

Socialist Republic of Viet Nam

Ex-Post Evaluation of Japanese Technical Cooperation Project
“The Project for Implementation Support for 3R Initiative in Hanoi City to
Contribute to the Development of a Sound Material-Cycle Society”

External Evaluator: Miho Sakuma, International Development Center of Japan Inc.

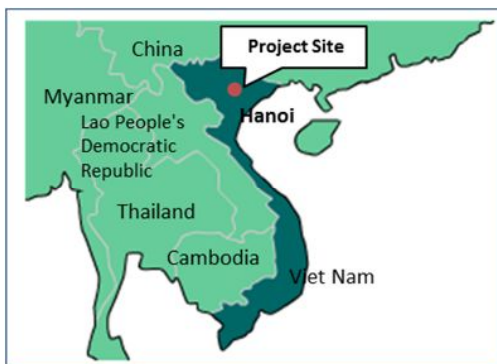
0. Summary

The Project aimed at creating a material cycle society in Hanoi City by means of establishing a 3R (reduce, reuse and recycle) system and making waste-related municipal policies incorporate the 3R through the implementation of a source separation and composting program, environmental education and publicity activities. As the Project was highly relevant to the development plan and development needs of Vietnam as well as Japan’s ODA policy, its relevance is high. The Project has generally achieved its objective. The source separation of organic waste which was conducted on full-scale basis under the pilot project for the first time in Vietnam has achieved better results than planned with the understanding and cooperation of the residents of the four model wards in central Hanoi and has become an established practice in the post-project period. With the wide publicity of such achievement, Hanoi City is now recognized as an advanced 3R city at home and abroad. In terms of the impacts on policies, the source separation of organic waste and composting are clearly stated as effective means of practicing the 3R in the National Strategy for Integrated Solid Waste Management up to 2025 and Vision 2050 (announced in 2009) while there is a good prospect of the enforcement of the Master Plan for Solid Waste Management in Hanoi City which is essential for the implementation of the 3R. The Project has contributed to the development of a system to promote the 3R as such new organizations as the 3R Council, 3R Stars, 3R Volunteer Club and 3R Supporters were established under the Project. There are, however, some pending issues, including (i) the non-expansion of the source separation of organic waste to areas other than the model wards due to a lack of funding and shortage of manpower and (ii) the discontinuation of the activities of the 3R Council and 3R Stars. Therefore, the effectiveness and impact of the Project is fair. Although the cooperation period was as planned, various surveys and publicity activities which were not originally planned were added, resulting in a significantly higher project cost than planned. Therefore, the efficiency of the Project is fair. As promotion of the 3R is clearly stated in the environmental policy and solid waste management strategy of Vietnam, its sustainability from the policy aspect is high and there are no institutional and technical problems in regard to the continuation of activities in the model wards. Meanwhile, there are some pending issues in relation to the implementation system and finance, therefore,

sustainability of the project effects is fair. Once the said Master Plan has been officially approved with a concrete prospect of budgetary appropriation for and investment in the activities proposed in the Master Plan, there is a realistic expectation of an improvement of the waste treatment facilities and strengthening of the implementation system together with increased funding, all of which are necessary to achieve an expansion of the source separation areas.

In light of the above, this project is evaluated to be partially satisfactory.

1. Project Description



Project Location



Containers for source separation at an ordinary household in the model area (at the time of ex-post evaluation)

1.1 Background

In recent years, Vietnam has been experiencing an increasing level of environmental pollution associated with rapid socioeconomic development and urbanization. In 2004 prior to the Project, Hanoi City¹ with a population of three million in an area of 921 km² generated urban waste at a rate of 1.0 kg/person/day. The waste collection rate was approximately 70% and the recycling/reuse rate was approximately 20%. Uncollected solid waste on the roadsides and illegally dumped waste in lakes and marshes were causing poor drainage and groundwater contamination. To deal with these environmental problems, Hanoi City came up with an environmental strategy of recycling 30% of household waste by 2020 and launched a movement to recycle solid waste. However, activities to recover valuable materials were only conducted by informal waste collectors and remained the economic activities of individual persons.

¹ On 1st August, 2008, Hanoi city merged with neighboring towns and villages. As a result, its geographical area increased by about 3.6 times to 3,344 km² with a population size of 6.23 million (2008) which was more than double the size in 2004.

Meanwhile, the Government of Vietnam emphasized the strengthening of its environmental protection policy in its national strategy to achieve the industrialization and modernization of the country by 2020 and identified the adoption of the philosophy of “the 3R Initiative” as an important development challenge in the said policy. Under these circumstances, the Government of Vietnam made a request to the Government of Japan, which internationally advocates the 3R Initiative and possesses advanced technologies with actual achievements in the field of solid waste management, for the provision of technical cooperation for the sustainable development of Hanoi City in harmony with the environment.

1.2 Project Outline

Overall Goal		(Long-term Overall Goal): Sound Material-Cycle Society will be established in Hanoi City. (Middle-term Overall Goal): Harmonized 3R system based on source separation programmes for organic waste is implemented.
Project Objective		The harmonized 3R system based on source separation programmes for organic waste is ready to familiarize to the whole area of Hanoi city.
Outputs	Output 1	Municipal solid waste (MSW) collection in pilot project area(s) is improved through implementation of pilot project with source separation of organic waste and composting.
	Output 2	Awareness of residents in pilot project area(s) and Hanoi citizens is improved by implementing environmental educational and PR activities on 3R under the spirit of mottainai (“no waste”).
	Output 3	Source separation programmes for organic waste, environmental education programmes and the concept of 3R are disseminated.
	Output 4	A strategic paper and action plan for the next steps to improve MSW collection system with source separation programmers for organic waste are developed.
Inputs		Japanese Side: 1. Experts 13 in total (2 for Long-Term, 11 for Short-Term) 2. Trainees 23 in total (Training in Japan: Twice, Third Country Training (Thailand): Once) 3. Equipment: Approximately: 15 million yen

	Vietnamese Side: 1. 21 Counterparts 2. Local Cost 1,429 million Vietnam Don 3. Office space, collection vehicles for source separation and facilities for composting
Total Cost	493 million yen
Period of Cooperation	November, 2006 – November, 2009
Implementing Agency	Hanoi Urban Environment Limited Company (URENCO)
Cooperation Agency in Japan	Ministry of the Environment
Related Projects	<ul style="list-style-type: none"> • Study for Planning of Environmental Conservation Master Plan in Hanoi City (1998-2000) • The Comprehensive Urban Development Program in Hanoi Capital City (2004-2006) • The Project for Supply of Equipment for Waste Management in Hanoi City (2002-2003)

Under the Project, citizens, private enterprises and administrative bodies in Hanoi worked together with the aim at introducing 3R based on source separation throughout the city. At the time of the ex-ante evaluation for the Project, however, even though the source separation of organic waste was practiced in part of central Hanoi, activities were not making smooth progress. The problem was that the concept of 3R was not widely known among the citizens of Hanoi. It was, therefore, decided to adopt a multi-stage approach. The first stage was to make the citizens of Hanoi understand the concept of 3R through environmental education and PR activities. This would be followed by the establishment of a 3R system in four model wards in central Hanoi through the practice of the source separation of organic waste and a composting pilot project. The third stage would be the development of a city-wide material cycle society over the medium to long-term by means of making recycling-related policies reflect/incorporate the positive outcomes of the pilot project. Throughout this process, the Hanoi Urban Environmental Limited Company (URENCO) would build up its experience and know-how while the citizens of Hanoi would be expected to raise the level of their environmental awareness.

The URENCO, the counterpart for the Project, is a public corporation under the direct jurisdiction of the Hanoi People's Committee (HPC) and provides the actual waste

collection and treatment service based on a contract with the Department of Construction (DOC) of the HPC. The service area of the URENCO's solid waste collection operation covers four central Hanoi districts (Hoan Kiem, Hai Ba Trung, Dong Da and Ba Dinh) with a service population of approximately one million people. In addition, the URENCO is entrusted to operate and manage the Nam Son Landfill Site, the largest solid waste disposal facility in Hanoi City, and its own Cau Dien Compost Plant² by the HPC.³

Under the Project, the URENCO played a principal role as it was involved in all activities ranging from the implementation of source collection and composting to environmental education, awareness raising for source separation and collaboration as well as coordination with citizens, private enterprises and administrative bodies in the four model wards. Many 3R-related departments, etc. of the HPC also participated in and/or cooperated with the activities under the Project. These were the DOC which controls urban infrastructure facilities in general, including waste management facilities, in Hanoi City under the leadership of the Deputy Chairman for Waste Management, the Department of Natural Resources and Environment (DONRE) responsible for the promotion of the 3R policy and the Department of Education and Training responsible for environmental education.

The relationship and roles of stakeholders in the pilot project under the Project and the related main activities are shown in Figure 1.

² This plant became operational in 2002 with the assistance of the Government of Japan.

³ In Hanoi City, there are small companies engaged in the collection of municipal solid waste (MSW) in districts other than the four central districts. However, these companies are relatively new and their overall collection and treatment volumes of MSW and service populations are both small. A MSW collection service is basically available in nine districts in central and semi-central Hanoi. In the suburbs, individual households are responsible for their own waste. In the case of industrial waste, medical waste and other special kinds of waste other than MSW, these are collected even in the suburbs.

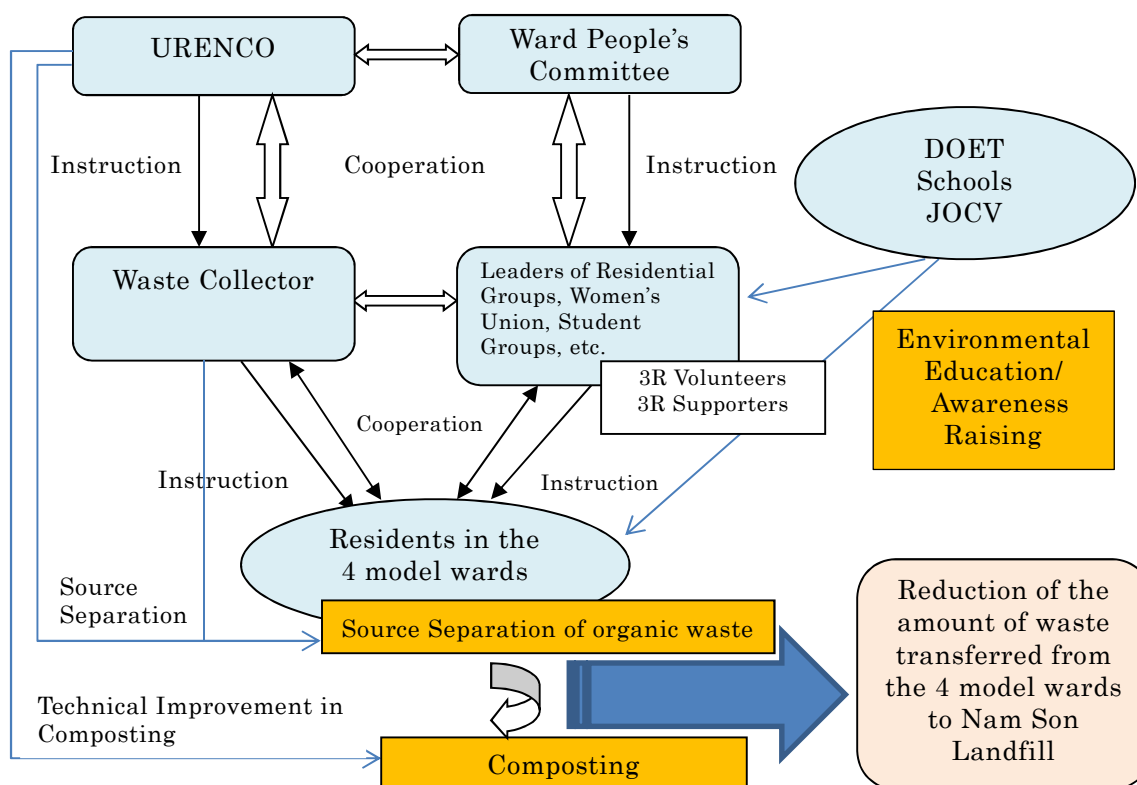


Figure 1 Relationship and Roles of Stakeholders in the Pilot Project and Main Activities

Under the Project, the 3R Stars was established as a forum designed to involve wide-ranging stakeholders in the process of policy recommendation and realization based on mutual consent and also to develop a partnership of all stakeholders involved in the formation of a recycling society. The URENCO acted as the Secretariat for this 3R Stars of which the members were representatives of the people's committees in the four model wards and four districts in central Hanoi, 3R-related HPC departments, research institutes, universities, private companies, organizations concerned, public funds, mass media and women's groups as well as residential groups in the model wards. At the same time, the 3R Council was established to discuss and recommend the suitable 3R policies for building a recycling society in Hanoi City. The Deputy Chairman for Waste Management of the HPC acted as the Chairman of the 3R council while the DOC acted as the Secretariat. The council members were representatives of 3R-related HPC departments, Women's Union of Hanoi City, Agricultural Cooperatives, environment police and people's committees of the four model wards and four districts in central Hanoi as well as academics.

1.3 Outline of the Terminal Evaluation

1.3.1 Achievement of the Overall Goal

Certain concrete progress was already observed with the relevant indicators, i.e. “expansion of the source separation areas” and “commencement of the next step, including projects, actions and movement based on a strategic paper”, at the time of the ex-post evaluation based on the facts that partial budgetary funding was made available for the introduction of source separation in areas other than the pilot project wards in four districts of central Hanoi and that the work to revise the Hanoi Solid Waste Management Regulation (January 10, 1994) was in progress to clarify the roles of and division of work among various 3R-related organizations and also to secure the necessary budget. However, judgment of the achievement of the overall goal at the time of the ex-post evaluation was postponed on the grounds that it would be premature to make a judgment in view of (i) the absence of comprehensive data and information regarding waste management in Hanoi City, (ii) the lack of a master plan for waste management in Hanoi City and (iii) the insufficient organizational capacity of the DOC responsible for waste management in Hanoi City.

1.3.2 Achievement of the Project Objective

At the time of project completion, the project objective had been almost achieved with the efforts of both the Vietnam and Japanese sides. The Project successfully demonstrated the effectiveness of the various approaches employed for the promotion of the 3R, including the active involvement of many stakeholders in the source separation and composting program, environmental education and participation of citizens. In addition to the implementation of the Project, prominent and important outcomes of the Project included (i) its impacts on the National Strategy for Integrated Solid Waste Management up to 2025 and the Vision 2050, two principal 3R strategies at the national level, and (ii) its contribution to the development of desirable policy and legal environments enabling the continuation of the project effects through the formulation of the Action Plan to Expand Source Separation to the Whole of Hanoi (hereinafter referred to as “the Action Plan”) and the Strategic Paper on the 3R Initiative (hereinafter referred to as “the Strategic Paper”) along with the progress of the revision of the Hanoi Solid Waste Management Regulation.

1.3.3 Recommendations

Before the completion of the Project, two recommendations were made regarding things to be done in the remaining period. The first was for the UNRECO to conduct a comprehensive cost-benefit analysis of the introduction of the source selection of organic

waste and composting program to entire Hanoi City based on knowledge acquired through the pilot project implemented in the project period. The second was assessment of the capacity of the counterparts at the end of the Project to check for any capacity improvement through the implementation of the Project along with the sorting out of any pending issues.

Two further recommendations were made to ensure the sustainability of the project effects in the post-project period. The first was for the HPC and DOC to formulate a master plan for the implementation of a waste treatment service covering entire Hanoi City, including those merged with the city in 2008. The second was for the HPC, DOC and other bodies responsible for waste administration in Hanoi City to strengthen their guidance of their lower tier organizations together with strengthening of the organizational, technical and financial capacity of the HPC and DOC to disseminate the project effects to expand the source separation of organic waste and to promote integrated 3R.

2. Outline of the Evaluation Study

2.1 External Evaluator

Miho Sakuma, International Development Center of Japan Inc.

2.2 Duration of Evaluation Study

Duration of the Study: December, 2012 – December, 2013

Duration of the Field Study: March 17 – April 6 and June 17 – June 22, 2013

2.3 Constraints During the Evaluation Study

The evaluator has requested the provision of historical financial data for the URENCO and its compost plant but only some such data has been made available. Therefore, the financial situation of the URENCO and its compost plant has been judged based on the results of interviews with the people concerned and the partial historical data provided. For evaluation of the effectiveness of the Project, it must be pointed out that the descriptions of the targets and indicators in the Project Design Matrix (PDM) are not very clear and that objective measurement of the outputs, etc. is difficult for some of the targets and indicators. Because of this, some indicators are interpreted by the evaluator where necessary and the degree of achievement of each target/indicator at the time of project completion is either verified or estimated at the time of this ex-post evaluation.

3. Results of the Evaluation (Overall Rating: C⁴)

3.1 Relevance (Rating: ③⁵)

3.1.1 Relevance to the Development Plan of Vietnam

The importance of promoting the 3R in the solid waste management policy for the environmental sector remained unchanged from the time of the ex-ante evaluation to the time of the ex-post evaluation. The Strategic Orientation for Sustainable Development in Vietnam (Vietnam Agenda 21) (2004), which was a valid policy at the time of the ex-post evaluation, called for a number of technical measures relating to solid waste and harmful waste. These included (i) adoption of sanitary landfill in medium to large size cities, (ii) improvement of recycling technologies, (iii) facilitation of volume reduction of solid waste at source and (iv) employment of a technology to convert waste to compost in order to reduce the area required for landfill. In terms of awareness raising, the Vietnam Agenda 21 called for community-level awareness raising activities, active participation of the public in the collection and treatment of waste, prevention of the dumping of waste at the public roadside and the separation of waste at households. Meanwhile, the Law on Environmental Protection (revised in 2005 and enforced in 2006) makes waste producers responsible for the minimization of waste by means of the 3R. The 8th Five Year Socioeconomic Development Plan (2006 – 2010) aimed at achieving the coexistence of environmental protection and sustainable development as a direction for development. As such, the relevance of the Project to the development policy of Vietnam was continually maintained from the planning stage to the completion of the Project.

3.1.2 Relevance to the Development Needs of Vietnam

The Government of Vietnam has set the recycling use of solid waste based on the 3R Initiative as one of the important themes in the “Vietnam Agenda 21”, “Law on Environmental Protection”, “National Strategy for Environmental Protection up to 2010 and Vision Towards 2020” (2003) and “Order of the Prime Minister for the Promotion of Solid Waste Management in Central Areas of Cities and Industrial Parks”. At the time of the ex-ante evaluation as well as the time of the ex-post evaluation, it was the intention of the Government of Vietnam to promote the 3R as one of its policies.

In 2003, the volume of MSW collected in Hanoi City was approximately 1,600 tons/day and the collection rate was 70%. Uncollected solid waste at public roadsides and the illegal dumping of waste in lakes and marshes caused such problems as poor drainage and groundwater contamination. There was concern that the rapid economic growth and

⁴ A: Highly satisfactory, B: Satisfactory, C: Partially satisfactory, D: Unsatisfactory

⁵ ③: High, ② Fair, ① Low

urbanization would result in some three times more waste in 2020 than in 2003. As a result of the stipulation of the compulsory source separation of household waste in the central areas of cities by “the National Strategy for Environmental Protection up to 2010 and Vision Towards 2020” (2003) which was followed by “the Order of the Prime Minister for the Promotion of Solid Waste Management in Central Areas of Cities” (2005), the URENCO began the trial source separation of organic waste and composting program for some 1,700 households in central Hanoi from around November, 2003. However, the insufficient experience and lack of know-how on the part of the URENCO and lack of environmental awareness among citizens meant that the collection volume was small with little proper separation, highlighting the strong need to tackle many issues, including a viable response to the ever increasing volume of waste, urgent capacity building of the URENCO and necessary improvement of environmental awareness among citizens.

The merger of Hanoi City with neighboring towns and villages in August, 2008, increased the municipal area by about 3.6 times the area in 2004 and also more than doubled the population from 3,083,000 before the merger to 6,451,000 as of April, 2009.

In the light of such a changing situation, the HPC in December 2009 immediately after the completion of the Project approved a plan to expand the Nam Son Landfill Site (opened in 1999 with an area of 83.5 ha) to a reclaimed neighboring site of 106 ha as it was concerned about the possibility of the Nam Son Landfill Site, which was the principal MSW disposal facility in Hanoi City, becoming completely filled sooner than expected (planned end of service in 2020). Such approval illustrated the increasing necessity for a reduction of the waste volume.

In 2006 when the ex-ante evaluation was conducted, the concept of the 3R was not yet common in Vietnam. However, interviews during the ex-post evaluation confirmed that the people involved in waste management viewed the introduction of the 3R in the capital of Hanoi as timely as the government policy for waste management mentioned earlier had already endorsed the concept of the 3R.

In summary, the Project centering on a pilot project for the source separation of organic waste and composting was relevant to the needs of Hanoi City from the viewpoint of the accumulation of concrete experience and know-how by the URENCO and the development of environmental awareness among citizens. Interviews during the ex-post evaluation have confirmed that there was a strong need for the strengthening of the source separation system and strengthening of environmental education for citizens (especially

those outside the model districts) even after the completion of the Project.

3.1.3 Relevance to Japan's ODA Policy

Japan's Country Assistance Program for Vietnam (2004) prioritizes the "promotion of growth", "improvement of lifestyle and social aspects" and "institutional building" for Japan's assistance and the Project fell in the category of "improvement of lifestyle and social aspects". Meanwhile, the JICA's Project Implementation Program for Vietnam (March 2006) at the time of project planning considered "urban waste management" to be an important sub-sector of the environment sector. As such, the contents of the Project were consistent with Japan's prioritized aid policies and themes for Vietnam. The relevance of the Project to Japan's ODA policy is further emphasized by the fact that Japan aimed at disseminating its own experience and know-how to the rest of the world based on the outcomes of the Ministerial Conference on the 3R Initiative held in Tokyo in April 2005.

This Project has been highly relevant to the country's development plan, development needs as well as Japan's ODA policy; therefore, its relevance is high.

3.2 Effectiveness and Impact⁶ (Rating: ②)

3.2.1 Effectiveness

3.2.1.1 Project Outputs

1) Output 1: MSW collection in pilot project area(s) is improved through implementation of pilot project with source separation of organic waste and composting.

Output 1 was achieved by the time of the terminal evaluation. The contents and concrete results of the pilot project are described below.

Contents of the Pilot Project

- The source separation pilot project consisted of seven components: (i) fact-finding survey on waste management, (ii) selection of collection points, (iii) procurement of tools, including a source separation guidebook for residents, (iv) training of waste collectors, (v) implementation of source separation, (iv) monitoring and evaluation and (vii) establishment of a standardized source separation program. The financial analysis of source collection was added later.
- The trial composting project consisted of two components: (i) improvement of the Cau Dien Compost Plant and (ii) expansion and securing of the demand for compost. The

⁶ Sub-rating for Effectiveness is to be put with consideration of Impact.

prospect of an increase of the compost production volume as a result of the expanded areas for source separation put emphasis on the process and technological improvement enabling the production of a large volume of compost in a short period of time. As a result, facility improvement and the provision of equipment were subsequently added to the project. Because it was thought to be necessary to expand the sales to match the increased production volume, a range of technical assistance, including financial analysis and the planning of a composting project, market survey, demand survey, analysis of the compost quality and improvement of the compost quality, was introduced under the Project.

- The following four wards were selected as model areas for the pilot project with the consent of all stakeholders in the Project based on such criteria as (i) area with typical characteristics which make the area a model for the ultimate expansion of the planned activities to entire Hanoi City, (ii) selection of one ward from each of the four central districts of Hanoi City and (iii) high level of commitment to the pilot project among local stakeholders.
 - ① Phan Chu Trinh Ward in Hoan Kiem District (approximately 2,000 households with a population of 8,224)
 - ② Nguyen Due Ward in Hai Ba Trung District (approximately 2,000 households with a population of 11,140)
 - ③ Thanh Cong Ward in Ba Dinh District (approximately 7,000 households with a population of 24,873)
 - ④ Lang Ha Ward in Dong Da District (approximately 7,300 households with a population of 28,584)

Concrete Results

- Indicator 1: The volume of waste disposed of at the landfill site is reduced by 30%. The average household waste volume reduction rate by August 2009 after the implementation of the pilot project was 45.4% for Phan Chu Trinh Ward, 41.6% for Nguyen Du Ward, 42.1% for Thang Cong Ward and 31.2% for Lang Ha Ward. Such a massive improvement was the result of the high level of cooperation by the residents, introduction of fixed time and fixed point collection using containers and fixed time collection of organic waste in very narrow streets in dense housing areas due to the development of special vehicles for the exclusive use for waste collection in narrow streets.⁷

⁷ These were special trucks and hand carts designed for exclusive use in narrow streets. In central Hanoi, there are many narrow streets which are impassable by ordinary collection vehicles. As it was not possible to install collection containers along these streets, residents dumped their waste at the roadside. With the development of specially designed collection vehicles to serve these

- Indicator 2: The percentage of residents in each pilot project area recognizing that the sanitation conditions of the area have improved is 50% or more. A survey conducted after the implementation of the pilot project as part of the Project found that an average of more than 90% of the residents in the four model wards considered that the sanitation conditions had improved compared to the pre-pilot project period, far exceeding the target 50% (Materials provided by JICA, November 2009).
- Based on the materials provided by JICA (November 2009) and the findings of interviews with stakeholders during the ex-post evaluation period, several positive results of the trial composting project have been confirmed. These are (i) verification of the improved composting process, (ii) improved quality of compost, (iii) establishment of a demand for compost in Hanoi City and its surrounding area, (iv) increased local demand for compost and (v) positive fertilizer effect of compost through a relevant survey.

Based on the above, the conditions of waste collection in the pilot project wards are judged to have improved through the pilot project for the source collection of organic waste and the trial composting project.

The pilot project is highly evaluated for its successful demonstration of the source collection of organic waste not only in terms of the tangible improvement of the waste collection conditions in the model wards but also in terms of the feasible reduction of waste to be disposed of at a final disposal site by 30% or more.

2) Output 2: Awareness of residents in pilot area(s) and Hanoi citizens are raised through implementation of environmental education and PR activities on 3R under the spirit of “mottainai”.

The contents and concrete results of the activities designed to achieve Output 2 are described below.

Activities

- Production of effective educational tools/programs
- Training of Hanoi URENCO staff members
- Experimental application of educational tools/programs in the model pilot project

narrow streets, however, it has become possible for these vehicles to collect waste at fixed times, increasing the organic waste collection rate. This has had the effect of reducing the volume of non-organic household waste to be transported to a final disposal site.

wards

- Evaluation of the educational tools/programs

Concrete Results

- Indicator 1: The percentage of residents in each pilot project area who know about the pilot project is 80% or more. A survey conducted as part of the Project after the commencement of the pilot project found that the proportion of residents who knew about the source separation activities was 93.9% in Phan Chu Trinh Ward, 97.6% in Nguyen Du Ward, 84.9% in Thanh Cong Ward and 85.0% in Lang Ha Ward in August, 2009 (Material provided by JICA, November 2009).
- Indicator 2: The Project is reported in the media 30 times or more. The number of reports on the Project by various media exceeded 300 times (Material provided by JICA, November 2009).
- Indicator 3: The number of mass organizations participating in the 3R activities is 10 times or more. The 3R Volunteer Club of which the membership consisted of university and senior high school students was established in December 2007 with the encouragement of the Project Team, playing an important role in the dissemination of information on the pilot project, etc. and educational activities on the 3R for residents. The scope of the activities of this 3R Volunteer Club gradually expanded as their targets widened from residents of the model wards to the citizens of Hanoi through the Mottanai Fair (held twice a year) and other events. By the time of the Project's completion, the number of activities in which 3R volunteers were involved right from the planning stage with the collaboration of the Project Team totaled 50. Moreover, there were 20 major 3R promotion events in which the 3R Supporters, consisting of members of women's groups and residential groups in the model wards, participated.

Based on the above, the awareness level of residents of the pilot project wards as well as the citizens of Hanoi is judged to have been raised through the implementation of environmental education and PR activities on the 3R under the spirit of "mottainai".

3) Output 3: Source Separation programmes of organic waste, the environmental education programmes and the concept of 3R are disseminated.

Although the difference between Output 2 and Output 3 is not easy to instantly understand because of the similar description of each output, Output 2 focuses on the raised awareness and PR of the pilot project and the 3R targeting the citizens of Hanoi in general and the residents of the model wards in particular. In contrast, Output 3 focuses

on the launch of an organization (3R Stars) and its activities in expectation of the post-project continuation of such activities.

Output 3 was achieved by the time of the project completion.⁸ The relevant concrete results are described below.

- Indicator 1: Establishment of an organization or forum composed of various stakeholders to promote the source separation program and environmental education program and to disseminate the concept of the 3R. February 2007 saw the establishment of the 3R Stars of which the membership consisted of representatives of 85 waste management-related organizations, including government bodies, universities, research institutes, media, private enterprises and the model wards as well as individuals. The 3R Stars contributed to the promotion of the participation of citizens in the 3R activities and the establishment of a partnership between stakeholders. The Hanoi URENCO functions as the secretariat for the 3R Stars.
- Indicator 2: Meetings of the 3R Stars and workshops or other meetings related to the extension of the 3R program are held six times or more with 30 or more total participants in these workshops or meetings. Meetings of the 3R Stars were held six times during the project period with the participation of a total of 85 organizations and about 650 persons. At the third meeting held on 15th March, 2008, the 3R Stars adopted the 3R Stars Declaration consisting of 10 items designed to disseminate the concept of the 3R and this declaration was signed by the Deputy Mayor of the HPC. These 3R Stars meetings provided the foundations for the formulation of the draft “Action Plan to Expand Source Separation to the Whole of Hanoi” and “Strategic Paper on the 3R Initiative” and also for discussions on the desirable revision of the Hanoi Solid Waste Management Regulation with a view to securing a source of funding for 3R activities. The final international seminar held on 25th September, 2009, under the Project attracted 135 participants, including those related to the Project in Hanoi City, one representative from each of six major cities in Vietnam and 14 representatives from seven neighboring countries (Indonesia, the Philippines, Thailand, Malaysia, Myanmar, Bangladesh and Cambodia).
- Indicator 3: A planning manual for the dissemination of the source separation program to other areas is prepared. The manual in question was discussed and compiled at

⁸ As “the number of wards or stakeholders which have participated in a workshop is more than 30”, which is one of the indicators for Output 3 listed in the PDM (revised version of February 25, 2009) for the Project, is found to be insufficient to accurately and objectively evaluate the degree of achievement of Output 3, the present ex-post evaluation uses three indicators set at the time of the ex-post evaluation to check the degree of achievement of Output 3.

meetings of the 3R Stars to address such issues as source separation and environmental education based on the experience and evaluation results of the pilot project.

Based on the above, the targets of the indicators for Output 3 were achieved and the original purpose of Output 3 of linking Output 1 and Output 2 to Output 4 is judged to have been achieved.

4) Output 4 : A strategic paper and action plan for the next steps to improve the MSW collection system with source separation programmes of organic waste is developed.

Output 4 was generally achieved by the time of the Project's completion except for Indicator 3.⁹ Interviews with the people involved confirmed the following facts.

- Indicator 1: A strategic paper is developed based on discussions at the 3R Stars meetings. The targets of this strategic paper were discussed and compiled through a series of meetings of the 3R Stars, meetings of the Task Force (of which the members are representatives of the DOC, URENCO, Japanese Expert Team and DONRE as well as waste management experts and university teachers) and meetings of the 3R Council composed of representatives of the DOC and other stakeholder organizations as well as knowledgeable persons (see Table 1).
- Indicator 2: An action plan is developed based on discussions at the 3R Stars meetings. A survey was conducted from October to December 2008 for the purpose of eventually expanding the model source separation program to entire Hanoi City. Based on the findings of this survey, discussions at the 3R Stars meetings and the evaluation results of the pilot project by the Project Team, the draft action plan was approved at a meeting of the Joint Steering Committee for the Project held on 25th February, 2009 (see Table 2).

⁹ As the indicator "recognition of the next stage of development by all of the counterparts based on the action plan" listed in the PDM (version revised on 25th February, 2009) for the Project is insufficient to evaluate the degree of achievement of Output 4, the present evaluation uses the three indicators set at the time of the terminal evaluation for this purpose.

Table 1. Targets of Strategic Paper on 3R Initiative

In 2009:
1. Enactment of the Solid Waste Management Regulation in Hanoi City 2. Approval of the Action Plan on Source Separation (SS) expansion in Hanoi City
Until 2010:
1. Completion of institutional and financial mechanism on waste management on basis of 3R implementation in Hanoi City 2. Expansion of SS implementation to the whole of Hoan Kiem District. 3. Preparation and approval of Master Plan on Solid Waste Management in Hanoi City 4. More than 30% of Hanoi residents know about 3R and SS through PR and EE activities and the mass media.
Until 2013:
1. Implementation of the Comprehensive Solid Waste Management Plan of Hanoi City 2. Improvement of waste collection, transportation and treatment system in Hanoi City through standardizing model of SS and 3R activities 3. Expansion of SS implementation to the whole of Ba Dinh, Dong Da, and Hai Ba Trung Districts. 4. More than 50% of residents in Hanoi know about 3R and/or SS through Public Relations (PR) and Environmental Education (EE) activities and the mass media
Until 2015:
1. Development of comprehensive waste treatment system and sanitary landfills of Hanoi City 2. Basically strengthen waste collection, transportation and treatment with modern process and technology. 3. Expand SS to Tay Ho, Cau Giay, Thanh Xuan, Hoang Mai, Long Bien and some Wards/communes of Tu Liem, Gia Lam, Thanh Tri, Dong Anh, Soc Son Districts. 4. All residents of Hanoi City recognize and/or take actions on 3R and/or SS and more than 80,000 pupils are involved in EE program on 3R and SS 5. Reduce about 30% of landfill waste
Until 2020:
1. Strengthen waste collection, transportation and treatment with SS based 3R process 2. Modern process and technology for waste treatment including incineration and energy recovery should be examined and introduced 3. Expand SS to the whole of Hanoi City 4. 3R and SS becomes common sense of Hanoi citizens 5. Reduction of about 70% of landfill waste

Source: Materials provided by JICA, November 2009.

Table 2. Action Plan to Expand Source Separation to Whole of Hanoi (Summary)

<p>This Action Plan is mainly consist of Source Separation (SS), Public Relations (PR) and Environmental Education (EE), and these components are integrated into this action plan. To introduce each activity, there are 3 steps. <u>The first step</u> will be to conduct PR activities for residents to tell them the new collection system using a fixed time and fixed collection point, and separation of organic, in-organic waste and recyclables. A precondition of this PR for residents is that PR activities to spread basic idea of 3R have been already conducted. In order to implement SS smoothly, PR activities will be implemented at the first stage to disseminate the concept of 3R and SS. <u>The second step</u> is to train leaders in the communities in order to conduct EE to community members continuing PR. After the residents understand their roles and responsibilities, the introduction of SS comes after the PR and EE as <u>the final step</u>. PR and EE will be implemented continuously at this stage. The each period of PR, EE, and SS depends on conditions or characteristics of the target communities.</p> <p>Based on these 3 steps, Action Plan consists of the following components.</p> <p>Action 1: Expansion of Source Separation to Whole Hanoi Action 2: Improvement/ Investment of Recycling Facilities Action 3: Broadening of Environmental Education on 3R Action 4: Broadening of PR and 3R Partners Action 5: Sustainable Activities of 3R Stars and Hanoi 3R Council Action 6: Information Management of 3R and SWM Action 7: Strengthening of Legal, Regulatory and Financial Mechanism</p>

Source: Materials provided by JICA, November 2009

Note: The underlined steps are added by the evaluator.

Indicator 3: Upper level organizations (HPC and DOC) will take the necessary steps to implement specific measures based on the strategic paper and action plan. Through a series of discussions at the 3R Stars meetings, all of the stakeholders gradually recognized the need to revise the Hanoi Solid Waste Management Regulation as the fundamental regulation for source separation at the municipal ordinance level from the viewpoints of clarifying the roles of individual stakeholders in the source separation system and of establishing suitable budgetary measures for the geographical expansion of source separation. For this reason, a task force composed of representatives of the DOC, DONRE, URENCO and Japanese Expert Team was established to conduct the work to revise the said Regulation. Meanwhile, the HPC instructed the DOC and the Project Team to examine and complete the draft revisions as soon as possible. In response, the DOC and the Project Team prepared draft revisions of the Hanoi Solid Waste Management Regulation, incorporating the comments and opinions put forward by various stakeholders, and submitted them to the HPC. The revised Hanoi Solid Waste Management Regulation was enforced in February, 2010, three months after the completion of the Project (November 2009) with the approval of the HPC.

Based on the above, Indicator 1 and Indicator 2 were achieved. In the case of Indicator 3, although it was not achieved by the time of the Project's completion,

sufficient measures to achieve it were implemented during the project period. Output 4 is, therefore, judged to have been generally achieved.

3.2.1.2 Achievement of Project Objective

Four indicators¹⁰ were introduced to measure the degree of achievement of the project objective: “The harmonized 3R system based on source separation programmes for organic waste is ready to familiarize to the whole area of Hanoi City”. Interviews with the counterparts and the beneficiary survey confirmed the following facts.¹¹

1) Indicator 1: The source separation program continues in at least the pilot project area(s). At the time of project completion, the URENCO and residents of all four model wards continued to practice source separation.

2) Indicator 2: The budget to extend the source separation program and to implement environmental education is secured. At the time of project completion, it was hoped that an appropriate budget to introduce source collection in non-model wards in four districts in central Hanoi would be secured with the backing of the program to clean and beautify Hanoi City in preparation for the millennium anniversary of Hanoi to be held in the following 2010. Meanwhile, the 3R Stars prepared draft revisions of the Hanoi Solid Waste Management Regulation which would form the legal basis for extension of the source separation areas and the implementation of environmental education based on the achievements of the pilot project and presented them to the HPC by June 2009. It was expected that the revisions would be approved by the time of project completion to pave the way to the securing of the necessary budget for the said extension of the source separation areas and implementation of environmental education in 2009. As mentioned earlier, the revised Hanoi Solid Waste Management Regulation was only enforced in February 2010, three months after project completion. The revised Regulation approved

¹⁰ Five indicators were listed on the ex-ante evaluation sheet to measure the degree of achievement of the project objective. However, in the PDM at the time of the commencement of the Project, one of these indicators, i.e. “environmental education is implemented in the pilot project area” was dropped. Another indicator, i.e. “preparations are ready to disseminate source separation and environmental education to the whole area of Hanoi City by means of achieving the improved capacity of staff members of the executing agency who are involved in the formulation of a planning manual and the source collection program for organic waste”, was replaced by another indicator, i.e. “the staff capacity for source separation is strengthened”. There were no records explaining the background of the deletion of one indicator and replacement by another indicator. For this reason, the present ex-post evaluation regarding the project objective is based on the four indicators listed in the latest PDM (revised version of 25th February, 2009).

¹¹ The beneficiaries survey was conducted in April and May, 2013 featuring 25 residents in each of the four model wards (100 in total) and 25 residents living outside the model area in each of the four districts concerned (100 in total). The main findings are outlined in connection with Indicator 3.

by the HPC stipulates that the HPC is responsible for “the preparation of a draft municipal budget for solid waste management” and that the Department of Finance is responsible for “the coordination and preparation of a draft municipal budget for solid waste management while guiding and cooperating with the DOC and the Department of Planning and Investment (DPI) of the municipal government”. Such arrangements suggest that the legal and institutional frameworks for the geographical extension of the achievements of the pilot project under the Project were roughly in place at the time of project completion. However, there was no clear indication of how the HPC would finance expanded source separation operation after the completion of the Project from the medium to long-term perspective, resulting in a lack of funding specially earmarked for expansion of the source separation program in the municipal budget for solid waste management. Because of this, the degree of achievement of Indicator 2 was limited. While the URENCO budget continued to slightly increase in response to inflation, there were no special budgetary arrangements to cover the possible expansion of the source separation program in 2009 when the Project was completed and in the following 2010. Interviews with stakeholders confirmed that the URENCO on its own judgment allocated part of its budget to the procurement of containers for the fixed place collection of separated waste and to the implementation of the source separation program in the four model wards. There were no additional budgetary arrangements for the expansion of the source separation program and environmental education for other stakeholders, such as district and ward people’s committees, residential groups and women’s unions, which would play a guidance as well as educational role in these activities. In summary, even though efforts were made to secure the budget required for expansion of the source separation areas during the project period, Indicator 2 had not been achieved at the time of project completion in the sense that no actual budget was disbursed to support such expansion.

3) Indicator 3: The staff capacity for source separation is strengthened. The questionnaire survey and series of interviews conducted by the Project Team in 2009 found that of the 18 counterparts, 15 (83%) evaluated that their own knowledge, skills and capacity had improved as a result of their involvement in the Project. Especially noticed was improvement of their sense of responsibility, strict time-keeping, cooperativeness and self-motivation for their work as a result of the joint work with the Japanese experts. The fact that most of the counterparts similarly evaluated themselves at the time of project completion is confirmed by the ex-post evaluation through interviews with the counterparts and waste collection workers. Interviews with such stakeholder organizations as the DOC, DOET, DONRE, district and ward people’s committees,

residential groups and women's unions confirmed that the capacity of the counterparts regarding source separation was at a somewhat satisfactory level at the time of project completion. In regard to the beneficiaries survey conducted in the four model wards, 16% of the respondents replied "highly satisfactory" while a further 55% replied "satisfactory" to the question of "Were you satisfied with the work of waste collectors in your area of residence in 2009?", suggesting a sufficient level of capacity of not only URENCO staff but also waste collectors to conduct their work. Both the Strategic Paper and Action Plan adopted a strategy of gradually extending the subject areas for source separation to other wards of the four districts of central Hanoi first, then to the five districts in semi-central Hanoi around the four central districts and further to the suburbs of Hanoi City. As far as the four central districts under the jurisdiction of the URENCO were concerned, technical arrangements were in place for URENCO staff trained under the pilot project to commence the extension of the source separation program to neighboring wards and districts. Further efforts in terms of manpower and budget are, however, necessary to consolidate the state of preparedness for the extension of source separation throughout Hanoi City, including the training of staff members of solid waste collection companies in charge of waste collection in districts other than the four central districts on the practice of source separation. Needless to say, URENCO personnel with an improved capacity through their participation in the pilot project will play a core role in such extension.

4) Indicator 4: Compost is produced from organic waste and utilized in an economically viable manner. Some 10,000 tons of organic waste were recovered¹² from the four model wards in the project period of three years and 10,000 tons of compost were produced. The annual production volume of compost in the project period was 3,828 tons in 2007, 3,390 tons in 2008 and 3,217 tons in 2009. Meanwhile, the sales volume of compost was 4,485 tons in 2007, 1,464 tons in 2008 and 2,060 tons in 2009. At the time of project completion, the fermentation facilities and equipment at the compost plant had been improved under the Project. The quality of the compost was improved with an improved system to remove such materials other than organic waste as glass and plastics and turning operation¹³ using a wheel loading newly provided under the Project. These technical improvements made the production of more compost in a shorter period of time possible.

¹² The Cau Dien Compost Plant also processes organic waste directly collected from the fresh market in central Hanoi.

¹³ The wheel loader is used to turn the fermenting compost in order to feed fresh air. In a composting experiment involving the daily production of 40 – 50 tons, the conventional air funnel method took eight weeks to produce matured compost while the wheel loader turning method took only five weeks. At the same time, the operating cost was reduced to the level of approximately 40% of the conventional method (Material provided by JICA, November 2009)).

To summarize, the Project aimed at creating a material-cycle society in the medium to long-term period by means of focusing on the implementation of a pilot project in the four wards of central Hanoi to establish a model area for the 3R system with a view to making waste management policies reflect the achievements of the pilot project.

At the time of project completion, source separation was continuing in all of the four model wards (Indicator 1) and the capacity of the URENCO staff had been sufficient improved through the pilot project to the point that they were able to cope with the extension of the source separation program to neighboring wards (Indicator 3). In the case of the trial composting project, the quality of the compost was improved and the production capacity of the plant was increased (Indicator 4), indicating the implementation of a harmonized 3R system based on source separation in the model wards. On the other hand, any work to extend the subject areas for source separation requires appropriate budgetary funding. In the present case, although the legal basis for such extension came into force, no actual budgetary funding was made during the project period (Indicator 2). In the light of the above, the Project is judged to have largely achieved its objective as Indicators 1, 3 and 4 were achieved in the project period with the exception of Indicator 2.



The equipment provided under the Project is being fully utilized at the compost plant.



A worker is collecting waste in a narrow street using a hand cart.

3.2.2 Impacts

3.2.2.1 Achievement of Overall Goal

Two indicators were set to measure the degree of achievement of the overall goal. These were “the source separation areas are expanded” and “the next step, including project, actions and movements, based on the Strategic Paper, is started”. Interviews with the counterparts and the beneficiary survey disclosed the following facts.

1) Indicator 1: The source separation areas are expanded. At the time of the ex-post evaluation, the source separation areas have not been expanded beyond the four model areas of the pilot project. Therefore, Indicator 1 has not been achieved. The main reasons for this are the tight municipal financial situation since the completion of the Project and the lack of a master plan for solid waste management in Hanoi City. As a result, no proactive initiatives have been introduced to expand the geographical scope of source separation in Hanoi City with neither the budgetary arrangements nor manpower deployment to realize the said expansion.

However, using its own resources, the URENCO has introduced a fixed time and fixed point collection system in some neighboring areas of the model wards as a precursor to a source separation system based on its own judgment. This new system using 240 liter containers installed at fixed points replaces the conventional system of using hand carts to collect waste with a bell to announce their arrival and was introduced in Hang Dao Ward in Hoan Kiem District (July 2009), Trang Tien Ward in Hoan Kiem District (August 2009) and Li Tai Lo Ward in Hai Ba Trung District (August 2009). A similar operation has been subsequently introduced in Bach Kho Ward and Le Dai Hanh Ward in Hai Ba Trun District.

2) Indicator 2: The next step, including projects, actions and movements based on the Strategic Paper, is started. In the ex-post evaluation, the next step products, actions and movements are interpreted as the targets listed in the Strategic Paper and the targets in the Strategic Paper (listed in the left-hand column of the table below) are compared to their implementation situation at the time of the ex-post evaluation (in the right-hand column of the table below). As shown in the table, in addition to the formulation of a master plan for waste management in Hanoi City, PR and environmental education activities are conducted even though they are restricted to the model wards. No other activities to achieve the targets in the Strategic Paper have been implemented.

Targets in Strategic Paper on 3R Initiative	State of Implementation at Time of Ex-Post Evaluation
Until 2010	
<p>1. Completion of an institutional and financial mechanism for waste management on basis of 3R implementation in Hanoi City.</p> <p>2. Expansion of SS implementation to the whole of Hoan Kiem District.</p> <p>3. Preparation and approval of the Master Plan for Solid Waste Management in Hanoi City.</p> <p>4. More than 30% of Hanoi residents know about 3R and SS through PR and EE activities and the mass media.</p>	<p>1. Not yet implemented.</p> <p>2. Not yet implement. However, a fixed time and fixed point collection system as a precursor to the source separation system was introduced in Hang Dao Ward in Hoan Kiem District (July 2008) and Trang Tien Ward in the same district (August, 2009).</p> <p>3. As of June, 2013, the Master Plan has been approved by the HPC and is awaiting its approval and effectuation by the Prime Minister.</p> <p>4. Educational activities on the 3R and guidance on source separation by the URENCO, residential groups and women's unions are continuing in the four model wards (and their districts). As described later, the DOET conducts environmental education at schools in Hanoi City while the DONRE conducts environmental education and publicity for the general public through events and the mass media. However, there is no way to measure the level of awareness of the 3R and/or source separation among the citizens of Hanoi as no relevant surveys have ever been conducted.</p>
Until 2013	
<p>1. Implementation of the Comprehensive Solid Waste Management Plan for Hanoi City.</p> <p>2. Improvement of the waste collection, transportation and treatment system in Hanoi City through a standardized model for SS and 3R activities.</p> <p>3. Expansion of SS implementation to the whole of Ba Dinh, Dong Da, and Hai Ba Trung Districts.</p> <p>4. More than 50% of residents in Hanoi know about 3R and/or SS through PR and EE activities and the mass media.</p>	<p>1 – 3: Not yet implemented. However, in connection with 3., a fixed time and fixed point collection system as a precursor to the source separation system was introduced in Li Tai To Ward in Hai Ba Trung District (August 2009) and subsequently in Bach Kho Ward and Le Dai Hanh Ward in the same district.</p> <p>4. The above-mentioned educational activities and guidance on source separation are continuing in the four model areas (and their districts).</p>

Since the completion of the Project, the HPC and DOC have made the formulation of a master plan for solid waste management in Hanoi City a priority over other targets in view of the implementation of the various activities planned in the Strategic Paper and the Action Plan. The ex-post evaluation study has confirmed the following background for this decision by the two organizations.

At the time of project completion, there was a reasonable prospect of funding for the source separation program in areas other than the four model wards in the central districts because of the planned cleaning and beautification of Hanoi in preparation for the millennium celebrations in the following 2010 and also because of the ongoing work to revise the Hanoi Solid Waste Management Regulation . In reality, however, the financial constraints faced by the HPC and the replacement of the deputy chairman responsible for solid waste management in the HPC led to a lack of budgetary disbursement to specially support the source separation program to the URENCO and other stakeholder organizations. At the time of project completion, neither the Action Plan nor the Strategic Paper produced under the Project were incorporated in municipal policies yet. Under these circumstances, the DOC and URENCO considered it essential to confirm the reality of the flow of urban waste in Hanoi City and the municipal capacity for waste management (collection, transportation, intermediate treatment and final disposal) and to prepare a city-wide master plan for solid waste management. Based on such understanding, they worked on the HPC to place an order for a study on a master plan for solid waste management in Hanoi City to a local consultant. The contents of this master plan were subsequently finalized through a series of consultations with various organizations in the city and approved by the HPC in early 2013. All of these activities aimed at the achievement of such targets as “the establishment of institutional and financial mechanisms for waste management based on the implementation of the 3R in Hanoi City” and “the expansion of the implementation of SS to the whole of Hoan Kiem District”.

Based on the National Strategy for the Integrated Management of Solid Waste Until 2025 and the Vision Towards 2050, the said master plan aims at minimizing the landfill volume through the collection, reuse, recycling and treatment using environmentally sound technologies of all types of solid waste. It proposes the construction and operation of solid waste treatment plants combining such treatment methods as landfill, incineration, composting and biogas production in collaboration with private companies. In this context, the master plan covers such targets identified in the Strategic Paper as “the development of a comprehensive waste treatment system and sanitary landfill in Hanoi City by 2015” and “the examination and introduction of modern processes and technologies for waste treatment, including incineration and energy recover, by 2020”. The master plan refers to some of the positive results of the source separation pilot project and trial composting project under the Project even though the target areas were rather limited; and indicates the city’s intention to continue the composting business with the introduction of other technologies. The master plan also covers such issues as the

extension of source separation to entire Hanoi City, improvement and expansion of recycling facilities and strengthening of the legal, regulatory and financial aspects of solid waste management and these contents are consistent with the contents of the Action Plan.

The master plan is expected to be signed off by the Prime Minister by the end of 2013 or early 2014. The establishment of an appropriate waste management system throughout the city with secured budgetary appropriation and investment in projects proposed by the master plan will be a step forward towards realizing the medium-term overall objective of “the implementation of a harmonized 3R system based on a source separation program for organic waste”. Although Indicator 1 for the overall goal was not achieved, Indicator 2 was partially achieved. Therefore, the overall goal was partially not achieved.

3.2.2.2 Situation of Various Activities Launched under the Project at the Time of Ex-Post Evaluation

The situation of the various activities introduced under the Project at the time of the ex-post evaluation is summarized below although they were not included in the indicators for the overall goal.

1) Source Separation of Organic Waste and Composting in the Four Model Wards < Source Separation of Organic Waste >

Even though there has been no budgetary backing for the continuation and expansion of source separation since the time of project completion to the time of the ex-post evaluation, the source separation of organic waste has been continuing in the four model wards. The results of the beneficiary survey outlined in the table below indicate that knowledge on the 3R has been spread among the residents of these four model wardareas compared to residents of other areas. Such knowledge underpins the high level of commitment of the residents of the model wards to the practice of the source separation of organic waste in the post-project period. The field survey and interviews with stakeholders during the ex-post evaluation study confirmed the development of a cooperative and friendly relationship between local residents, district and ward people’s committees, women’s unions and other organizations and URENCO staff and waste collectors with the advancement of the pilot project in Nguyen Du Ward and Phan Chu Trinh Ward where the state of source separation has been excellent up to the time of the ex-post evaluation.

Table 3: Beneficiary Survey Results

Knowledge of the 3R

- Question: Do you know about the 3R?

	Model Area				Total
	Nguyen Du	Land Ha	Thanh Cong	Phan Chu Trinh	
Don't know	4 (16%)	1 (4%)	0 (0%)	6 (24%)	11 (11%)
Have heard of them	9 (36%)	6 (24%)	1 (4%)	1 (4%)	17 (17%)
Knows	11 (44%)	12 (48%)	13 (52%)	17 (68%)	53 (53%)
Knows well	1 (4%)	6 (24%)	11 (44%)	1 (4%)	19 (19%)
Total	25 (100%)	25 (100%)	25 (100%)	25 (100%)	100 (100%)

* In wards other than the model wards, the answer “Knows well” accounts for 2% while “Knows” accounts for 18%, “Have heard of them” for 57% and “Don't know” for 23%. The results among residents of the model wards shown above suggest a much higher level of knowledge of the 3R in the model wards.

- Question: What does 3R stand for? Please specify each R.

	Model Area				Total
	Nguyen Du	Land Ha	Thanh Cong	Phan Chu Trinh	
3 correct answers	14 (56%)	2 (8%)	3 (12%)	18 (72%)	37 (37%)
2 correct answers	3 (12%)	3 (12%)	1 (4%)	1 (4%)	8 (8%)
1 correct answer	1 (4%)	18 (72%)	21 (84%)	0 (0%)	40 (40%)
Don't know any	7 (28%)	2 (8%)	0 (0%)	6 (24%)	15 (15%)
Total	25 (100%)	25 (100%)	25 (100%)	25 (100%)	100 (100%)

* In wards other than the model wards, “3 correct answers” account for 5% while “2 correct answers” account for 11%, “1 correct answer” for 58% and “Don't know any” for 26%. The results among residents in the model wards shown above indicate a high proportion of residents with 3 correct answers (37%).

State of Source Separation at Individual Households

- Question: Did you separate organic waste throughout the pilot project period (2006 – 2009) without fail?

	Model Area				Total
	Nguyen Du	Land Ha	Thanh Cong	Phan Chu Trinh	
Not at all	0 (0%)	0 (0%)	2 (8%)	1 (4%)	3 (3%)
Not really	2 (8%)	8 (32%)	3 (12%)	3 (12%)	16 (16%)
More or less	4 (16%)	6 (24%)	16 (64%)	2 (8%)	28 (28%)
Most of the time	18 (72%)	10 (40%)	2 (8%)	12 (48%)	42 (42%)
Always	1 (4%)	1 (4%)	2 (8%)	7 (28%)	11 (11%)
Total	25 (100%)	25 (100%)	25 (100%)	25 (100%)	100 (100%)

- Question: Do you always separate organic waste as of 2013?

	Model Area				Total
	Nguyen Du	Land Ha	Thanh Cong	Phan Chu Trinh	
Not at all	0 (0%)	1 (4%)	0 (0%)	1 (4%)	2 (2%)
Not really	2 (8%)	5 (20%)	0 (0%)	4 (16%)	11 (11%)
More or less	1 (4%)	3 (12%)	6 (24%)	1 (4%)	11 (11%)
Most of the time	18 (72%)	15 (60%)	13 (52%)	11 (44%)	57 (57%)
Always	4 (16%)	1 (4%)	6 (24%)	8 (32%)	19 (19%)
Total	25 (100%)	25 (100%)	25 (100%)	25 (100%)	100 (100%)

* In wards other than the model wards, the ratio of households practicing the source separation of organic waste (most of the time or always) is higher at the time of the ex-post evaluation (76%) compared to during the project period (53%).

Source: Beneficiary survey.

< Composting >

Since the completion of the Project, the volume of organic waste taken to the Cau Dien Compost Plant from the four model wards has decreased (Table 4). According to the people concerned, the main reason for this is the decrease of generated organic waste at households due to the marketing of fish, meat and vegetables of which the inedible parts have already been removed before sale in the fresh market. During the project period, the volume of waste taken to this compost plant was as high as 40 – 50tons/day but the ratio of actual organic waste was only 25 – 30%. At the time of the ex-post evaluation, however, even though the volume of waste taken to the compost plant has dropped to some 30 tons/day, the ratio of actual organic waste is 65%, indicating a much higher level of source separation.

Meanwhile, the sales amount and sales value of compost have also declined (Table 5). Although the plant management has made efforts to keep the plant afloat, including reducing the number of employees from 100 to 42, it still faces tough business conditions. According to the people concerned, the main reasons for the sluggish business performance of the compost plant are the sales price of compost (approximately 500 VND/kg) which is substantially lower than the production cost (1,800 – 2,100 VND/kg), preference of farmers for chemical fertilizers with a quick effects, lack of a proper understanding of the soil improvement effect of compost and difficulty of expanding the market (high cost of transportation to distant farming areas from Hanoi City even though there is a potential demand for compost in these areas). The separation of the Cau Dien Compost Plant which makes the compost and the organization responsible for the marketing and sale of the compost (another subsidiary of the URENCO) is another factor

for the employment of a consistent concept through the product planning, development, production, marketing and sales stages. The fact that the HPC pays the cost of transporting organic waste to the Cau Dien Compost Plant but does not pay the cost of composting or the residue transportation cost is an obstructing factor for the continuation and strengthening of the URENCO's compost business.

According to people working at the Cau Dien Compost Plant, the turning method using a wheel loader introduced under the Project can produce more compost in a shorter period of time than the conventional air supply fan method. However, the latter is continually used because it is unnecessary to increase the compost production volume in view of the lack of expansion of the source separation areas which was expected to take place after the completion of the Project.

Table 4 Volume of Organic Waste Transported to the Cau Dien Compost Plant from Each Model Area (Unit: tons/year)

Year	Model Area				Total
	Phan Chu Trinh	Nguyen Du	Thanh Cong	Lang Ha	
2007	594	675	-	-	1,269
2008	803	1,022	1,642	1,277	4,744
2009	424	1,043	1,734	1,380	4,581
2010	405	923	1,325	1,022	3,675
2011	413	773	1,137	1,095	3,418
2012	407	733	1,095	1,010	3,245

Source: URENCO

Note: Source separation started on 1st July, 2007 in Phan Chu Trinh Ward, 1st August, 2007 in Nguyen Du Ward, July, 2008 in Thanh Cong Ward and August, 2008 in Lang Ha Ward.

Table 5 Production Volume and Turnover of Compost at the Cau Dien Compost Plant

Year	Total Production Volume (tons/year)	Unit Production Cost (VND/ton)	Sale of Compost	
			Volume (tons/year)	Turnover (VND/year)
2004	6,513	600,000	2,114	1,258,391,500
2005	5,151	600,000	2,735	1,903,402,500
2006	4,788	600,000	2,799	1,715,355,300
2007	3,828	600,000	4,485	2,919,500,000
2008	3,390	600,000	1,464	691,189,600
2009	3,217	600,000	2,060	811,098,698
2010	2,424	600,000	1,958	783,182,437
2011	2,018	600,000	1,776	710,882,090
2012	1,997	600,000	1,612	644,746,500
2013	-	800,000	-	-

Source : URENCO

The questionnaire survey and series of interviews with the people concerned conducted as part of the ex-post evaluation study has confirmed that no meetings of the 3R Council or 3R Stars have been held since the completion of the Project. The reasons cited for the lack of 3R Council meetings are (i) the HPC has not taken any initiative for the continuation of such meetings and (ii) no staff members of the DOC have been assigned to arranging 3R Council meetings as all DOC staff members have been busy with other assignments. The reasons cited for the lack of 3R Stars meetings are (i) neither the HPC nor the DOC have taken any initiative for the continuation of such meetings, (ii) difficulty of the URENCO as a subordinate body of the DOC to call people from higher municipal bodies to such meetings and (iii) failure of the URENCO to secure funding to cover the cost of 3R stars meetings.

Several respondents and interviewees have expressed the opinion that a discussion forum such as the 3R Council or 3R Stars is necessary for the promotion of the 3R and that the DONRE or DOC would be a preferred organizer of such a forum.

3) Environmental Education

The promotion of environmental education featuring the 3R was one of the activities most emphasized by the Project. The importance of environmental education in Hanoi City was recognized during the project period and such education has been enhanced and expanded since the time of project completion to the time of the ex-post evaluation. However, the actual educational activities have been conducted by several organizations without any guidelines or organization to centrally control or oversee these activities.

As the promotion of the 3R is a policy of the Government of Vietnam, both the MOET and MONRE have been implementing environmental education in accordance with the policy. According to the DOET, the textbook used for 1st through 5th grade primary education pupils already includes contents similar to those of the environmental education tool program developed under the Project (source separation at home is not referred to in the textbook). Meanwhile, the DONRE with budgetary funding for environmental education and publicity has been conducting (i) events, including the International Environment day, (ii) environmental education and publicity using such media as television and newspapers and (iii) environmental activities (cleaning volunteer program, etc.) in collaboration with student unions and women's unions. The DONRE has also been conducting educational and PR activities to promote the 3R and source separation.

At the URENCO, the Personnel Division used to handle publicity until around 2008. As it recognized the importance of environmental education and publicity under the Project, it established the 3R Communication Team in 2008 responsible for environmental education and publicity specializing in 3R-related activities. Later in November, 2012, the Publicity Division was established to be responsible for (i) the education and training of staff members of the URENCO on environmental conservation and hygiene and collaboration with external organizations on these matters, (ii) dealing with complaints made by users, (iii) contact with the mass media and (iv) management of a website. However, education and publicity on the 3R and source separation for the citizens of Hanoi City are not essential part of the duties of the URENCO but of the DONRE and MONRE. From 2009 to 2012, the URENCO received two Japan Overseas Cooperation Volunteers (JOCVs) as long-term volunteers who conducted environmental education at primary schools using the environmental education tool program developed under the Project. Since the end of the dispatch of the JOCVs, the URENCO has not been involved in environmental education and publicity at schools.

4) Activities of the 3R Volunteer Club and 3R Supporters

Although the members of the 3R Volunteer Club decreased from some 200 in 2008 and 2009 during the project period to some 100 in 2013, it is still in operation. It has been organizing the MOTTAINAI Fair twice a year and continuing the environmental education at schools. Apart from its contribution to awareness raising of the 3R among the residents of the model wards as well as citizens of Hanoi City and to the dissemination of the spirit of MOTTAINAI as a driving force for the promotion of the 3R among young people, the 3R Volunteer Club has developed a network with other environmental protection organizations to issue the Environmental Conservation Declaration for Vietnam. It has been hailed as a leading environmental protection body and has had positive impacts beyond the framework of the project-related activities.

Meanwhile, the 3R Supporters consisting of representatives of such local community groups as women's unions and the Youth League has been continuing educational activities on the 3R and source separation in the four model wards while maintaining a loose link with the 3R Volunteer Club.

3.2.2.2 Other Impacts

1) Reflection of the Achievements of the Pilot Project on the National 3R Strategy

The National Strategy for Integrated Solid Waste Management up to 2025 and the Vision 2050 adopts source separation at each household as an effective means of 3R

based on the achievement of the pilot source separation project under the Project of reducing the volume of waste to be dealt with by a final disposal site by more than 30%. This National Strategy also incorporates a program to formulate regulations to enforce source separation at households as well as workplaces.

The Committee which formulated the National Strategy included two members of the 3R Stars (a senior researcher of the research institute of the MONRE and a staff member of the Ministry of Construction) whose proposals led to the inclusion of a call for source separation at households and workplaces in the National Strategy. Interviews with committee members during the process of the ex-post evaluation have confirmed that the National Strategy was unanimously approved as all of the committee members know about the trial source separation of organic waste and composting program through publicity of the Project (television, radio, newspapers and others).

The National Strategy is one basis for the Master Plan for Solid Waste Management in Hanoi City.

2) Recognition of Hanoi City as an Advanced 3R City

Through the source separation of organic waste and composting program, the Project has attracted much attention from other cities in Vietnam and study teams from Da Nang and other major cities have visited Hanoi City to learn about Hanoi's experience of the said program. Interviews at the URENCO's Publicity Division have found that Hanoi City is perceived to be an advanced 3R city and a number of study teams (of local public bodies, universities and others) from other cities have visited Hanoi City every year in the post-project period. For example, 18 such study teams visited Hanoi City in 2012. While there have been frequent media reports on solid waste management, concrete records have not been kept.

Based on the above, the project objective is deemed to have been achieved as the preparations for a harmonized 3R system based on the source separation program are in place. This assessment is backed by the continued implementation of 3R-related activities in the four model wards and by the development of the legal and institutional frameworks to secure budgetary funding for expansion of the source separation areas. However, in terms of the financial aspect, no decision has been made regarding how to finance the medium to long-term expansion of the source separation areas to cover entire Hanoi City. As far as the overall goal is concerned, its achievement is partial because of the fact that the source separation areas have not been expanded and also because of the fact that only

a limited number of activities based on the Strategic Paper have started. In contrast, the source separation of organic waste has been continuing at a very high level in the model wards and other positive impacts have emerged, including the inclusion of source separation in the national policy and the recognition of Hanoi City as an advanced 3R city. Among the target issues identified by the Strategic Paper, a master plan for solid waste management in Hanoi City has already been formulated as it is considered to be the most important issue. Once the budget for investment in the activities/projects proposed by the master plan are realized to conduct the improvement of existing waste treatment facilities, construction of new such facilities and expansion of the source separation areas, it is expected that the URENCO and other stakeholder organizations in solid waste management will receive extra manpower as well as funding, resulting in the realization of the various activities/projects proposed by the Strategic Paper.

The Project has somewhat achieved its objective and, therefore, its effectiveness and impact is fair.

3.3 Efficiency (Rating: ②)

3.3.1 Inputs

The planned inputs and actual inputs at the completion of the Project are shown in the table below.

Inputs	Plan	Actual Performance
Japanese Side		
(1) Experts	5 experts	13 experts
(2) Trainees Received	“Environmental Management” “Recycling Technologies” “Planning of a Recycling Society	13 trainees (First Session: 7, Second Session: 6)
(3) Third Country Training Program	No entry	8 trainees (Thailand)
(4) Equipment	Waste containers, AV equipment and other	Approximately 1,5 million yen (containers for source separation; containers for household separation; computer; digital camera; digital video camera; other)
Field Work Cost	Preparation of contents for the 3R promotion project; development of trial goods for promotion of source separation at households; implementation of the pilot project; development of consistent	No entry

	media contents; other	
Local Subcontracting Cost	No entry	102 million yen (waste survey; compost analysis; PR tools; events)
Total Project Cost	Total: 326 million yen	Total: 493 million yen
Vietnamese Side		
Deployment of Counterparts	As required	21 counterparts
Arrangement of Land, Facilities and Equipment	Arrangement of an office space	Arrangement of facilities (Project Office; vehicles for separate collection; compost plant)
Local Cost	Securing of the necessary budget	Project operation cost: Approximately 1,429 million VND (source separation collection; surveys and analyses; meetings; seminars; printing and other costs)
Other	The URENCO supplies necessary information and data on the pilot project for source separation and collection of organic waste, trial composting project and target areas of the pilot project and conducts necessary coordination between stakeholder organizations and local residents.	No entry

Source: Materials provided by JICA.

3.3.1.1 Elements of Inputs

A series of interviews with Japanese and Vietnamese people involved in the Project was conducted and the response was that the quality, quantity and timing of each input were generally adequate. The Vietnamese side highly appraises the quality of the Japanese experts, timing and duration of their dispatch, contents of the training in Japan and a third country, PR and educational activities under the Project and quality and quantity of equipment provided and believes that the adequate inputs led to positive outputs and outcomes.

As far as the recruitment of local staff for the Project is concerned, the original plan was simply to recruit a secretary-cum-interpreter for the Project Team. In reality, additional staff members were recruited at the beginning of project implementation in view of the fact that not enough counterparts were assigned to the 3R activities which were not standard duties of the URENCO and that it was essential to directly work with

residents in the model wards to encourage their participation in these activities. Interviews with staff members of the URENCO and others confirmed that the local staff employed for the Project collaborated with the counterparts and follow-up activities even when the Japanese experts were temporarily absent from the scene, positively contributing to the smooth and proper implementation of various activities. Meanwhile, the original plan for the Project did not include financial analysis of the source separation of organic waste and the composting business in the post-project period when the subject areas for source separation would have been increased. This analysis was added as a new project-related activity at a meeting of the Joint Steering Committee held in February 2008 and was conducted in the final year of the Project. Moreover, the quantity was substantially increased in the course of project implementation for such inputs as the analysis and market survey for compost, financial plan and improvement and provision of equipment for the composting facility. However, the outputs and outcomes of composting do not necessary correspond to the increased inputs at the time of the ex-post evaluation as shown in Table 4. The principal reason for this is that the planned expansion of the source separation areas has not been achieved.

3.3.1.2 Project Cost

The actual project cost was 493 million yen, higher than the planned cost of 326 million yen by 51%. The reasons for the higher project cost than planned are the extension of and additions to the dispatch periods of the Japanese experts, additional training, provision of additional equipment, etc. and increased cost of subcontracting in relation to various surveys and publicity activities.

3.1.3 Period of Cooperation

The period of cooperation was approximately three years as planned.

Although the period of cooperation was within the plan, the project cost exceeded the plan, therefore, the efficiency of the Project is fair.

3.4. Sustainability (Rating: ②)

3.4.1 Related Policy towards the Project

At the time of the planning of the Project, Vietnam was aiming at achieving the 30% recycling use of solid waste by 2020 under the National Strategy for Environmental Projection up to 2010 and Vision Towards 2020 (2003). The National Strategy for Integrated Solid Waste Management up to 2025 and Vision 2050 which came into force after the completion of the Project is another step forward and states that 85% of of the total solid waste from households in the urban areas of cities, which have their own

recycling facilities such as Hanoi City, will be collected and adequately treated by 2015, of which 60% will be recycled, re-used or converted to energy or compost. Promotion of the 3R in Vietnam has become more important in the environmental sector in general and the country's solid waste management policy in particular compared to the time of the Project's commencement and the target values have been upwardly revised.

Moreover, the Master Plan for Solid Waste Management in Hanoi City has already been passed by the HPC and is expected to be approved by the Prime Minister by the end of 2013. Improvement of the existing recycling facilities and the construction of facilities (composting, gasification, plastics recycling and other facilities) proposed in the said Master Plan will become a reality when the necessary funding for and investment in these facilities is secured. This new reality should then facilitate the promotion of the 3R and expansion of the source separation areas. In view of such prospect, the sustainability in terms of the related policies is high.

3.4.2 Institutional and Operational Aspects of the Implementing Agency

It is recognized that the organizational capacity of the URENCO has been improved through the pilot project, trial composting project and environmental education while the continuation of activities by the newly established Publicity Division at the time of the ex-post evaluation has been confirmed. Of the 21 counterparts working for the URENCO at the time of project completion, 18 still work there at the time of the ex-post evaluation. In the case of people's committees, women's unions and other organizations in the four model wards, many of those who participated in the activities introduced under the Project are still active in their organizations. Therefore, there do not appear to be any major organizational problems to hinder the continuation of source separation. For the promotion of the 3R throughout the four central districts with the expansion of source separation, however, there are several goals which must be successfully achieved. These include (i) training of URENCO staff members who were not counterparts for the Project, (ii) establishment of a cooperative relationship with people's committees, women's unions and other organizations in those areas where the source separation system is to be newly introduced in line with the planning manual formulated under the Project for the introduction of the said system to non-model wards, (iii) educational activities targeting residents and (iv) procurement of new containers and collection vehicles for source separation. To achieve these goals, it will be necessary for the URENCO to increase its staff strength and budget size. Moreover, enhancing the organizational strength of such superior bodies as the DOC (in charge of the development of environmental infrastructure) and the DONRE (in charge of environmental education and publicity) is

essential to spread source separation throughout Hanoi City with the URENCO utilizing the knowledge and skills learned from the Project to the maximum.

For expansion of the source separation areas, the collaboration between stakeholder organizations must be further enhanced along with the strengthening of each organization. Under the Project, the introduction of a material-cycle society embracing the entire material flow from the upstream to the downstream (material input → production → distribution → consumption → source separation → collection/transportation → recycling → final disposal) was aimed at by means of establishing the 3R Stars (consisting of some 85 organizations and individuals ranging from citizens, representatives of the private sector and administrative bodies to scholars and others) for the wide promotion of the 3R through the collaboration of citizens, the private sector and administrative bodies. At the same time, the 3R Council consisting of representatives of government organizations and scholars was established to discuss policies relating to the development of a material cycle society. These two organs have been inactive since the completion of the Project and there is a strong call among the people concerned to revive their activities. It is hoped that a network which will function like the 3R Stars and/or 3R Council will be established in view of the fact that the eventual enforcement of the Master Plan for Solid Waste Management in Hanoi City will make it necessary for citizens, the private sector and administrative bodies to discuss and agree on a number of issues, including the construction of waste treatment facilities and strict enforcement of a law controlling source separation and the illegal dumping of waste (crackdown on offenders).

Based on the above, the institutional and operational aspects of the implementing agency have some problems.

3.4.3 Technical Aspects of the Implementing Agency

The counterparts of the URENCO and waste collectors acquired knowledge and skills relating to the 3R through the pilot project and are still applying these skills today. The people's committees, residential groups and women's unions in the four model wards have also acquired knowledge and much experience of the 3R through the pilot project. No technical problems are anticipated in regard to the expansion of source separation to non-model wards in the four central districts of Hanoi City where the URENCO is responsible for waste collection due to the development of the necessary technical knowledge and skills under the pilot project. In the case of the composting business, as engineers of the compost plant have learned the wheel loader turning method under the Project, the conventional air fan method can be switched to the turning system with an

increase of the volume of organic waste to be treated, boosting the compost production volume. There is, therefore, a local understanding that there are no major technical problems regarding composting operation.

However, further strengthening of the technical capability of not only the URENCO but also other stakeholder organizations, such as the HPC, DOC and DONRE, is essential for the spread of the 3R activities to the entire area of Hanoi City based on the Master Plan for Solid Waste Management in Hanoi City.

3.4.4 Financial Aspects of the Implementing Agency

The main sources of income for the URENCO are its budget (consisting of a service fee based on the actual performance of waste collection, transportation and treatment and a subsidy) allocated by the HPC and the waste collection charge payable by households and businesses. Interviews for the ex-post evaluation have confirmed that there has so far been no special budgetary allocation by the HPC for the expansion of source separation. In the midst of a lack of funding for the expansion of source separation in the post-project period, the URENCO has somehow managed to implement source separation in the four model wards. Any expansion of source separation throughout the four central districts of Hanoi in the coming years will require a certain budget level for the procurement of containers and collection vehicles for organic waste, awareness raising and environmental education activities targeting residents and an increase of the number of waste collectors. The collection charge for households is currently 3,000 VND/person/month (approximately 14 yen based on the JICA exchange rate of 1 VND to 0.0046 yen in August 2013) and has not been revised since 2007.¹⁴ As already mentioned, the business situation of the compost plant is very tough because of the substantially lower sales price of compost than the production cost and also because of the sluggish growth of the sales volume. The introduction of both a collection charge corresponding to the cost of the waste treatment and recycling service as well as a compost price which matches the production cost is necessary to secure the URENCO's own funding sources. At present, any financial shortfall of the URENCO is supplemented by the HPC, illustrating the rather unprofitable business operation of the URENCO.

The draft revision of the Hanoi Solid Waste Management Regulation discussed and proposed by the 3R Stars during the project period was endorsed several months after project completion, completing the legal and institutional framework for the geographical expansion of the achievements of the pilot project. Interviews with officials of the DOC,

¹⁴ Revision of the collection fee requires the approval of the HPC.

DONRE and URENCO have found that there is a good prospect for an increase of the waste management budget and review of the collection charge once the Master Plan for Solid Waste Management in Hanoi City is implemented. The financial aspect of the URENCO is, therefore, likely to improve.

Some problems have been observed in the structural and financial aspects, therefore, the sustainability of the project effects is fair.

4. Conclusion, Lessons Learned and Recommendations

4.1 Conclusion

The Project aimed at creating a material cycle society in Hanoi City by means of establishing a 3R (reduce, reuse and recycle) system and making waste-related municipal policies incorporate the 3R through the implementation of a source separation and composting program, environmental education and publicity activities. As the Project was highly relevant to the development plan and development needs of Vietnam as well as Japan's ODA policy, its relevance is high. The Project has generally achieved its objective. The source separation of organic waste which was conducted on full-scale basis under the pilot project for the first time in Vietnam has achieved better results than planned with the understanding and cooperation of the residents of the four model wards in central Hanoi and has become an established practice in the post-project period. With the wide publicity of such achievement, Hanoi City is now recognized as an advanced 3R city at home and abroad. In terms of the impacts on policies, the source separation of organic waste and composting are clearly stated as effective means of practicing the 3R in the National Strategy for Integrated Solid Waste Management up to 2025 and Vision 2050 (announced in 2009) while there is a good prospect of the enforcement of the Master Plan for Solid Waste Management in Hanoi City which is essential for the implementation of the 3R. The Project has contributed to the development of a system to promote the 3R as such new organizations as the 3R Council, 3R Stars, 3R Volunteer Club and 3R Supporters were established under the Project. There are, however, some pending issues, including (i) the non-expansion of the source separation of organic waste to areas other than the model wards due to a lack of funding and shortage of manpower and (ii) the discontinuation of the activities of the 3R Council and 3R Stars. Therefore, the effectiveness and impact of the Project is fair. Although the cooperation period was as planned, various surveys and publicity activities which were not originally planned were added, resulting in a significantly higher project cost than planned. Therefore, the efficiency of the Project is fair. As promotion of the 3R is clearly stated in the environmental policy and solid waste management strategy of Vietnam, its sustainability

from the policy aspect is high and there are no institutional and technical problems in regard to the continuation of activities in the model wards. Meanwhile, there are some pending issues in relation to the implementation system and finance, therefore, sustainability of the project effects is fair. Once the said Master Plan has been officially approved with a concrete prospect of budgetary appropriation for and investment in the activities proposed in the Master Plan, there is a realistic expectation of an improvement of the waste treatment facilities and strengthening of the implementation system together with increased funding, all of which are necessary to achieve an expansion of the source separation areas.

In light of the above, this project is evaluated to be partially satisfactory.

4.2 Recommendations

4.2.1 Recommendations to the HPC

Dissemination of the 3R to the entire area of Hanoi City should be promoted by the HPC as a municipal policy while utilizing the skills and knowledge acquired by the URENCO through the implementation of the Project. The early implementation of activities proposed by the Master Plan for Solid Waste Management in Hanoi City is desirable to achieve the overall goal of “the implementation of a harmonized 3R system based on a source separation program for organic waste”. It is recommended here to the HPC that the HPC should allocate the necessary budget and manpower to ensure such early implementation of activities while re-starting a forum such as the 3R Stars launched under the Project for improved coordination as well as collaboration between citizens, the private sector and the administration.

4.2.2 Recommendations to JICA

None

4.3 Lessons Learned

1. Establishment of a Counterpart Organization(s) Corresponding to the Scope of the Project

The URENCO, the principal counterpart organization for the Project, is a public corporation supervised by the DOC and is the main implementation body for waste treatment in Hanoi City. It is responsible for (i) the collection and transportation of waste in the four central districts with the largest generation of urban solid waste in Hanoi City and (ii) the operation and management of the final disposal site and compost plant. It is, therefore, the ideal counterpart organization for technical cooperation in the fields in

which the URENCO operates. As described in 1.1 – Background, even though the source separation of organic waste was conducted in part of central Hanoi at the time of the ex-ante evaluation for the Project, it was not making smooth progress. Moreover, the concept of the 3R was not widely known among the citizens of Hanoi. Under these circumstances, the Project primarily aimed at making the citizens of Hanoi understand the concept of the 3R through environmental education and publicity activities and then feeling the significance of the 3R through their participation in the source separation of organic waste and composting program. From such viewpoint, the selection of the URENCO as the counterpart organization was appropriate as it would play a central role in the pilot project. However, not only the skills and knowledge possessed by the URENCO but also the decision-making and initiatives of the HPC are essential to make waste management policies reflect the achievements of the pilot project and to facilitate city-wide source separation as well as a 3R movement, both of which will require the policy coordination and collaboration of many stakeholder organizations and much funding.

It is true to say that the management of a project becomes somewhat complicated if more than one organization is selected as the counterpart organization. In the case of the present Project, however, the active and deep involvement of the HPC (DOC and DONRE) responsible for waste-related administration throughout Hanoi City from the very beginning of the Project as the counterpart for technology transfer in terms of policy formulation, system development and fiscal management would have ensure a higher level of effectiveness/impact and sustainability.

When planning a similar project in the future, it will be essential to determine the overall goal within the scope covered by the authority and decision-making of the selected counterpart or to select a counterpart which corresponds to the scope of the overall goal in order to achieve a higher level of effectiveness/impact and sustainability.

2. Innovative Ideas for Dissemination of the Pilot Project

Under the Project, the pilot project for the source separation of organic waste and trial composting project were implemented with the utmost care and the acquired knowledge was incorporated in a planning manual for the source separation of organic waste. The development of this useful tool for the extension of the pilot project went hand in hand with innovative ideas for the dissemination of the pilot project from the technical aspect. In reality, however, the scale of the pilot project was extremely small compared to the area and population of Hanoi City. Expansion of the source separation of organic waste to

non-model wards since project completion has not been achieved because of a lack of initiative on the part of the HPC in terms of the allocation of funding as well as manpower. In the case of a top-down administrative system such as that in Vietnam, it may be an idea to develop and utilize a process of dissemination which capitalizes on the characteristics of the administration (a dissemination model which operates along the axis of the administrative hierarchy from the HPC to district and ward HPCs) to strictly enforce educational activities and guidance on source separation from the viewpoint of securing sufficient budget and manpower allocation. Meanwhile, the procurement and installation of containers for source separation and the training of waste collectors should be left to a solid waste management body, such as the URENCO, so that these activities are implemented to a certain extent as part of the project design.

In many cases, a small and firmly structured model is difficult to apply to a wider area without modification. When a model (pilot) project is introduced as part of the main project, it is important at the time of project planning to clearly indicate the policy for the dissemination of the model project in the post-project period.

3. Essential Economic and Financial Perspectives When Examining How to Promote the 3R

The introduction of the source separation of organic waste and composting program under the Project was almost unprecedented in Vietnam at the time of its implementation. The URENCO which is responsible for waste management activities and the DOC which is responsible for waste management-related infrastructure still does not have a full understanding of the economic and financial aspects of the source separation system, including the cost of educational and practical guidance activities on source separation, recycling cost as part of waste management, cost of studies on the market demand for recycled goods and cost of expanding the sales channels for recycled goods.

When a component involving business operation is included in a project, comprehensive analysis of not only the project's technical and social aspects but also its economic and financial aspects is essential. The availability of a subsidy to make the component in question economically viable and other relevant matters must be fully examined prior to the implementation of the component.