

Country Name	The Project for Capacity Development of Central and Local Governments for 3R and Domestic Solid Waste Management System
Republic of Indonesia	

I. Project Outline

Background	<p>In Indonesia, the amount of waste increased rapidly along with economic growth. However, many cities relied on open-dumps at disposal sites for their wastes because sanitary landfill sites were undeveloped. Furthermore, due to the lack of capacity for waste management, the rate of collection and transportation of solid waste was low, and illegal dumping of waste by citizens became routine and rampant. While the capacity of existing landfills would reach the limit, securing sites for landfill became increasingly difficult because of the objections of residents and urbanization. As such, waste reduction was a near-term practical solution. The Act on Solid Waste Management (No.18/2008) was enacted in 2008 to address waste reduction and waste handling through the promotion of 3R (Reduce, Reuse and Recycle). However, the Act presented merely the basic principles; a set of rules and regulations imperative for the implementation was to be determined in related governmental, ministerial, and local regulations in order. The policymaking and enforcement capability of local governments needed to be strengthened for the implementation of proper solid waste management.</p>												
Objectives of the Project	<p>Through the preparation of draft governmental and ministerial regulations for 3R and solid waste management in full compliance with the Act on Solid Waste Management, the preparation of a mid-term action plan for the target cities, and strengthening the capacity of solid waste management of the target cities through the pilot project, the project aimed at implementation of 3R and solid waste management in conformity to a set of related regulations in the target cities, thereby contributing to their dissemination and implementation to the other local governments in Indonesia.</p> <ol style="list-style-type: none"> Overall Goal: 3R and solid waste management (household and household-like wastes) is appropriately implemented successively in representative local governments of the country in accordance with the Act on Solid Waste Management (No.18/2008), the related government regulations, ministerial regulations, and local regulations. Project Purpose: 3R and solid waste management (household Project Activity Report and household-like wastes) are appropriately implemented in the target cities based on the Act on Solid Waste Management (No.18/2008), the related government regulations, ministerial regulations as well as local regulations. 												
Activities of the Project	<ol style="list-style-type: none"> Project site: The whole country (Target Cities: Palembang and Balikpapan) Main activities: 1) preparation of draft governmental and ministerial regulations for 3R and solid waste management complied with the Act on Solid Waste Management (No.18/2008), 2) the preparation of a mid-term action plan for the target cities, 3) strengthening the capacity of solid management of the target cities through the pilot project. Inputs (to carry out above activities) <table border="0" style="width: 100%;"> <tr> <td style="width: 50%;">Japanese Side</td> <td style="width: 50%;">Indonesia Side</td> </tr> <tr> <td>1) Experts: 14 persons</td> <td>1) Staff allocated: 25 persons</td> </tr> <tr> <td>2) Trainees received: 34 persons</td> <td>2) Facilities: Offices for the experts</td> </tr> <tr> <td>3) Equipment: digital camera, PCs, Printers, digital scales, etc.</td> <td>3) Local cost: Administrative and operational expenses</td> </tr> <tr> <td>4) Local cost: costs for holding meetings, etc.</td> <td></td> </tr> </table> 			Japanese Side	Indonesia Side	1) Experts: 14 persons	1) Staff allocated: 25 persons	2) Trainees received: 34 persons	2) Facilities: Offices for the experts	3) Equipment: digital camera, PCs, Printers, digital scales, etc.	3) Local cost: Administrative and operational expenses	4) Local cost: costs for holding meetings, etc.	
Japanese Side	Indonesia Side												
1) Experts: 14 persons	1) Staff allocated: 25 persons												
2) Trainees received: 34 persons	2) Facilities: Offices for the experts												
3) Equipment: digital camera, PCs, Printers, digital scales, etc.	3) Local cost: Administrative and operational expenses												
4) Local cost: costs for holding meetings, etc.													
Project Period	(ex-ante) November 2013-December 2016 (actual) November 2013-November 2017	Project Cost	(ex-ante) 414 million yen, (actual) 519 million yen										
Implementing Agency	Ministry of Environment and Forestry (KLHK), Ministry of Public Works and Public Housing (PUPR), Palembang City: Regional Development and Planning Agency (BAPPEDA), Environmental Agency (BLH), City Cleansing Department (DKK), Balikpapan City: BAPPEDA, BLH, Department of Cleansing, Parks and Cemetery (DKPP)												
Cooperation Agency in Japan	Ministry of Environment, Municipality of Kitakyusyu												

