Knowledge Lessons : Waste Management

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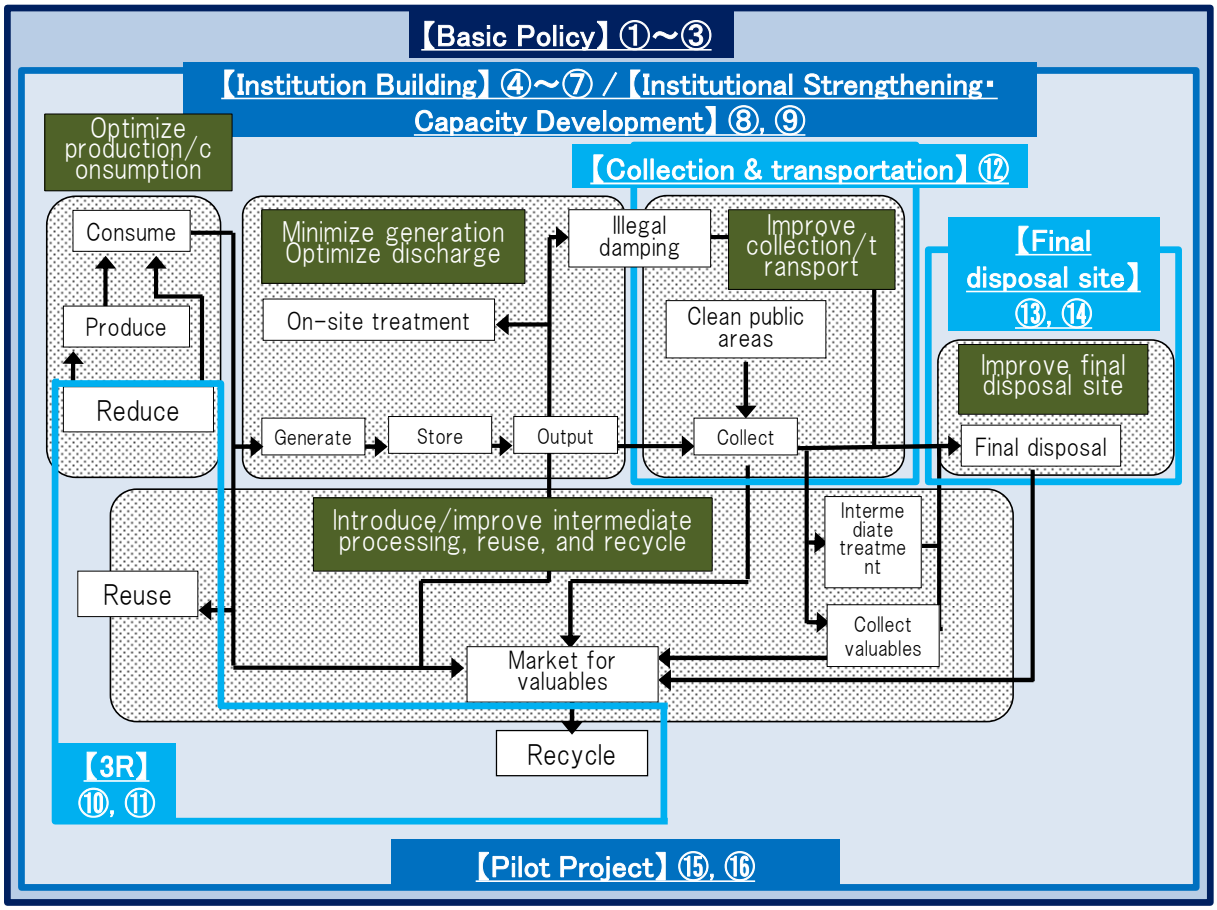

Knowledge Lessons : Waste Management

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Knowledge Lesson Sheet

Waste Management 1	Cooperation Policy	Basic Cooperation Policy of Project Design

Lesson (Matters to be considered and applied)	
Lesson Type	**Lessons on project management (Cross-sectoral)** **Lessons for sectors and sectoral characteristics**
Keywords	**Project design, development stages, waste management system, construction of implementation system, cooperative relationship-building, JICA's cooperation model**

Conditions for Application	Lessons (Countermeasures)	
Considering the project design of waste management	Point in time	Project formation stage Project planning stage
	Countermeasures (Approach)	To set an appropriate project design to effectively promote waste management
Risk (Considerations)		In JICA projects, "waste management" is defined as the "efforts to manage the set of processes that involve the collection and transportation of the discarded (waste) that is generated and discharged, as well as the intermediate treatments, reuse and recycling and final disposal of the waste." The subjects of "waste management" include all wastes, regardless of whether they are hazardous or not. 【JICA's Basic Cooperation Policy】 １．Integrated solid waste management to achieve the 3R ① Cooperation that builds solid waste management implementation frameworks Implementing proper solid waste management practices in developing countries requires increasing solid waste management capacity throughout the entire society as well as building sustainable implementation frameworks. Proper assessment must be carried out on all levels,
If the implementation system of the waste management project does not reflect the overall view or is not in accordance with the country's development stage, there is a risk of not being able to produce reasonable results and to conduct activities smoothly.		

		such as individual, organizational, institutional, and social in order to understand the existing capacity of targeted governments or municipal councils so that appropriate assistance could be provided to partner governments to establish integrated solid waste management frameworks. In working from this perspective, following seven aspects: (1) legal and institutional improvements, (2) organizational improvements, (3) financial improvements, (4) private sector involvement, (5) waste producer initiatives, (6) citizen participation, and (7) cultural and social considerations should be selected and combined, to consider cooperation activities. ② Assistance for process-wide improvements Solid waste management involves a waste management flow that starts with production/consumption and moves through the generation/discharge of waste, collection and transport, intermediate treatment or reuse/recycling, and final disposal. For this reason, cooperation first focuses on pinpointing specific problematic processes within the overall solid waste management flow. Once the underlying causes for technical issues or problems within each process are identified, cooperation measures are designed and implemented in consideration of five different processes: (1) optimizing production and consumption; (2) minimizing generation and optimizing discharge; (3) improving collection and transport; (4) encouraging intermediate treatment, reuse, and recycling; and (5) improving final disposal. 2. Assistance in accordance with the country's development stage

		2. Assistance based on development stages The amount of waste generated and its composition depend heavily on the level of economic development of the partner country. The problems that must be addressed and the goals that must be achieved change as economic development progresses. JICA offers assistance based on the following three stages of development. ① Stage I: Improving public health and sanitation ② Stage II: Reducing environmental impacts and pollution control ③ Stage III: Using 3R initiatives to establish a sound material-cycle society Although Japan has experienced all of these development stages, economic conditions in today's developing countries are characterized by the rapid emergence of consumer societies driven by globalization. This has drastically reduced the timeframe in which countries move through the three stages—and some countries may even experience multiple stages simultaneously or may not go through them in the same order. The situation makes it critical that the capacity and challenges of each partner country are properly assessed before moving forward. (See Source No.2 for more information.) 【JICA cooperation models with specific examples】 ① Comprehensive assistance models Assistance for comprehensive waste management will be implemented by accurately grasping the needs of developing countries and by promoting program approach that combine and deal with optimal schemes that address the identified challenges (Technical cooperation

		projects, Technical cooperation for development planning, Dispatch of experts, Grant aid, ODA loan, etc.). Assistance for infrastructure and facilities building is one of the strong points of Japan's assistance, and there are many cases in which large positive effects are expected. On sufficiently verifying the relevancy, active use is designed. ② Local government partnership models Local governments in Japan have accumulated a wealth of expertise and personnel able to address challenges like these as a result of the services they have been providing to local residents. It is, thus, important to advance projects in cooperation with local governments. (See Knowledge Lesson Sheet Waste 2) ③ Private sector partnership models For services that are capable for outsourcing operations, such as collection and transportation, intermediate treatment, energy recovery, recycling, final disposal, waste facility management (including facilities after the final disposal site closure) the viability of collaboration with the private sector should be examined. (See Knowledge Lesson Sheet 6) ④ Institution-building assistance models It has been common for developing countries to have industrial structures that place a heavy toll on the environment, and pollution levels are rapidly increasing. Strengthening regulatory frameworks and providing economic incentives are two effective ways to address this situation and prevent the contamination from spreading. Another effective approach is transitioning the industrial structure itself towards more environmental conscious one. JICA aims to provide assistance for formulating governments' policies and institutions and for strengthening

		capacity of administrative organizations. Alternatively, JICA demonstrates the model of specific waste management system in a municipality of a certain area and expands the appropriate model across the whole country. (See Knowledge Lesson Sheet 5, 9, 16, 17)
	Expected Effects	Projects with the waste management project design constitute a logical frame and will contribute to the achievement of the goal. Furthermore, by providing specific and appropriate roles for each stakeholder that is involved, activities of actors that are suitable for the logical frame are conducted.

Reference: Reference projects for the lesson / Sources

No.	Country	Project Name / Source	Keywords
1	Argentina	Project on Establishment of Control Capacity for Industrial Wastewater and Waste (Project for Technical Capacity Development for Industrial Wastewater and Waste Pollution Mitigation)	Cleaner production, evaluation methods, overall goal, non-regret policy
2		JICA. 2015. Commitment to International Cooperation by JICA's Waste Management Sector	Project design, waste management system, construction of implementation system
3		JICA. 2004. For Assistance for Capacity Development in Developing Countries' Waste Sector – Aiming to Improve Society's Waste Management Capacity –	Project design, coordination relationship building, stakeholders, division of roles
4		IDB-AIDIS-PAHO. 2011. Regional Evaluation on Urban Solid Waste Management in Latin America and the Caribbean -2010 Report	Waste management system, administrative jurisdiction

Knowledge Lesson Sheet

Waste Management 2	Cooperation Policy	Selection of the Project Area

Lesson (Matters to be considered and applied)	
Lesson Type	**Lessons for sectors and sectoral characteristics** **Lessons on project management (Cross-sectoral)**
Keywords	Target area, model effect, social and political conditions, past cooperation assets

Conditions for Application	**Lessons (Countermeasures)**	
Selecting a target area for waste management project	Point in time	Project formation stage Project planning stage
	Countermeasures (Approach)	For positive expression of results and smooth implementation, the number of the project's target region and cities needs to be set.
Risk (Considerations)		When selecting the target region of the project, it should be clear whether the project purpose is to improve the situation in a particular target area or to expand the development scheme to other regions. In considering the aim, the target region will be selected. 【Basic Considerations】 • In selecting the target region, the following should be noted. ① Performance and capacity of waste management in target cities and regions Adequate performance (collection rate, percentage of waste management budget) and capacity (understanding of the current situation, presence or absence of engineers in charge of waste management) that correspond to the expected activities and
If target cities and regions are not properly selected, there is a risk of negatively impacting the smooth implementation of activities, result expression and dissemination.		

		achievements should be confirmed. ② Intentions of partner governments and agencies From the viewpoint of collaborating with partner country officials, the selection will be carried out in light of their intentions and the key cities in their countries. ③ Presence or absence of support from other donors Information on the intentions of related donors should be collected, and coordination and cooperation among the donors should be conducted as needed. 【Setting appropriate target areas and number of cities】 The appropriate target areas and number of cities are set by taking into consideration the effect (improvement in subject cities, realization of outcome dissemination) and the cost. When the number increases, there is an advantage that "information collection and confirmation on a variety of different conditions become possible"; however, it also becomes disadvantageous in that "the necessary inputs increase," "investments per city will decrease and will become more difficult to generate effects," "it will require time for transportations, and activities would become inefficient," and "adjustments for the balance between regional and urban areas would become difficult." Because there are budgetary restrictions, the setting will be conducted appropriately. (Source: No. 1)

		In addition, the following can be cited as factors for the success of projects. ① Model effect on other regions When considering the provision and utilization of the post-project effects to other regions, regions and targets that are expected to proceed smoothly will be selected preferentially. In general terms, are expected big model effects for important areas of the partner country, such as the metropolitan areas and principal cities (in turn, is necessary to take into account some demerits such as "assistance to metropolitan areas makes bigger the scale and target area as those as the input amounts"; "in case of dissemination approach throughout the central government, it takes time until tangible effects become visible", etc. ② Consideration of social and political conditions Not limiting to physical conditions, other conditions that have large impacts on the development of waste management project—social conditions (such as the caste system and informal waste pickers related to waste handling) and political conditions (such as political relations with central governments in target regions)—should be taken into consideration. Factors that will lead to smooth implementation will also be determined. ③ Practical use of past cooperation assets In many developing countries, waste management-related projects have already been implemented in the past, and these

		assets (trained human resources, trust relationship with C/P, understanding of the role Japan plays in international development, etc.) should be effectively utilized. (Source: No. 2)
	Expected Effects	By effectively selecting the target area, suitable activities will be carried out smoothly.

Reference: Reference projects for the lesson

No.	Country	Project Name	Keywords
1	Philippines	Establishment of Ecological Solid Waste Management in three cities	Numerical determination of target areas and cities, construction of implementation system
2	Pakistan	Capacity Building for Solid Waste Management	Promotion of effective cooperation that utilizes past cooperation records and capacity accumulation
3	Oceania	Japanese Technical Cooperation Project for Promotion of Regional Initiative on Solid Waste Management	Numerical determination of target areas and cities

Knowledge Lesson Sheet		
Waste Management 3	Cooperation Policy	Consideration for Important Conditioins on Project Outcomes

Lesson (Matters to be considered and applied)	
Lesson Type	**Lessons on project management (Cross-sectoral)** **Lessons for sectors and sectoral characteristics**
Keywords	**Legal reform, jurisdiction scope, administrative district change, budget system change, contribution breach, funding delay, construction permit delay, land-use permit delay**

Conditions for Application	Lessons (Countermeasures)	
In cases where important conditions with difficult management that will determine the success or failure of the project exist	Point in time	Project formation stage Project implementation stage
Risk (Considerations)	Countermeasures (Approach)	Dealing with occurrence of external conditions
In cases where the issues of important conditions are not solved—,there is a the risk of not being able to carry out planned activities. Or even if the projects were implemented as planned, there is a risk that project goals and outcomes cannot be achieved.		In cases where important conditions (including external conditions) that may greatly impact on the generation of project effects exist, it is necessary to conduct checks, consultations and coordination with responsible institutions from the project planning stage, as well as to minimize effects on the important conditions. For those that are positioned as external conditions of the log frame (PDM), instead of simply labeling them outside of the scope of the project, the important conditions should be "internalized" as much as possible, lobbied, and monitored with institutions of partner countries. Important conditions that require specific attention include the following. 【Verification and Monitoring of the Related Activities that Correspond to the Responsibility of Partner Countries】 • In cases where activities by partner countries that comprise important conditions (Projects

		implemented by activities of C/P institutions and partner countries, equipment procurement and fiscal measures (expense)) exist, consultations and coordination with related organizations should be conducted from the planning stage, and monitoring should be carried out regularly in meetings to steadily deal with the circumstances. 【Confirmation of the authority of C/P agencies and jurisdiction scope】 After determining the authority of C/P agencies, if the service-operations/duties overseen by the partner countries are beyond the scope of jurisdiction of the C/P agencies, implementation system building and coordination meetings involving relevant organizations will be held. Moreover, it is crucial to discern the impact of changes of the jurisdiction scope of partner government agencies and the administrative districts. In case of change, it is necessary to adequately approach the leadership of the organizations. 【Fiscal Measures】 • For projects that require a considerable amount of funding as the burden of partner countries' institutions, such as for new landfill constructions and safety closure of existing disposal sites, there is a possibility that their funding cannot be provided as scheduled. • In cases where the policy priorities of waste management is low, it is possible that the budget necessary for the delivery of basic services (such as waste collection and transportation) will not be ensured. In addition to encouraging partner country institutions to fulfill their responsibilities, it is

		vital to review the content and implementation timing of project activities to minimize negative effects. Moreover, for the tasks engaged by the partner side, they are necessary to ask for those engagements including the accomplishment of time schedules; and also to take effective measures, such as exchanging agreement in writing, conditioning the commencement upon there achievements. Furthermore, after sufficiently confirming the revenues and expenditures of waste management, outreach for budget system change will be conducted as needed. (Source: No. 1, 3) 【Monitoring of the Development Status of Related Laws and Regulations and the Progress of Administrative Procedures】 For the construction and promotion of use of waste management-related facilities, the development of related laws and regulations (such as environmental emission standards and waste management facilities standards), as well as administrative procedures (such as construction permit delays and land-use permit delays) may be required. In particular, because changes in legislations and regulations are frequently observed in developing countries, it is important to gather sufficient information on the trends and conduct constant monitoring from the project formation stage. (Source: No. 2, 4)
	Expected Effects	By constantly monitoring the possibilities of not being able to clear the important conditions and carrying out necessary countermeasures beforehand, the realization of planned business outcomes will be expected.

Reference: Reference projects for the lesson

No.	Country	Project Name / Source	Keywords
1	Pakistan	The garbage collection and disposal project for the improvement of environmental conditions in Quetta	Contribution breach, administrative district separation, budget system change
2	Republic of Korea	Solid Waste Management Facilities Construction Project	Equipment specifications change, legal reform, land-use permit delay
3	Philippines	Boracay Environmental Infrastructure Project	Legal reform, jurisdiction transfer, jurisdiction change
4	Philippines	Establishment of Ecological Solid Waste Management in Three Cities	Funding delay, weather conditions
5	Albania	Project for the Support of Waste Minimization and 3R Promotion	Municipal consolidation

Knowledge Lesson Sheet

Waste Management 4	Institution Building	Considerations for Effective Policy Recommendation

Lesson (Matters to be considered and applied)	
Lesson Type	Lessons on project management (Cross-sectoral) Lessons for sectors and sectoral characteristics
Keywords	Policy proposal, counterpart, implementation system, implementation period and timing, understanding of current situation, training in Japan, follow-up

Conditions for Application	Lessons (Countermeasures)	
When implementing the policy recommendations cooperation related to waste management	Point in time	Project formation stage Project planning stage Project implementation stage Post-project completion
	Countermeasures (Approach)	In order to conduct policy recommendation assistance, necessary conditions must be recognized and organized.
Risk (Considerations)		In many developing countries, policies to smoothly ensure waste management are insufficient. Improvements of these policies, hence, have important implications. 【Appropriate selection of partner country counterparts】 If implementing policy advisory-type projects (not systems, but assistance at the policy-level), the project should be formed with the government agencies—which are at the center of policy planning and law development—as counterparts in partner countries. As a result: ① Active participation of ministries and agencies related to waste management (including the local level) will be obtained. ② Through the cooperation with researchers and institutions of partner countries that
If the policy recommendations fail to consider the situation of partner countries or are not fully based on Japanese knowledge/experience, there is a risk that these recommendations include inappropriate contents. Even if the recommended policies are suitable, there is also a risk that they are not smoothly and aptly utilized in partner countries.		

		have an influence on policymaking, it is possible to create significant impacts (such as involving in policy review processes in partner countries). For example, in "The project for promotion of municipal solid waste recycling" that was implemented in the People's Republic of China, the National Development and Reform Commission was designated as a C/P institution, leading to a smooth implementation of policy development support in the field of waste and recycling/circular economy. (Source: No. 1) 【Ensuring Experienced Policymakers on the Japanese Side and Construction of a System Where Experienced Japanese Policymakers Can Cooperate Proactively and Effectively】 In policy-making assistance, the construction of a system should be promoted, in which experienced Japanese policymakers can be obtained and can participate proactively and effectively will be promoted. ① Ensuring participation of Japanese researchers that have experience in waste management policy-making in the Ministry of Environment and Ministry of Economy, Trade and Industry. ② Enhancing collaboration schemes hiring Japanese researchers. In situations where there are issues concerning cost, time and procedures, there have been cases where positive input was attained by outsourcing contracts between the domestic committee members and their affiliated universities. ③ Set up occasions where Japanese policy-making officials can directly discuss with policy-making officials from partner

		countries (such as working groups). ④ The provision of sufficient information on the situation of target developing countries (such as basic data and site information) to the experienced Japanese policymakers from the consultants (Source: No. 1) 【Timing of Policy Recommendations】 In order for policy recommendations for waste management to actually be utilized in partner countries, it is essential that the timing to generating these recommendations match to the timing of the upper-tier development plan's review and formulation timeframe to be reflected on them. E.g. In cases where the objective encompasses revision or conduction of policy statements, they are necessary to verify the specific "roadmap" for the realization of the partner's concerned policy, and to formulate and to agree on project activities' schedules in order to be consequent with the required operational process. (Source: No. 1) 【Ensuring Flexibility of Business Operations】 It is not always easy to set necessary activities to provide effective policy recommendations at the beginning of projects. Therefore, in order to formulate appropriate policy recommendations, it is important to ensure sufficient flexibility in the implementation and management of projects. ① Identify truly necessary activities and implement with flexibility, depending on the circumstances. ② Ensure availability of necessary human resources (such as researchers and short-term experts).

