

## Summary

<b>I. Outline of the Project</b>	
<b>Country:</b> The Republic of El Salvador	<b>Project title:</b> The Project for Integrated Solid Waste Management for Municipalities in the Republic of El Salvador
<b>Issue / Sector:</b> Solid Waste Management	<b>Cooperation scheme:</b> Technical Cooperation Project
<b>Division in charge:</b> Environmental Management Division 2, Environment Management Group, Global Environment Department, JICA	<b>Total cost:</b> about 555 million yen
<b>Period of Cooperation</b>	November 2005 to March 2009
	<b>Partner Country's Implementing Organization:</b> Ministry of Environment and Natural Resources, Ministry of Public Health and Social Assistance, Salvadorian Institute of Municipal Development
	<b>Supporting Organization in Japan:</b> Yachiyo Engineering Co., Ltd.
<b>Related Cooperation:</b> JICA Third Country Training Course, "Regional Course on Appropriate Hazardous Solid Waste Management", held in Mexico	
<p><b>1. Background of the Project</b></p> <p>Recently, the waste amount is rapidly increasing in the Republic of El Salvador (hereinafter referred to as El Salvador) due mainly to concentration of the population in urban areas, increased consumption and changes in economic structure. Inadequate solid waste management creates problems associated with solid wastes and exerts adverse impacts not only on public health but also on the region's ecology through contamination of soil and groundwater.</p> <p>To improve this status, the government of El Salvador requested the government of Japan for a technical cooperation project in December 2003, with aims of establishing Integrated Solid Waste Management (ISWM) system for pilot municipalities, and of increasing capabilities of the central government agencies, namely Ministry of Environment and Natural Resources (MARN), Ministry of Public Health and Social Assistance (MSPAS) and Salvadorian Institute of Municipal Development (ISDEM) so that experiences gained by these agencies would be widely shared among local governments in El Salvador and the Central American countries. In response to this request from El Salvador, the government of Japan started a technical cooperation project named The Project for Integrated Solid Waste Management for Municipalities in the Republic of El Salvador (hereinafter referred to as the Project) from November 2005 for the period of three years and five months.</p>	

To implement the Project in El Salvador, JICA dispatched the Team consisting of 7 Japanese Experts: (i) Chief Advisor/ Solid Waste Management, (ii) Sub-Chief Advisor/ Financial, Institutional and organizational aspects/ Capacity Development, (iii) Integrated Solid Waste Management, (iv) Final disposal, (v) Waste Collection and transportation/ Intermediate treatment, (vi) Environmental education, and (vii) Environmental and Social Considerations/ Financial aspects. In the northern area of La Union Department, Inter-municipal Association consisting of 9 municipalities named “ASINORLU” was formulated. The Project aimed to establish solid waste management system in ASINORLU, strengthens the capacity of relevant people and organizations such as MARN, MSPAS and ISDEM through the process of system establishment, and disseminate the result to other municipalities not only in El Salvador but in other Latin American countries.

## **2. Project Overview**

### **(1) Overall Goal:**

Municipalities implement appropriate Integrated Solid Waste Management to improve environmental sanitary conditions in the Republic of El Salvador.

### **(2) Project Purposes:**

The central government, MARN, MSPAS and ISDEM strengthens its capacity to apply ISWM to municipalities in the Republic of El Salvador, and decides to implement the strategic promotion plan of ISWM within its authority.

### **(3) Outputs:**

1. The central government in cooperation with ASINORLU (Inter-municipal Association of Northern Area of La Union Department) develops sustainable models in the nine municipalities of ASINORLU for ISWM.
2. The central government develops ISWM guidelines, which are feasible and adapted to the present conditions of municipalities in the Republic of El Salvador.
3. The counterpart personnel in the central government acquire the knowledge and experiences on ISWM.
4. The counterpart personnel in the central government acquire the capabilities to conduct the trainings and to raise awareness on ISWM of municipal administrations, other actors of municipalities, governmental organizations and NGOs in the Republic of El Salvador.
5. The central government develops a draft strategic promotion plan of ISWM for approval to municipalities in the Republic of El Salvador.

