.

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

The Overall Goal has not been achieved. Since the project completion, DOW has conducted seminars to introduce the Soda method to other 14 provinces including Phongsaly and Oudomxay. For example, it conducted training on monitoring and supervision for river bank protection works in Oudomxay Province in 2017. However, due to budget shortage of DOW, there has been no new project in other provinces.

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

First, according to DOW and DPWTs, there has been no negative impact on the natural environment, and vegetation and tree growing have prevented further erosion, in addition to tree planting of the pilot project. Second, manuals on river bank protection works developed and translated by the project were distributed to the Faculty of Engineering of the University of Laos. They have been incorporated into the curriculum and lectures have been given on river engineering, though it is a minor subject. Third, a settled area (sedimentation area) formed after the pilot project in Luangprabang has been utilized as a recreational space for villagers, boosting the local economy during Lao New Year in April.

<Evaluation Result>

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

Achievement of the Project Purpose and Overall Goal

Aim	Indicators	Results
(Project Purpose) The Staff will be able to implement low cost and environmentally friendly protection measures against riverbank erosion.	1. Riverbank protection works will be implemented a total of at least three sites in the Pilot Project Provinces.	Status of achievement: <u>Achieved (Continued)</u> . (Project Completion) - Three pilot projects for riverbank protection were implemented in the Provinces of Bokeo, Luangprabang, and Bolikhamxay. (Ex-post Evaluation) - In Bokeo, the river protection work implemented by the project was repaired by DPWT and villagers, and it has been under regular monitoring by DPWT and villagers. - In Luangprabang, the river protection work implemented by the project was repaired by DPWT and DOW after it partially collapsed by flash flooding in 2014. It has been monitored by DPWT in coordination with the District Office of Public Works and Transport. - In Bolikhamxay, the river protection work implemented by the project has been maintained and monitored by villagers?
(Overall goal) The other provincial DPWT staff, besides the Target Group, will be able to implement low cost and environmentally friendly protection measures against riverbank erosion.	1. Riverbank protection works will be implemented at least one province other than the Target Group.	Status of achievement: <u>Not achieved</u> . (Ex-post Evaluation) - There has been no new project using low cost and environmentally friendly river bank protection work in other provinces.

Source: Terminal Evaluation Report, Project Completion Report, and information provided by DOW and DPWTs.

3 Efficiency

Although the project period was as planned (ratio against the plan: 100%), the project cost exceeded the plan (ratio against the plan: 119%). There was no change in the Outputs described in the Project Design Matrix. Therefore, the project efficiency is fair.

4 Sustainability

<Policy Aspect>

Development of human resources for disaster prevention including riverbank protection is prioritized in the “8th National Socio-Economic Development Plan” (2016-2020) as a policy on coping with disaster risks and impacts from climate changes. And, riverbank protection is included in the “Eighth Five-year Plan” (2016-2020) of MPWT. Thus, development of human resources for disaster prevention is backed up at least 2020.

<Institutional Aspect>

There have been issues of staff insufficiency. At the time of the ex-post evaluation DOW of MPWT had 41 staff. 24 posts were vacant due to the limited quota of the government staff recruitment. The Division of Riverbank Impact Prevention under DOW had 12 staff, members which was not sufficient to carry responsibilities related to riverbank protection works, according to DOW. At the provincial level, the Waterway Management Division has been newly established at each DPWT of Bokeo, Luangprabang and

Bolikhamxay in 2011 as a division specific for prevention measures against riverbank erosion. In these divisions, three, three and four staff have been assigned as responsible for prevention measures against riverbank erosion, respectively. Although DPWTs have requested for filling the vacant posts, they have not been realized due to the limited quota of the government. Regarding the meteorological and hydrological data, DOW has received necessary data under the agreement on information sharing with the Department of Meteorology and Hydrology of the Ministry of Natural Resources and Environment.