		③ Conduct placements of both Japanese and local experts (central-local level) in a flexible manner. ④ To enable flexible implementation and management, coordination between the three parties—JICA headquarters, local offices and Chief Advisors—should be enhanced . (Source: No. 1) 【Importance of the Current Situation as a Premise of Policy Consideration】 In developing countries, the current status of material flow and waste disposal flow—which function as prerequisites for waste-management policy planning—is not identified accurately. To promote waste management, sharing the recognition of the current state is vital. It is important to advance comprehensive and quantitative recognition on where, how much and how waste is produced, as well as whether the waste is treated, disposed, reused or recycled. (Sources: No. 1, 2, 3) 【Promoting the Understanding of Policymakers that Underwent Trainings in Japan】 Through the participation of in-Japan trainings by officials that have influence over policymaking and institution-building procedures (including officials of ministries and agencies that are not direct counterparts), the understanding of policy and institutional details should be promoted. In particular, it is beneficial 1) for officials from multiple related organizations to participate together in the training and 2) to provide occasions for discussion with Japanese policymakers. As a result, there have been cases where the needs for the officials' recognition and policymaking have

		been shared, leading to smooth planning of policies and institutions. (Source: No. 1) 【Follow-up for Policy Implementation】 For the process of aptly implementing recommended policies in partner countries, there may arise problems that cannot be resolved solely by the partner countries. Hence, it is important to establish appropriate follow-up systems that enable greater recognition of the policies' viability and situation, and provide necessary assistance. (Source: No. 1)
	Expected Effects	Because the recommended policies will be beneficial for partner countries to be actively adopted and utilized. It is possible to contribute to the improvement of basic policies related to waste management in partner countries.

Reference: Reference projects for the lesson / Sources

No.	Countries	Project Name	Keywords
1	People's Republic of China	The project for promotion of municipal solid waste recycling	Policy recommendation, business implementation system, maintenance of implementation system, follow-up assistance
2	Thailand	The study on master plan on industrial waste management in the Bangkok metropolitan area and its vicinity	Source (factory) survey, industrial waste
3	Brazil	Development of an Integrated Solution Related to Industrial Waste Management in the Industrial Pole of Manaus	Source (factory) survey, processing flow, declaration form
4	Fiji	Waste Minimization and Recycling Promotion Project	Guideline, 3R policy, subsidies

Knowledge Lesson Sheet		
Waste Management 5	Institution Building	Promoting Participation of Private Sector

Lesson (Matters to be considered and applied)	
Lesson Type	**Lessons on project management (Cross-sectoral)** **Lessons for sectors and sectoral characteristics**
Keywords	**Private cooperation, private consignment, private investment, business sharing cooperation, PPP (public-private partnerships), SME, cleaner production, EPR (extended producer responsibility)**

Conditions for Application	Lessons (Countermeasures)	
When considering the participation of private operators in waste management	Point in time	Project formation stage Project planning stage Project implementation stage
	Countermeasures (Approach)	For the realization of effective waste management, the needs and conditions for private sector participation must be understood and be appropriately introduced.
Risk (Considerations) 【Limited implementation system of waste management due to the lack of private sector participation】 In cases where there is no private sector participation or where its sufficient participation cannot be ensured, only the government plays a direct role in waste management. As a result, it makes it more difficult to select a more efficient implementation system. 【 Control and Supervision of Activities by Private Sector】 If appropriate control and		Private sector participation is likely to contribute to increased efficiency of waste management. Many projects—such as waste collection, street sweeping, vehicle maintenance, fee collection and facility management—are subject to be entrusted to the private sector. It should be noted that, in comparison to the situation of direct management by local governments, improvement of the quality of existing services, expansion of service coverage, and contribution to the improvement of public health and environment via appropriate methods are set as conditions for the selection of private sector participation. Moreover, the development of management standards for private sector cooperation (such as bidding, contracts, monitoring and public information systems, as can be referred to below in “Enhancing

supervision are not exercised by government agencies over private businesses, it will lead to insufficient and inefficient project implementation. 【 Introduction of Systems that Require Cooperation with the Private Sector】 For systems that require private sector involvement as a prerequisite (such as cleaner production, expansion of EPR), their introduction will not be realized.		Institutional Capacity of Government Organizations for Private Sector Partnership") in advance will be necessary for the municipality side. 【 Approach for Promoting Participation of Private Companies】 In order to promote the participation of private sector, the existence of appropriate government-led contracts (fair selection of contractors, contract period that takes into consideration depreciation, quantitative terms and conditions), management (appropriate tariff setting and performance monitoring), and promotion of competitive environment (balance between private consignment and municipality-led operations, security for political risks induced by regime change, licensing system) become crucial. However, it must be noted that strong will and long-time are necessary for environmental development. (For more details, refer to No. 5, pg. 64-66) (Sources: No. 1, No. 3, No. 4, No. 8) Furthermore, building systems and mechanisms to aim to improve the organization aspects of private companies and officials can serve as an effective approach (Example: ① A registration system was established for waste pickers at the final disposal site, promoting the collection of valuable materials. ② As a result of instituting a permit system for the primary collectors of medical waste, a primary collectors' union was established and it paved the way for privatization. (Sources: No. 5, No. 6) 【 Enhancing Institutional Capacity of Government Organizations for Private Sector

		Partnership】 To achieve cooperation between the government and private sector, the requirements for capacity development of governments are as follows. <u>Local government level:</u> ① Capacity for cost analysis and estimate, ② Ability to identify technical demands, performance standards and monitoring indicators, ③ Aptitude for creating documents for contracts and licenses, as well as for bid evaluation and contract negotiations, ④ Capacity for surveillance monitoring, ⑤ Enactment of regulations that aim to establish cooperation with residents, beneficiary payments, appropriate discharge manners and volume reduction, ⑥ Development of cost recovery mechanisms, ⑦ Development of mechanisms that implement sanctions against low performance and wrongdoings. <u>Central government level:</u> ① Development of policy guidance for private sector participation and cost recovery, ② Consolidation and strengthening of the implementation capacity of legal deterrence measures for waste disposal and use of open dumping methods, ③ Development of guidelines and standards for waste sorting, storage, processing and disposal. (Source: No. 8) 【Considerations for Projects Related to Cleaner Production】 Cleaner Production requires the incorporation of production technologies from a wide range of industrial fields, as well as consideration on how

		to make improvements via specializations in production technologies. Thus, it is, in particular, important to promote cooperation with the industrial sector. ① Assign institutions that have a strong relationship with the main constituent as C/P. ② Incorporate content that promotes the coordination and cooperation in activity descriptions. ③ Clarify the subjects, content and goals of the projects (For example, "The Dissemination of the Cleaner Production Concept" and "Technological Expansion of Cleaner Production for Specific Industries"), and perform appropriate investments and activities. (Sources: No. 2, No. 10) 【Promotion of Private Investment and Technology】 In the course of implementing assistance only with the conventional scheme of JICA, cooperation with public-private partnership (PPP) projects and small- and medium-sized enterprises (SME) assistance initiatives should be considered as necessary.
	Expected effects	Participation of private sector will contribute to increased efficiency of waste management and ensuring profitability in accordance with market principles. Also with private sector participation, optimization of special waste handling and expansion of cleaner production—which requires special technology—will be expected.

Reference: Reference projects for the lesson / Sources

No.	Country	Project Name / Source	Keywords
1	Bangladesh	Solid Waste Management Study in Dhaka City	Private organization cooperation, business sharing cooperation
2	Argentina	Project on Establishment of Control Capacity for Industrial Wastewater and Waste (Project for Technical capacity Development for Industrial Wastewater and Waste Pollution Mitigation)	Cleaner production
3	Philippines	The Study on Recycling Industry Development in the Philippines	Participation of associated companies
4	Malaysia	The Project for Model Development for E-Waste Collection, Segregation and Transportation from Households for Recycling	Participation of associated companies
5	Oceania	Japanese Technical Cooperation Project for Promotion of Regional Initiative on Solid Waste Management	Waste picker, registration system
6	Bangladesh	Project for Strengthening of Solid Waste Management in Dhaka City	Primary collection, privatization, permit system
7		Strategy Paper on Waste Management by the Japan International Cooperation Agency (JICA)	Private cooperation model, private consignment, private investment
8		JICA. 2004. For Assistance for Capacity Development in Developing Countries' Waste Sector – Aiming to Improve Society's Waste Management Capacity –	PPP advantages, PPP promotion, capacity building of local government, SME involvement
9		GIZ. 2013. Operator Models. Respecting Diversity: Concepts for Sustainable Waste Management	Standard example of PPP
10		GTZ-CWG. 2005. Private Sector Involvement in Solid Waste Management. Avoiding Problems and Building on Successes	PPP disincentives

Knowledge Lesson Sheet		
Waste Management 6	Institution Building	Regional Waste Management System

Lessons (Matters to be considered and applied)	
Lesson Type	**Lessons on project management (Cross-sectoral)** **Lessons for sectors and sectoral characteristics**
Keywords	**Wide-area waste management, economies of scale, technical and financial efficiency, financial base enhancement, sustainability, metropolitan area, interest adjustment, social research, understanding of needs**

Conditions for Application	Lessons (Countermeasures)	
In cases where the construction of waste disposal system, final disposal sites, intermediate treatment facilities, transfer stations, collection and recycling system of valuables covers multiple municipalities waste management system.	Point in time	Project formation stage Project planning stage Project implementation stage Post-project completion stage
	Countermeasures (Approach)	On top of clarifying the implications of implementing regional waste management, institution-building and adjustments will be proceeded in reflection of the needs and inclination of the related parties.
Risk (Considerations)		【Study of wide-area waste management】 For projects that are considering broad-based waste management, it is necessary to fully consider their backgrounds and their needs and demerits. <u>Background and necessity of regional management</u> • Necessity of waste disposal suburbanization associated with urbanization • Necessity of implementing efficient collection and transportation activities • Necessity of high waste management capacity <u>Advantages of regional management</u> • Improved efficiency due to the scale merit (including recycling projects that are carried
In cases where regional waste management cannot be realized, it will not be possible to enjoy the economies of scale and will result in inefficient waste management operations. More specifically, the following risks will ensue. • Expenditures on waste management will increase, which will put pressure on the finances. • In cases where the private sector is responsible for the operation of waste facilities and payment		

conditions are proportional to the loading and processing of waste, the profitability of operations will become difficult. • There is a possibility that recycling businesses—which involve low volumes of collectable valuables and are carried out in adjacent disposable sites—will not be profitable to operate.		out at the final disposal sites' adjacent land) • Optimization of the scale of facilities • Acquisition of technical skills for proper disposal • Ensuring of treatment responsibilities to municipalities • Securing suitable sites <u>Disadvantages of regional management:</u> • High transportation costs due to increase in transportation distance • Interest adjustments between waste-accepting municipalities and those that discharge waste (Source: No. 2, No. 4, No. 5) 【 Criteria of Regional Management Implementation】 • Needs as problem-solving methods • Needs on policies and environmental conservation • Political will and structure for the implementation, as well as the staffing situation of relevant municipalities • Whether there is unity of the living areas among the target multiple municipalities or -multi-area region and whether there is a certain population size • Whether there is support from higher authority (province, country) and measures for financial assistance • Whether agreement from the residents can be obtained (Source: No. 2) 【Coordination between regional and local governments】 Because multiple regional and local governments are involved in broad-based waste

		management, it becomes necessary to perform the maintenance and management of treatment and disposal facilities in collaboration. As a result, it becomes necessary to coordinate with nearby municipalities. In order to perform such adjustments and coordination effectively, it is required to develop proper plans and accurately explain their advantages and disadvantages. (Source: No. 3) 【System Design Based on the Current Situation of Beneficiary Needs】 In order to ensure the sustainability of wide-area management, it is important to understand the details of the beneficiaries' needs and, on top of that, incorporate studies of the contents of the system (design of collection routes, methods for fee burden and collection). In particular, in cases where local governments with various political, tribal and economic diversities are involved, it is necessary to actively incorporate social surveys. The introduction and utilization of common financial and accounting systems by agencies involved in broad-based management will enable the development of effective budget planning via accurate understanding of the cost, which will be very effective towards ensuring sustainability and strengthening of the financial base. (Source: No. 1)
	Expected Effects	• Economies of scale will be enjoyed and positive financial effects will be obtained, which will be advantageous for waste facility operations. • Although depend on the market's supply and demand, the increase on the volume of valuables that can be collected creates

		opportunities for establishing the recycling industry.

Reference: Reference projects for the lesson / Sources

No.	Country	Project Name / Source	Keywords
1	Palestine	The Project for Capacity Development on Solid Waste Management in Jericho and Jordan River Rift Valley in Palestine	Understanding of needs, utilization of social research
2		JICA. 2007. JICA's activities for the promotion of 3Rs in developing countries and Japan's experiences in the promotion of 3Rs	Wide-area study, advantages and disadvantages of wide-area management, economies of scale, cases of wide-area cooperation (p.261-264)
3		JICA. 2004. For Assistance for Capacity Development in Developing Countries' Waste Sector – Aiming to Improve Society's Waste Management Capacity –	Cases of wide-area management
4		GIZ. 2013. Operator Models. Respecting Diversity: Concepts for Sustainable Waste Management	Cases of wide-area management
5		IDB-AIDIS-PaHO. 2011. Regional Evaluation on Urban Solid Waste Management in Latin America and the Caribbean – 2010 Report	Cases of wide-area management

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Knowledge Lesson Sheet		
Waste Management 7	Institution Building	Industrial Waste Management

Lessons (Matters to be considered and applied)	
Lesson Type	**Lessons on project management (Cross-sectoral)** **Lessons for sectors and sectoral characteristics**
Keywords	Industrial waste, Waste Treatment Law, treatment responsibility, industrial waste treatment enterprise, investigation of sources and factories, in-factory treatment, treatment flow

Conditions for Application	Lessons (Countermeasures)	
In cases when project for improving industrial waste management is provided and, in particular, when supporting Japanese companies that expanded their factories into partner countries is implemented	Point in time	Project formation stage Project planning stage Project implementation stage
	Countermeasures (Approach)	Carry out assistance by sufficiently understanding the differences in (general) waste management in cities.
Risks (Considerations)		【Definition and Processing Responsibility of Waste】 • In Japan, industrial waste is defined in the Waste Treatment Law as follows; "Waste is classified into industrial waste and general waste. Industrial waste is defined as waste generated by business activities (20 types—such as cinders, sludge, oil waste, acid waste, alkali waste, plastic waste—are specified). Municipal solid waste is defined as waste other than industrial waste." Moreover, "company officials that discharge industrial waste must, in principle, treat the discharged industrial waste at their own responsibility; but in case they are unable to do so, they can entrust the responsibility to waste treatment companies that have license of the industrial waste treatment service. • In developing countries, there are very few cases where industrial waste is defined by law. Among industrial waste, the processing of hazardous waste—which entails many challenges—is under the responsibility of waste producers. These waste
【Assistance Based on Definition and Administrative Clarification】 • If projects are implemented based on the definition and classification of industrial waste management that is different from those requested by partner countries, it may be possible that, if the project is carried out, it will not reflect the partner countries' policies and systems and can possibly trigger the risk of not obtaining sufficient results. 【Understanding of the		

Situation of Target Countries】 In cases where countermeasures were considered without understanding the specific realities of waste at the emission source, there is a risk that the content will not reflect the actual situation of partner countries.	producers or, alternatively, private waste service operators that are commissioned by the waste producers manage the treatment systems and conduct treatment and disposal activities. The support should be advanced, taking into consideration the different definitions of industrial waste in each country. 【Assistance for the Construction of Institutional System】 • In regards to industrial waste management, public institutions will function as a supervisory body instead of implementing agencies. Thus, the primary content of the assistance does not entail the management of waste treatment equipment and facilities (technical system), but will involve "the construction of mechanisms (institutional systems) so that governments can properly manage treatment business activities of waste producers or private waste service operators that are commissioned by the waste producers. • It should be noted that, like the facilities for hazardous waste treatment, initial investments for the facilities are enormous. Thus, in cases where there are no appropriate treatment facilities in the country, there are cases where governments conduct facility construction and treatment service operations in cooperation with private businesses. (Thailand's GENKO and Turkey's IZAYDAŞ) 【Current Status of Industrial Waste • Understanding the treatment flow】 • In order to understand the handling and treatment realities and challenges of each waste type, it is crucial to conduct surveys on the waste reality with waste producers that possess primary processing responsibility (mainly factories). • There are many types of industrial waste sources and waste types, and it is difficult to perform factory

		surveys on all types of waste and sources. Therefore, the investigation will be conducted after clarifying the definition of the research plan's purpose and establishing the classification of the target sources and waste. •Because the treatment reality differs for each type of waste, it will be explored for each waste type as much as possible. However, the definition for industrial waste is complex and includes many types, and there is also need for analytical tests for identification. Due to these hurdles, the generated amount and treatment status cannot be clearly identified and this point should be noted. • Unlike municipal solid waste, in-factory treatment of industrial waste (especially hazardous waste that lacks proper treatment operators) is frequently conducted. This point should also be noted. • For treatment businesses, there are cases that the government is not grasping the whole situation and the realties are difficult to recognize. Hence, to understand the industrial waste handling and its treatment flow, it is effective to first perform factory investigations by as many industrial types as possible; understand the particular treatment situation of industrial waste; and complement the lack of information on factory investigations with surveys on treatment service operators. (Sources: No. 1, 2, 3)
	Expected Effects	The realities of industrial waste will be effectively understood, and institutional systems that resolve challenges concerning industrial waste management will be improved and constructed. In addition, the following impacts can be expected for companies, including Japanese ones. (General companies) The development of the factories' appropriate waste management system will

		be promoted, and the risk of improper treatment will be avoided. (Companies in industrial waste treatment) Through accurate understanding of the demand and institution building, appropriate businesses and projects can be expanded. (Sources: No. 2, 3)

Reference: Reference projects for the lesson / Sources

No.	Country	Project Name	Keywords
1	Chile	Management Plan for Industrial Solid Waste Treatment Systems in the Region Metropolitana (Santiago)	Investigation of sources (factory)
2	Thailand	The study on master plan on industrial waste management in the Bangkok metropolitan area and its vicinity	Investigation of sources (factory), harmful industrial waste, external treatment, waste disposal operators
3	Brazil	Development of an Integrated Solution related to Industrial Waste Management in the Industrial Pole of Manaus	Investigation of sources (factory), waste inventory, regulation of improper treatment and disposal, manifest system

Knowledge Lesson Sheet

Waste Management 8	Institutional Strengthening • Capacity Development	Capacity Development of Public Administration

Lessons (Matters to be considered and applied)	
Lesson Type	**Lessons on project management (Cross-sectoral)** **Lessons for sectors and sectoral characteristics**
Keywords	**Organizational capacity, central and local governments, human capital, physical capital, intellectual capital, private sector and public-private partnerships**

Conditions for Application	Lessons (Countermeasures)	
When implementing capacity development procedures for administrative organization related to waste management	Point in time	Project formation stage Project planning stage Project implementation stage
	Countermeasures (Approach)	Considering the importance of administrative organization related to waste management, appropriate capacity development measures that are in line with organizational characteristics and circumstances will be promoted.
Risks (Considerations)		
【Capacity Development of Waste Management Organization】 In cases where suitable organizational selection and measures that reflect the characteristics of the organization are not taken, there is a risk that appropriate capacity development would not be achieved in both organizational and individual aspects. As a result, resources necessary for waste management will not be fully utilized, and thus there is a risk that		【Understanding and Support that Correspond to the Organization】 Waste management organizations in developing countries have various characteristics depending on the country, and necessary organizational improvements should be implemented by understanding those situations. ① Organizational Structure (Example: Related operations are distributed across multiple parts, operations and functions are divided between central and local institutions): The main organizations, related policies, and the development of strategies and plans of the waste management system at central and local levels, as well as the organizations that

proper waste management will not be implemented. Moreover, concerns regarding the increase in the number of personnel in waste management organizations and their proper placements will not arise. 【 Organizational and Capacity Development of Local Governments】 Local governments are practitioners of waste management practices. In cases where necessary measures for capacity development are not being taken, and the capacity development of local government officials cannot be realized, there is a risk that the practice of waste management will not progress smoothly. 【Effective Capacity Development】 Where the methods of capacity development and technology transfer are unsuitable, there is a risk that capacity development will not progress smoothly.		put them in practice must be identified. ② Revenue Structure (Example: Biased and uncertain revenue structure) ③ Instruction System (Example: Non-sharing of bottom-up information) (Source: No. 3) 【Capacity Development of Waste Management Administrative Organization】 It is important to recognize that formulation of related laws, and establishment of regulations and development of waste management plans are conducted at the central government level, and at the local government level (including ordinances), respectively, and JICA should select appropriate organizations as counterparts for improvement of their capacities. 【Method of Capacity Development and Technology Transfer of Waste Management】 In waste management administrative organizations, the following elements are necessary: - