

Ex-Ante Evaluation (for Japanese ODA Loan)

1. Name of the Project

Country:	The Republic of Peru
Project:	Solid Waste Management Project
Loan Agreement:	October 12, 2012
Loan Amount:	4,396 million yen
Borrower:	The Republic of Peru

2. Background and Necessity of the Project

(1) Current State and Issues of the Waste Sector in Peru

In Peru, the amount of solid waste generated through household and shopping activities (hereinafter referred to as the “municipal Solid Waste” reaches 23,260 tons/day.

While the generation of such large amount of municipal solid waste, only 26% of the generated municipal solid waste is disposed in the sanitary landfills, which indicates that the most of the municipal solid waste generated out of Lima is disposed in the open-dumping site without any appropriate treatment. Also, the leachate water from the existing final disposal sites is discharged without any treatment, which causes the major concern for the negative impact of the pollution of water resources such as the river and ground water. Such situation causes serious concern about the environmental deterioration and sanitary conditions of the residents.

Under such circumstances, it has become urgently necessary to establish integrated systems for the collection and disposal of waste, including the construction of sanitary landfills in the local cities and the strengthening of the waste collection and transportation capabilities of the cities.

(2) Development Policies for the Waste Sector in Peru and the Priority of the Project

In its “National Environmental Plan,” the Ministry of the Environment (MINAM) declared the main goal of the appropriate disposal of all waste by 2021. As a first step to achieve the goal, MINAM aimed to dispose of half of the waste appropriately and drew up the “Programa de Desarrollo de Sistemas de Gestión de Residuos Sólidos en Zonas Prioritarias” (hereinafter referred to as “the Program”) to establish integrated systems for the collection and disposal of waste in 31 local cities. This project, named Solid Waste Management Project (hereinafter referred to as “the Project”) is a part of the Program and aims to construct sanitary landfills and procure equipment for strengthening the waste collection and transportation capabilities of 23 cities out of the 31 cities.

(3) Japan and JICA’s Policy and Operations in the Waste Sector

In the project development plan for Peru, Japan has designated the “treatment of global problems” as a priority sector for aid. Based on this policy, JICA has made efforts to provide support to Peru, focusing on environmental conservation as a priority development issue. Therefore, the implementation of this Project is consistent with the policy of Japan and JICA.

(4) Other Donors’ Activity

In August 2012, the Inter-American Development Bank (IDB) signed the Loan Agreement on the provision of loans to eight cities among the 31 cities covered by the General Program, excluding the 23 cities covered by this Project. From 2007 to 2011, the US Agency for International Development (USAID) provided technical assistance for the strengthening of the capability to formulate waste disposal projects for each local government. The State Secretariat for Economic Affairs (SECO) is considering providing grant aid support for the project to construct a sanitary landfill in Chiclayo.

(5) Necessity of the Project

As described above, in the local cities in Peru, the municipal solid waste has been discharged without sufficient environmental consideration, which indicates the urgent necessity to establish integrated systems for the collection and disposal of waste with consideration for the environment. Since the Project forms the crucial part of the Program to grapple the situation, which means that it is consistent with Peru's development policy, and is also consistent with Japan and JICA's development policy to Peru, it is highly relevant and appropriate for JICA to support the Project.

3. Project Description

(1) Project Objective

To establish efficient and sustainable solid waste management in the 23 prioritized cities by constructing solid waste infrastructure as well as developing and/or rehabilitating solid waste collection and recycling/recovering systems thereby contributing to improve environmental quality and living standard of the people in the target region in Peru.

(2) Project Site/Target Area

23 local cities (Abancay, Aymaraes, Azangaro, Chachapoyas, Chincha, Ferreñafe, Huacho, Huánuco, Ilave, Juliaca, Moyobamba, Nuevo Chimbote, Paita, Piura, Puerto Maldonado, Puno, Santiago, Sechura, Sullana, Talara, Tarapoto, Tarma, Tumbes)

(3) Project Components

- 1) Procurement of materials and machinery (heavy machinery for operation of facilities, vehicles for waste collection and transportation, equipment (cleaning tools, collection boxes, etc.))
- 2) Construction and maintenance of facilities (final disposal facilities (including access roads), recycling facilities, administrative buildings, etc.) (international competitive bidding)
- 3) Consulting services (detailed design, construction supervision, raising awareness among the residents, etc.)

(4) Estimated Project Cost (Loan Amount)

6,305 million yen (loan amount: 4,396 million yen)

(5) Schedule (period of cooperation)

Planned for the period between July 2012 and July 2016 (49 months in total). The Project will be completed when the construction of all the facilities and the procurement of all the machinery are completed.

(6) Project Implementation Structure

- 1) Borrower: The Republic of Peru
- 2) Executing Agency: Ministerio del Ambiente (MINAM)
- 3) Operation and Maintenance System: Local governments of the 23 target cities

(7) Environmental and Social Considerations/Poverty Reduction/Social Development

1) Environmental and Social Considerations

(1) Category: B

(2) Reason for Categorization

The project is not considered to be a large-scale waste sector project, is not located in a sensitive area, and has none of the sensitive characteristics under the JBIC guidelines for confirmation of environmental and social considerations (April 2002), it is not likely to have a significant adverse impact on the environment.

(3) Environmental Permit

For each of the 23 subprojects that constitute this Project, it is necessary to prepare an Environmental Impact Assessment (EIA) report and to be approved by the Ministerio de Salud (Ministry of Health).

Regarding the 6 subprojects whose size is relatively large, EIA Report is necessary to be approved by the Ministerio de Salud before the preparation of the detailed design. Regarding the rest 17 subprojects, it needs to be approved by the Ministerio de Salud before the commencement of the construction.

(4) Anti-Pollution Measures

Since foul odors are prevented by an earth cover and leachate is collected and treated appropriately at the final disposal facilities, no negative impact is foreseen.

(5) Natural Environment

Since the target areas are not located in or around any sensitive areas, such as nature conservation areas, any adverse impacts on the natural environment are assumed to be minimal.

(6) Social Environment

When it is necessary to acquire a site, the site will be acquired according to the procedures in Peru. It is assumed there is no requirement for the relocation of residents.

(7) Other/Monitoring

MINAM and the local governments concerned will monitor air quality, water quality (only if there are any rivers nearby), noise, etc. in accordance with the EIA report.

2) Promotion of Poverty Reduction

None in particular

3) Promotion of Social Development (gender perspective, measures for infectious diseases including HIV/AIDS, participatory development, consideration for persons with disabilities, etc.)

None in particular

(8) Collaboration with Other Donors

As described above, the IDB is planning to grant a loan for a part of the Program. Close collaboration with IDB is expected concerning the supervision of the Program.

(9) Other Important Issues

JICA has provided training course about waste management to the officials of MINAM and the target cities.

Also, this Project aims to establish and improve waste collection and final disposal systems and it contributes to a reduction in greenhouse gas (GHG) emissions. The Project's effect of reducing climate change is about 200,000 tons per year in terms of CO₂ emissions.

4. Targeted Outcomes

(1) Quantitative Effects

1) Performance Indicators (Operation and Effect Indicator)

Indicator	Baseline (Actual value in 2009)	Target (2018) [2 years after project completion]
Amount of solid waste collected in the cities where the equipment for transportation is procured (tons/day) (See Note)	1,020	1,500
Amount of solid waste treated in sanitary landfill in the target cities (tons/day)	0	1,990
Average BOD of leachate from final disposal sites in the target cities (mg/l)	1,000-5,000	<100
Average collection rate of solid waste in the target cities where the equipment for transportation is procured (%)	75	100

Note: Collection and transportation vehicles will be procured only in the main district of each target city of the Project. Although the vehicles will not be procured in the other districts of the target cities, the waste generated in these districts will be transported to and treated in the sanitary landfills to be constructed through the Project.

2) Internal Rates of Return

Based on the conditions indicated below, the economic internal rate of return (EIRR) of this Project will be 9.4%. Although charges for waste collection will be collected, because the characteristic of the Project is highly public, the recovery of the investment costs by the collection of charges is not assumed. Therefore, the financial internal rate of return (FIRR) has not been calculated.

EIRR

Cost: Project cost (excluding taxes), operating, maintenance and reinvestment costs

Benefits: Reduction in GHG emissions, improvement of the sanitary environment (amount that residents can pay for waste management)

Project life: 10 years

(2) Qualitative Effects

Improvement in the living environment of the residents in the target areas, environmental conservation, strengthening of the administrative capabilities of the local governments, and combating climate change

5. External Factors and Risk Control

Any deterioration in the political or economic situation and any natural disasters in Peru or in the vicinity of the target areas

6. Results of Evaluations and Lessons Learned from Past Projects

(1) Results of Evaluations of Similar Past Projects

Through the results of the ex-post monitoring reports of the waste sector projects such as that of Jakarta Solid Waste Management System Improvement Project in Indonesia, it has turned out to be important that the waste to be disposed need to be collected separately to prevent the settlement of waste pickers in the landfills and that the public awareness is important to achieve the separate collection of waste.

(2) Lessons for the Project

Support for the consideration of concrete measures to raise awareness among the residents in the target cities will be provided through the consulting services of the Project

7. Plan for Future Evaluation

(1) Indicators to Be Used

- 1) Amount of solid waste collected in the cities where the equipment for transportation is procured (tons/day)
- 2) Amount of solid waste treated in sanitary landfill in the target cities (tons/day)
- 3) Average BOD of leachate from final disposal sites in the target cities (mg/l)
- 4) Average collection rate of solid waste in the target cities where the equipment for transportation is procured (%)

(2) Timing

Two years after project completion