II. Result of the Evaluation

1 Relevance
<p><Consistency with the Development Policy of Indonesia at the Time of Ex-Ante Evaluation> The project was consistent with the national development policies of Indonesia such as “The National Medium-Term Development Plan (RPJM)” (2010-2014) aiming at controlling waste generation through the application of 3R.</p> <p><Consistency with the Development Needs of Indonesia at the Time of Ex-Ante Evaluation> The project was consistent with the development needs of Indonesia to solve the following issues: 1) delays in the regulatory arrangement to implement the Act of Solid Waste Management (No18/2008), 2) insufficient waste control and treatment, 3) low capacity of service providers for waste treatment, 4) inadequacy of waste management plans in the central and local governments, 5) lack of financial resources for waste management.</p> <p><Consistency with Japan’s ODA Policy at the Time of Ex-Ante Evaluation> The project was consistent with the “Country Assistance Program for Indonesia” (2012) prioritizing “the support for infrastructure development and the improvement of various regulations and systems based on the deepening of economic relations in “the support for further economic growth” as one of the priority areas (mid-term goal).</p> <p><Evaluation Result> 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 by the time of project completion. In both Palembang City and Balikpapan City, the dissemination of the pilot activities was generally completed. In Palembang City, waste bank¹ activities in Alang Alang Lebar (AAL) were disseminated to Sematang Borang (Srimulya section) and to Sukarami (Sukodadi section) by mid-2016. The waste bank in Sukarami has already been a business; the activities in Semarang Borang on the contrary have been suspended, due to the limited interest of the residents. In Balikpapan, there were 57 neighborhood blocks (RT), which expanded the activities from the original 13 to 54 RTs in February 2016. (Indicator 1). On the other hand, the reduction of solid waste hauled to the final disposal site from the entire city was not able to be confirmed due to inappropriateness of its definition (Indicator 2). Alternatively, this ex-post evaluation set the reduction in the waste from the pilot areas to the final disposal site as a supplemental indicator for project purpose. However, the data collection for the waste reduction ratio by KLHK began in 2018, the actual values of this supplemental indicator by the project completion was not available. Therefore, its achievement status at the time of project completion cannot be verified. Considering the result of Indicator 1 and supplemental indicator, the project purpose should be judged as partially achieved by the time of project completion in this ex-post evaluation.

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

The Project effects have been partially continued at the time of the ex-post evaluation. Through bilateral cooperation with Denmark (Strategic Sectors Cooperation focusing on organic waste treatment), KLHK has continued and further disseminated the Temporary Dumping Station with 3R (TPS-3R)² since the project completion. Also, it has planned to construct facilities such as a waste bank and TPS-3R for a recycling center near the Citarum river area, Compost facilities in Banda Aceh City, Bukittinggi City, Malang City and Depok City. PUPR has carried out constructing TPS-3R as regular activity since before the project started. Especially, in Palembang City, there are additional 16 TPS-3Rs constructed by using the city budget based on the annual goal made by the regional government with the communities involved. On the other hand, some pilot projects have not been implemented or even started but on hold because of insufficient infrastructure preparations and limited budgets.

Although there is no specific system to manage data, waste reduction has been calculated manually by collecting data about the amount of managed/recycled waste on the level of the pilot areas. On a national level, KLHK has National Waste Handling Information System (SIPSN³) for collecting data and comparing the actual waste reduction rate to the target of waste reduction throughout Indonesia. In common, Palembang City and Balikpapan City have increased the annual waste reduction ratio after the project completion. For example, the waste reduction rate in Balikpapan City was improved from 19.22% in 2018 to 24.13% in 2021. Similarly, the waste reduction rate in Palembang City improved from 19.63% in 2019 to 21.30% in 2021, and the city has not set a target but has remained steady. However, waste residues from waste banks and TPS 3R have not been measured prior to transport, making it difficult to ensure data accuracy.

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

The Overall Goal was partially achieved at the time of ex-post evaluation. According to SIPSN, TPS-3R was introduced by KLHK to every province and the amount of waste has been managed in the system. Although the dissemination of the project to other cities has not been conducted as planned, the project has expanded to 29 cities. In addition, some cities have not developed a structure for local regulations, data management, action plans, and so on to be input into the SIPSN system although PUPR has shared them with the cities and provinces that implemented 3R. As mentioned above, although TPS-3R has been disseminated to the 29 cities indicated as indicators, it is not perfect in terms of proper waste management which JICA aimed, and therefore the Overall goal should be partially achieved.

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

There have been some positive impacts observed at the time of ex-post evaluation. 63% of the worker in Waste Banks are women. In addition, sorting workers in Palembang City TSP-3R, MRF (Material Recovery Facility) and intermediate treatment facilities in Balikpapan City are mostly women too. These show that the project contributes to women's empowerment.

No negative impact on natural environment was observed.

<Evaluation Result>

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

Achievement of Project Purpose and Overall Goal

Aim	Indicators	Results	Source
(Project Purpose) 3R and solid waste management (household and household-like waste) is appropriately implemented in the target cities based on the act on solid waste management (no.18/2008), the related government regulations, ministerial regulations as well as local regulations	Indicator 1 Implementation of Pilot Project is disseminated to other regions in accordance with the related government regulations, ministerial regulations and local regulation	<p><u>Status of the Achievement: achieved (partially continued)</u> (Project Completion)</p> <ul style="list-style-type: none"> - In both Palembang and Balikpapan, the dissemination of the pilot activities was generally completed. - In Palembang, waste bank activities in AAL were disseminated to Sematang Borang (Srimulya section) and to Sukarami (Sukodadi section) by mid-2016. The waste bank operation in Sukarami had already been a business; the activities in Semarang Borang on the contrary were suspended, due to the limited interest of the residents. - In Balikpapan, the expansion of activities from 13 to 54 RTs out of 57 RTs was completed in February 2016. <p>(Ex-post Evaluation)</p> <ul style="list-style-type: none"> - Through bilateral cooperation with Denmark (Strategic Sectors Cooperation focusing on organic waste treatment), KLHK has continued and further disseminated the Temporary Dumping Station with 3R (TPS-3R) since the project completion. 	Project completion report, p. 10, p.119

¹ Waste bank is a management entity which promotes the recyclable collection under the management of the community. In this system, a community-based organization or group that purchases recyclable waste from ordinary households and delivers it to recycling companies.

² TPS-3R is a temporary storage facility that can sort organic waste, recyclables and other waste from waste collected by collectors.

³ Sistem Informasi Pengelolaan Sampah Nasional.