<Technical Aspect>

DOW has sustained sufficient skills for river engineering and management, as it has university graduates from river engineering and management courses. Also, some of them have got experiences on river protection in other countries. DPWTs of the target provinces have lacked a sufficient number of skilled staff or faced concerns of such staff's turnover or retirement. DOW used to organize trainings on riverbank erosion and protection for DPWT staff on the semi-annual basis, but there has been no training since the ones in 2017 due to limited budgets. Manuals developed by the project have been used by DPWTs for data collection and riverbank protection design. In all of the three target provinces, private construction companies have been available to outsource low cost and environment-friendly methods.

<Financial Aspect>

Overall, there have not been sufficient budgets for river management at the central and provincial levels. Budgets of DOW including the Division of Riverbank Impact Prevention and other five divisions have not been stable. Budgets of DPWTs come from MPWT and get only approved on the project basis. Budgets of the three DPWTs have been increasing and decreasing in each province. This insufficient budget allocation from MPWT has been attributed to lack of MPWT's precise planning and budget calculation, according to DOW. As mentioned earlier, the Soda method is less expensive than other methods, but still, budgets have not been sufficient to cover all the needs of riverbank protection. Budget shortages have also been affected by MPWT's policy which prioritizes road network more than waterways. Furthermore, among waterways works, more emphasis has been put on riverbank protection works of the large rivers such as the Mekong, since they are more economically influential than those of smaller rivers flowing through the target provinces.

Table: Disbursed budget (billion Laotian Kip)

	2015	2016	2017	2018
DOW	15.98	21.42	13.51	15.64
DPWT Bokeo	0.60	2.00	1.75	1.75
DPWT Luangprabang	0	0.25	0	0.12
DPWT Bolikhamxay	2.40	0.50	0.1	0.47

Source: DOW and DPWTs

<Evaluation Result>

Therefore, the sustainability of the effects is fair.

5 Summary of the Evaluation

The Project Purpose was achieved, and the effects have continued. Pilot projects for riverbank protection were completed in all of the three target provinces with the low cost and environmentally friendly method introduced by the project, and these construction works have been maintained. However, due to budget shortages, these measures against riverbank erosion have not been extended to other sites within and outside the three departments. Regarding sustainability, budget shortages have hindered assignment of sufficient skilled staff and new construction works. As for efficiency, the project cost exceeded the plan.

Considering all of the above points, despite of the fact that effectiveness of the Soda method was confirmed during the evaluation process, this project is evaluated to be partially satisfactory.

III. Recommendations & Lessons Learned

Recommendations for Implementing agency:

- It is recommended to DPWTs to prepare the master plan for riverbank protection and staff capacity building with clearly specified prioritization and finely calculated budget planning, in order to request approval from MPWT. Then, it is recommended to MPWT to carefully examine submitted budget requests to discuss with the Ministry of Finance and the Ministry of Planning and Investment.
- Newly assigned DPWT staffs have not gained sufficient skills for riverbank protection works. It is recommended to DOW to restart training for DPWT staffs or to DPWT to have a succession plan for knowledge transfer before skilled staff's turnover.

Lessons learned for JICA:

- In two of the target provinces, villagers have been involved in minor repair of the riverbank protection works, and local private companies have conducted outsource works. Thus, introduced construction methods have been not only transferred to DOW and DPWTs but also diffused to local stakeholders. Their involvement has been promoting factors for making construction works efficient and effective. In projects which conduct constructions works, it is effective to include components of capacity building of the local stakeholders in the project design and involve them in the construction works, which will lead to technical sustainability of the introduced construction methods.

In the project, no new riverbank protection works have been conducted since the project completion, due to budget shortages at DPWTs. This insufficient budget allocation from MPWT has been attributed to lack of precise planning and budget calculation. Another reason is that river protection of large rivers has been more prioritized than that of smaller rivers flowing through the target provinces, even though the significance of the Soda method as low cost and environmentally friendly means has been understood by MPWT and DPWTs. For securing necessary budgets after the project completion, it is necessary to train the responsible staff on how to make the work plan with budget calculation, not only certain technical methods themselves which the project introduces.



Board with explanation about the riverbank protection works in Bokeo



Riverbank protection works implemented in Bolikhamxay



Nam Khan River where riverbank protection works were implemented in Luangprabang