### **(4) Inputs (as of this final evaluation)**

#### **Japanese side:**

Short term expert:	29 persons ( 72.8 M/M )
No. of trainees received in Japan:	9 persons

Provision of equipment:	Items such as heavy machineries and their spare parts (Approximately JPY 36 million)
Local cost:	Approximately JPY 116 million
<b>Salvadorian side:</b>	
Counterpart:	7 persons at ISDEM-Project Execution Unit (PEU) and others who are Steering Committee (ST/C) and Technical Committee (T/C) members
Provision of land and facility:	For the project office space
<b>II. Evaluation Team</b>	
<b>Members of Evaluation Team</b>	<p><b>Japanese Side</b></p> <p>(1) Mr. AMANO Shiro (Leader) Senior Advisor, JICA Research Institute</p> <p>(2) Ms. YAGO Naoko (Cooperation Planning) Assistant Director, Global Environment Department, JICA</p> <p>(3) Ms. OISHI Misa (Evaluation Analysis) Consultant, Overseas Operations Department, Kokusai Kogyo Co., Ltd.</p> <p><b>Salvadorian Side</b></p> <p>(1) Mr. Francisco Perdomo Lino (Leader) Director General, Department of Environment Management, MARN</p> <p>(2) Ms. Rigoberto Trinidad (Member) Chief of Local Government Development Department, ISDEM</p> <p>(3) Ms. Rosa Elena Perez de Villeda (Member) Regional Coordinator, ISDEM</p>
<b>Period of Evaluation:</b> Sept 29, 2008~Oct 16, 2008	<b>Type of Evaluation:</b> Terminal Evaluation
<b>III. Results of Evaluation</b>	
<b>1. Achievements</b>	
<b>(1) Project Purpose</b>	
<b>The Project Purpose is expected to be accomplished before the completion of the Project.</b>	
<b>[Indicator 1]</b>	
<p>The Strategic Promotion Plan of ISWM (hereinafter referred to as “the Strategic Plan”) consists of guiding principles to disseminate ISWM in El Salvador and financial and technical measures that the central government should take. The Strategic Plan will soon be granted approval by Consultative Council<sup>4</sup> and submitted to Joint Coordinating Committee (JCC) members. MARN and other relevant</p>	

<sup>4</sup>The Consultative Council established in December 2007, as a consultative body to MARN, is chaired by the Executive Director, MARN, Mr. Oscar Díaz. By taking it into consideration that budget allocations by the

institutions are now actively discussing how to incorporate the Strategic Plan into the Salvadorian policies and regulations, especially into the Solid Waste Policy.

**[Indicator 2]**

Formulation of the Strategic Plan has progressed smoothly as noted above and the Strategic Plan will be highly granted approval by Consultative Council and JCC members.

**[Indicator 3]**

The interest in ISWM is being increased. Accordingly the interest in ASINORLU as a successful case of ISWM is aroused especially among the participants in the First Central American Diffusion Seminar of PROMADES, a numbers of associations and municipalities indeed visited ASINORLU to learn the experience of the pilot project, 4 municipalities and 7 Inter-municipal Associations. This suggests the increasing concerns over the sanitary landfilling and the promotion of 3R<sup>5</sup>s among municipalities and municipal associations.

**(2) Outputs**

Output 1: A series of activities that contributes to develop an ISWM model for ASINORLU has been carried out as planned. In fact, at the Santa Rosa de Lima (SRL) landfill site improved and expanded by the Project, the team headed by the landfill officer in ASINORLU not only well operates and maintains the provided equipment and machinery but also properly operates the sanitary landfill through daily soil coverage, re-circulation of leachate, etc. In addition, the Project widely implemented 3R activities targeting schools and their surrounding communities, and succeeded in raising environmental awareness of these students and residents. As just seen, an ISWM model for ASINORLU is indeed developed and therefore the achievement level of Output 1 can be concluded as satisfactory.