		<ul style="list-style-type: none"> - PUPR has carried out construct TPS-3R as regular activity. - In Palembang City, there are additional 16 TPS-3Rs constructed by using the city budget. - Some pilot projects have not been implemented or even started but on hold because of insufficient infrastructure preparations and limited budgets. 																													
	Indicator 2 Solid waste hauled to the final disposal site will be reduced	<p><u>Status of the Achievement: not achieved (not continued)</u> (Project Completion)</p> <ul style="list-style-type: none"> - The reduction of Solid waste hauled to the final disposal site from the entire city was not able to be confirmed due to a lack of information. - The amount of waste from the pilot area was insignificant compared to the total waste at the final disposal site, and the relationship between the rate of waste reduction only at the final disposal site and the effort of this project is unclear. - The rate of reduction in the waste from the pilot area to the final disposal site has been decreasing since the end of 2016, which indicates that MRF properly started functioning. <p>(Ex-post Evaluation)</p> <ul style="list-style-type: none"> - No data available. 	Project completion report, p. 10, p.119																												
	Supplemental indicator Waste reduction ratio from the pilot area to the final disposal site	<p><u>Status of the Achievement: not verified (continued)</u> (Project Completion)</p> <ul style="list-style-type: none"> - The data for the annual waste reduction ratio of pilot projects by the project completion was not available. <p>(Ex-post Evaluation)</p> <ul style="list-style-type: none"> - According to the waste management database of KLHK, the waste reduction ratio in 2 pilot cities has steadily improved after the project completion as shown in the table below. - Regarding Balikpapan City, the actual values fully achieved the target values. <p style="text-align: center;"><The annual waste reduction ratio of pilot projects></p> <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th colspan="2">Pilot city</th> <th>2018</th> <th>2019</th> <th>2020</th> <th>2021</th> </tr> </thead> <tbody> <tr> <td rowspan="2">Palembang City</td> <td>Target</td> <td>N/A</td> <td>N/A</td> <td>N/A</td> <td>N/A</td> </tr> <tr> <td>Actual</td> <td>N/A</td> <td>19.63%</td> <td>19.78%</td> <td>21.30%</td> </tr> <tr> <td rowspan="2">Balikpapan City</td> <td>Target</td> <td>18%</td> <td>20%</td> <td>22%</td> <td>24%</td> </tr> <tr> <td>Actual</td> <td>19.22%</td> <td>20.16%</td> <td>22.21%</td> <td>24.13%</td> </tr> </tbody> </table>	Pilot city		2018	2019	2020	2021	Palembang City	Target	N/A	N/A	N/A	N/A	Actual	N/A	19.63%	19.78%	21.30%	Balikpapan City	Target	18%	20%	22%	24%	Actual	19.22%	20.16%	22.21%	24.13%	Interview with KLHK, PUPR, Balikpapan and Palembang city
Pilot city		2018	2019	2020	2021																										
Palembang City	Target	N/A	N/A	N/A	N/A																										
	Actual	N/A	19.63%	19.78%	21.30%																										
Balikpapan City	Target	18%	20%	22%	24%																										
	Actual	19.22%	20.16%	22.21%	24.13%																										
(Overall Goal) 3R and solid waste management (household and household-like wastes) is appropriately implemented successively in representative local governments of the country in accordance with the Act on Solid Waste management (No.18/2008), the related government regulations, ministerial regulations and local regulations.	Indicator 1 In three (3) years after completion of the technical cooperation period, the models are disseminated to more than 29, including 14 metropolitan and 15 large cities, and some of 29 cities plan to adopt the practices in the target cities (i.e. local regulations, data management, action plan and its implementation).	<p>(Ex-post Evaluation) partially achieved</p> <ul style="list-style-type: none"> - According to SIPSN, TPS-3R was introduced by KLHK to every province and the amount of waste has been managed in the system. - Although the dissemination of the project to other cities has not been conducted as planned, the project has expanded to 29 cities. - Some cities have not developed a structure for local regulations, data management, action plans, and so on to be input into the SIPSN system although PUPR has shared them with the cities and provinces that implemented 3R. 	Interview with KLHK, PUPR, Balikpapan and Palembang city																												

3 Efficiency

The project cost and the project period exceeded the plan (the ratio against the plan:125% and 133%, respectively) mainly due to a delay in the construction of Integrated Waste Processing Facility (TPST). The outputs were produced as planned.

Therefore, the efficiency of the project is fair.

4 Sustainability

<Policy Aspect>

Specific policies endorsed for each implementing agency were confirmed at the time of ex-post evaluation such as Ministerial Regulation No. 14 of 2021(KLHK) and Mayor Regulation No. 38 of 2018 (Balikpapan City).

<Institutional/Organizational Aspect>

There are no institutional/organizational changes in each implementing agency. KLHK and PUPR have taken responsibility to support 3R activities. Palembang City has had a general hygiene and waste reduction section in Environment and Cleansing Agency and

Balikpapan City has had an environmental service section. These departments have been responsible for 3R and solid waste management and managed TPS-3R well and secured the number of their personnel. In order for Balikpapan City Government to handle waste management, it is planned to establish 2 Department Technical Implementation Units (UPTDs), for hygiene and transportation, covering the three districts in 2022.

<Technical Aspect>

Each implementing agency has sustained the knowledge and skills about waste management. KLHK has conducted capacity building through training, comparative studies, and field visit for their staff. Similarly, PUPR has held training and sharing sessions for their staff. In addition, they have carried out training in Palembang City and Balikpapan City. For manuals/guidelines, notably, PUPR has utilized TPS-3R Technical Guidelines and will prepare TPST Guideline. Furthermore, it has provided information exchange meetings and training to facilitators who worked for TPS-3R on its guideline every year, leading to further dissemination to related People's Self Help Group (KSM) in each city.

<Financial Aspect>

In general, the implementing agencies have the necessary budgets to disseminate their activities. KLHK has received the national allocation budget (APBN), local allocation budget (APBD), local incentive budget, grant, and loan. PUPR has also received APBN for the construction of TPS-3R. Palembang City has the budget for socialization on the only pilot site due to the community-based activity. Balikpapan City has the sufficient APBD budget for continuation of TPS-3R although cost recovery through the recycling and collection of salable waste is still limited.

<Evaluation Result>

In light of the above, no problem has been observed in terms of the policy, institutional/organizational, and technical aspects. Therefore, the sustainability of the effectiveness through the project is high.

5 Summary of the Evaluation

The project partially achieved the Project Purpose aiming at the implementation of 3R and solid waste management in the target cities based on the Act on Solid Waste Management (No.18/2008), the related government regulations ministerial regulations as well as local regulations, and partially achieved the Overall Goal to implement successively them in representative local governments of the country according to the same regulations as the Project Purpose. As for efficiency, the project cost and project period exceeded the plan.

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

III. Recommendations & Lessons Learned

Recommendations for Implementing Agency:

(1) KLHK and PUPR

- KLHK proposes to inform local governments and communities that plan to build waste management facilities of proper waste management practices. In this way, smooth implementations are expected.
- In order to collect data and compare the actual waste reduction rate to the target of waste reduction, KLHK needs to encourage every local government to enter the information on waste management into SIPSN at the appropriate time.
- KLHK and PUPR need to further cooperate with each other in order to ensure that the construction plan for the waste management facilities and infrastructures are properly implemented and to effectively and efficiently carry out daily operations of waste management with related local governments.
- KLHK and PUPR should provide the necessary training for the operational staff of waste management and involved communities and follow-up training on a regular basis. By doing so, they can motivate the operational staff of waste management and involved communities who engage in the project, which will lead to continued and effective participation.

(2) Palembang

- Joined TPS-3R and Sakura Waste Bank are community-based facilities that are still in existence today with staff reductions of up to 80%. All operating costs are covered by the cost of transporting waste collected monthly from residents by KSM in Maju Jaya⁴. The employees seem to work voluntarily, as they receive little or no monthly income. In order to maintain the motivation to engage in the activities, Palembang City needs any incentive for KSM, and is also required to increase the number of staff members.
- KSM members often become the key person for waste sorting in the household and RT in collaboration with universities. However, KSM members have focused on sending data on sorted waste and residuals to temporary dumping stations (TPS), not calculated waste reduction data. That is, Palembang City needs to facilitate KSM members to calculate waste reduction data.

(3) Balikpapan

- Waste reduction rate needs to be calculated on a regular basis so that its impact can be measured at the city level. In doing so, it is necessary to appoint permanent employees to ensure stable operation. The data released to the public will create a willingness to sort and participate in city waste management.
- It is important to further enlighten residents in terms of waste separation because some people dump the waste outside of the collection hours. It would be very useful to have community gatherings to discuss the latest topic related to waste separation, which would have a positive impact on operators of the vehicles and conveyor machines at MRF.
- TPS-3R provided by the PUPR is community-based waste management and Balikpapan City has 6 of these facilities. However, they have not been operated properly. Since PUPR already has the technical guidelines and training that should be recommended, the city should use them and aim for proper operation.

Lessons Learned for JICA:

- At the time of the project completion, it was suggested that the indicator 2 of Project Purpose be revised. In the first place, it needed to be suggested for revision at the mid-term review. One of the important roles of the mid-term review is to review and revise the PDM based on the logic, taking into account the progress of the project and changes in the circumstances surrounding the project. However, at the time of the mid-term review of this project, the definition and validation of the indicator 2 of Project Purpose and the expected

⁴ Maju Jaya is the name of one KSM in Palembang.

achievement of Project Purpose by the project completion were probably not sufficiently examined. Therefore, the system of the mid-term review should be properly operated to suggest necessary PDM modifications at an appropriate timing.



Intermediate Treatment Facility in Balikpapan City



Pelangi Waste Bank in Palembang City