Output 2: Output 2 is being achieved, since the ISWM Guidelines which assist municipalities and inter-municipal associations in formulating the ISWM plan are just being finalized. The ISWM Guidelines have been formulated through three steps, i.e. the draft by October 2006, the revised guidelines by February 2008 and the final-version guidelines by November 2008. After the mid-term evaluation, the ISWM Guidelines have been reviewed and revised jointly by counterpart personnel in charge and the Japanese experts. Currently the ISWM Guidelines

---

central government and local governments are vital for ISWM, the Consultative Council is participated by members from Ministry of Finance and Municipalities Corporation of El Salvador (COMURES).

<sup>5</sup> Reduce, Reuse, Recycle: Efforts in order of priority that should be taken to construct a recycling-oriented society and reduce the amount of solid waste. (p207, Terms and Abbreviation, Supporting Capacity Development in Solid Waste Management in Developing Countries -Towards Improving Solid Waste Management Capacity of Entire Societies- , JICA, July 2005)

<sup>6</sup> PROMADES is a Spanish abbreviation of the Project name, which stands for Proyecto Manejo Integral de Desechos Solidos para Municipios de la Republica de El Salvador

are being finalized with the target deadline of November 2008.

Output 3: The achievement level of Output 3 is also satisfactory and indeed the counterpart personnel have acquired the knowledge and experiences on ISWM through the Project as seen below.

As for ISDEM-PEU members

In ASINORLU, a number of important activities, i.e. (i) collection and transportation: recommendations on collection areas and routes based on time and motion survey in SRL, (ii) final disposal: supports for operation and maintenance of the SRL landfill site, the second-phase construction of the SRL landfill site, (iii) 3Rs activities: monitoring survey on the ongoing school programs and expansion to other schools, (iv) social considerations: implementation of a waste pickers program and (v) financial activities: planning of a ASINORLU's financial plan up to 2015, have been carried out even after the mid-term evaluation. The smooth implementation of the pilot project in ASINORLU indicates that capacities of counterpart personnel at ISDEM-PEU have been enhanced through all these activities.

As for counterpart personnel in San Salvador

As for counterpart personnel at the central government level, their knowledge on ISWM and capacities for disseminating such knowledge is being enhanced through formulation of the ISWM Guidelines and the Strategic Plan.

Output 4: The First Central American Diffusion Seminar of PROMADES<sup>6</sup>, inviting five neighboring countries, i.e. Costa Rica, Guatemala, Honduras, Nicaragua and Panama, was successfully carried out, and eight counterpart personnel delivered lectures at the seminar. This suggests that counterpart personnel be being equipped with capabilities to conduct training and to raise awareness on ISWM. From now, the further development of their capacities to conduct training is expected through implementing the Second Central American Diffusion Seminar of PROMADES in November 2008 and training courses for municipalities scheduled in the beginning of 2009. As just seen, it can be safely said that Output 4 will be fully produced before the completion of the Project.

Output 5: As previously seen, the contents of the Strategic Plan have been discussed at the Consultative Council, which was formally established as a consultative body to MARN. It will soon be granted approval by the Consultative Council and submitted to JCC members, i.e. MARN, ISDEM and MSPAS. Thus the current achievement level of Output 5 is also satisfactory, and

this output will be fully produced before the completion of the Project.

## **2. Summary of Evaluation Results**

### **(1) Relevance**

The Team concluded that the Project remains highly relevant in terms of Salvadorian policy in the related field and the target group's needs in the Project.

For example, according to *the Government Plan for a Secure Country 2005-2009*, the Government of El Salvador considers environmental conservation including the proper solid waste management as an important issue. In concrete terms, improvement of waste management and promotion of recycling activities are presented as priorities. In addition, *National Strategy for the Environment* issued by MARN in November 2001 categorizes waste management as an important theme along with watershed conservation, water and air quality conservation and biodiversity conservation. Also, the Free Trade Treaty of Dominican Republic–Central America–United States which was entered into effect in 2006 in El Salvador, demands the countries to assure obedience of environmental legislation of each country and prohibits the countries to pursue advantage in trade competition by ignoring the obedience of environmental legislation. Appropriate SWM in line with the Special Regulation on Integrated Solid Waste Management (2000), the Executive Decree 42 is required to take benefits of the free trade and to develop the Salvadorian economy.

As a response to Legislative Decree 237, from September 10, 2007, all municipalities must dispose of their wastes in authorized sanitary landfills and must have closed down all open-dumping sites. Regarding the pilot project, from the interview to the mayors of the participating municipalities of ASINORLU, it was confirmed that these municipalities highly appreciate the Project, since it provides them with a great opportunity to learn ISWM. This illustrates that the pilot project is providing support in right time and place. Also, the Project is in line with the needs of MARN which supervises and guides municipalities regarding waste management, MSPAS which keeps sanitary vigilance and minimizes health risks that may arise from mal-management of waste and ISDEM which supports municipalities in strengthening their administrative and technical capacities for providing public services; thus the relevance of the Project can be concluded as high.

### **(2) Effectiveness**

The Project adopts the comprehensive approach containing the following three steps to achieve the Project Purpose.

- (1) Counterpart personnel in the central government gain knowledge on ISWM through implementation of the ASINORLU pilot project,

- (2) Counterpart personnel improve their capacity in the course of the preparation of the ISWM Guidelines and the Strategic Plan, and
- (3) MARN in cooperation with other relevant institutions disseminates ISWM by using the ISWM Guidelines and the Strategic Plan to the whole country.

This comprehensive approach is indeed to produce five outputs one by one; thus the number of outputs and their contents can be considered as sufficient and appropriate. Currently, the major outputs of the Project, i.e the Strategic Plan and the ISWM Guidelines are under final review for the approval by JCC. The Project Purpose is expected to be accomplished before the completion of the Project; thus the Project will remain highly effective.

### **(3) Efficiency**

A number of activities in PO have been carried out and the outputs are being produced as planned. In addition, the interview surveys reveal that overall satisfaction towards inputs such as human resources (Japanese experts), trainings and provided equipment is high, and so is the level of utilization, as seen below.

As for adequacy of timing of inputs, there is no major drawback except two Inhibiting factors as below:

- (i) a three-month delay of the phase-two engineering work and,
- (ii) before the employment of a ASINORLU for the citizen's participation, a ISDEM-PEU member who is in charge of the citizen's participation and 3Rs programs had to carry out related activities by herself.

Therefore it can be concluded that the efficiency is secured.

### **(4) Impact**

The importance of the Strategic Plan and the ISWM Guidelines is well recognized by the central government agency, and both documents will be granted approval by JCC soon. Now MARN and other relevant institutions are discussing how to incorporate these major outputs of the Project into the Salvadorian policies and regulations, especially into the Solid Waste Policy; so that the prospect to achieve the overall goal and to produce positive impacts is becoming high. In addition, the interest in ASINORLU as a successful case of ISWM is aroused especially among the participants in the First Central American Diffusion Seminar of PROMADES. Indeed, a municipal association in Guatemala and another municipal association in Honduras visited ASINORLU in June 2008 and September. 2008 respectively to learn the experience of the pilot project. The other association from Nicaragua plans to visit ASINORLU in November. 2008, too. It can be said that another positive impact is being realized beyond the expected target groups.

## **(5) Sustainability**

As detailed below, the sustainability is examined as (i) the sustainability of the pilot project and (ii) that of the Project as a whole.

### Sustainability of the pilot project

#### **[1: Policies and systems]**

ASINORLU, the implementer of the pilot project, is an organization formed formally in accordance with the Municipal Code. In response to a suggestion at the mayors' meetings to set up a solid waste management unit in ASINORLU, ASINORLU indeed was strengthened by hiring all the necessary staff to carry out the pilot project successfully. In addition, it was confirmed in the M/M signed on June 6, 2006 that ISDEM-PEU becomes a permanent unit and will continue its activities after the completion of the Project.

#### **[2: Organizational and financial aspects]**

From the view point of financial aspects, each of the nine municipalities pay its revised monthly due per tonnage for operation and maintenance of the SRL landfill site. Although some municipalities delay in payment, it can be said that the minimal financial measure is now taken. However, by taking it into consideration that the remaining life period of the SRL landfill is about four years and the equipment used for landfill operation should be renewed after seven to ten years, it becomes rather difficult to secure the sustainability if there is no further increment of monthly dues and/or financial supports from the central government and other sources. It is worth mentioning here that, in response to the above mentioned situation, ASINORLU endeavors to draw additional supports by contacting donor organizations who participated in the First Central American Diffusion Seminar of PROMADES. This effort suggests that ASINORLU seriously considers securing the financial sustainability of the pilot project, too.

#### **[3: Technology]**

Also, ASINORLU and ISDEM-PEU members have been acquiring knowledge and skills on ISWM including operation and maintenance of the SRL landfill site through implementing the pilot project. A concern on operation and maintenance of the SRL landfill site is raised by ISDEM-PEU since "staged" technical advices will become necessary depending on the stages of land filling. If this concern is well taken, the sustainability is likely to be secured from the view points of technical aspects.

### Sustainability of the Project

During the latter half of the project period, the Project made a substantial progress in formulation of the ISWM Guidelines and the Strategic Plan, and the capacity of counterpart personnel at the central level has been enhanced accordingly. Thus prospects on the sustainability of the Project as a whole is somewhat enhanced. In addition, the ISWM Guidelines and the Strategic Plan themselves incorporate



organizational/institutional, technical and financial measures to ensure the sustainability.

#### **[1: Policies and systems]**

After the Project, by appreciating importance of the ISWM Guidelines and the Strategic Plan, if MARN with other relevant agencies try and succeed in incorporating these documents into policies and regulations of the Salvadorian government and indeed endeavor to improve the solid waste situation by making use of these documents, the prospects of the sustainability will be enhanced from the point of policies and systems.

#### **[2: Organizational and financial aspects]**

The prospects of the sustainability will be enhanced from the point of organizational and financial aspects if central government shows active involvement to implement the Strategic Plan including organizational and financial aspects as mentioned in above “1: Policies and systems”.

#### **[3: Technology]**

The relevant central governments learned know-how through the Pilot Project in ASINORLU and incorporated it into the Strategic Plan. With this case as a start, if both central and municipal governments sustains continuous collaboration and consider the necessary measures considering “staged” technical advices depending on the stages of land filling, the prospects of the sustainability will be enhanced from the point of technology.

### **3. Factors that promoted realization of effects**

- Currently Decree 237, being effective in September 2007, forces municipalities to close down open dumping. At this occasion, awareness on sanitary landfill and solid waste management is being raised in the nation wide.
- All ISDEM-PEU members who implement the pilot project are full time.
- Especially in the latter half of the project period, Technical Committee members’ commitment to and involvement in the Project has become firm.
- Prior to the Project, two counterpart personnel had been sent to the training courses in Japan; thus they could be equipped with comprehensive knowledge on ISWM.

### **4. Factors that impeded realization of effects**

- Consensus on how to mainstream the major outputs of the Project, i.e. the ISWM Guidelines and the Strategic Plan, into national policies and regulations has not reached yet among the stakeholders.
- Before the employment of a ASINORLU for the citizen’s participation, a ISDEM-PEU member who is in charge of the citizen’s participation and 3Rs programs had to carry out related activities by herself. It caused a little delay to start capacity development of ASINORLU staff in the field of citizen’s participation and 3Rs programs, but not with serious effect.

## **5. Conclusion**

The major achievements of the Project up until the time of Terminal Evaluation include, but are not limited to, the following:

- The Project has substantially formulated the draft Strategic Promotion Plan of ISWM as a guiding principle of El Salvador on solid waste management. The Plan will be formally approved by the respective authorities composed of the JCC.
- The second phase of the landfill construction at Santa Rosa de Lima was completed with a delay of three months. ASINORLU has been keeping relatively proper operation at the new landfill cells with the well-maintained landfill equipment provided by JICA. In addition, the financial status of the organization has been in healthy condition since all the municipalities of ASINORLU have been fulfilling their duty to pay monthly dues as a tipping fee.
- Through the Project activities and trainings, capacity of Salvadorian counterparts, MARN, MSPAS and ISDEM, has been increased to a great extent. One of such examples includes dissemination of the knowledge and experience obtained from the Project at the First Central American Diffusion Seminar of PROMADES and the in-country seminars for municipalities in El Salvador.

It is observed that the Salvadorian counterparts have made remarkable efforts to provide inputs to the Project since the beginning of the Project. One of such inputs is illustrated by the numerous number of technical committee meetings. It is also worth noting that most of the recommendations made at the time of the mid-term evaluation have been carried out under the increased ownership of the Salvadorian counterparts.

Considering the above circumstances, the Team is of the opinion that the Project has been progressing well and the Project Purpose will be achieved with continued efforts of the people concerned. In conclusion, the Team therefore suggests that the Project be terminated as planned.

## **6. Recommendations**

1. The Strategic Plan and the ISWM Guidelines is planned to be approved within the project period by the Joint Coordinating Committee (JCC). Toward the approval, roles of chairperson / members of the Consultative Council will become essentially important. Their initiative and active involvement are keenly required.
2. With the strong initiative of MARN, the outcomes of the Project such as the Strategic Plan and the

ISWM Guidelines should be incorporated into the national policy and/or plans on solid waste management. All the counterpart agencies, MARN, MSPAS and ISDEM, are required to strengthen their organizations to fully support implementation of the national policy and plans.

3. A mechanism to ensure dissemination of ISWM should be established in line with the Strategic Plan. Such a mechanism could be reinforcement of ISDEM-PEU and establishment of a specialized unit on SWM within MARN, a responsible organization to implement the Solid Waste Policy.
4. The equipment provided by JICA needs to be continuously deployed at the SRL landfill site after termination of the Project, until such time that ASINORLU is able to secure substitute landfill equipment, so that ASINORLU will be able to sustain its proper operation. In the meantime, it is also recommended that ASINORLU consider increasing the tipping fees to accumulate a fund for maintenance and the future renewal of landfill equipment.
5. It is desirable to provide further technical cooperation to secure sustainability of the operation of ASINORLU since ASINORLU is planning to obtain used collection vehicles from Japan with its own effort to move forward the implementation of associated collection activities as recommended by the pilot project. Assistance also needs to be extended to landfill operation since technical advices will become necessary at various stages of landfilling at the SRL landfill site in the future in order to respond to needs to secure proper operation as a sanitary landfill.
6. Cooperation with volunteers and NGOs from Japan, third countries or within El Salvador should be considered to reinforce activities at the community level on public education and awareness since it requires sustained efforts to bring changes on the people's attitude toward the better management of waste.
7. In order to further increase the capacity of individuals and organizations, Salvadorian counterpart agencies should make the most of opportunities for trainings and workshops provided by JICA to be held in Japan, third-countries and/or in-country.

## **7. Lessons Learned**

### **1. Appropriate technology can sustain the operation of landfill**

Most failures to sustain sanitary landfill operation fall into two factors, financial and technological ones. Improving operation from open dumping to sanitary landfilling requires much higher budget and technology than the current operation. It is therefore imperative to utilize appropriate technology

in terms of cost, sophistication and suitability to local conditions in order to sustain proper operation with the strong ownership of the counterparts.

**2. Rehabilitation of open dumps makes changes**

Rehabilitation of an existing open dumping site can provide benefits to all the stakeholders, including the municipal government, the land owner, nearby residents, landfill workers and visitors. The aesthetic impact brought by the rehabilitation of the open dump at SRL has positively and significantly changed the attitude of people including communities, political leaders, and landfill workers. People are encouraged as well as convinced to believe that solid waste can be managed by their own efforts when they see the physical and visual changes of the landfill. It is imperative to improve the existing situations of open dumping before the construction of a new landfill site.

**3. Capacity does not increase overnight**

Combination of formal training/workshops and informal on-the-job training on a day-to-day basis is desirable to develop and increase the capacity of counterparts. Dispatch of experts, therefore, needs to be carefully planned to make the most of their stays. It may, however, sometimes difficult to fully transfer technical expertise within a limited project period where such expertise has to be demonstrated at different stages of operation.

**4. Creation of consensus is a key to success**

For a project that works with an infant organization, e.g. an association of municipalities, it is imperative to give careful consideration to strengthening of the organization and creation of consensus. In case of ASINORLU, solidarity among the participating municipalities, especially the top management of each municipality, is a key to success.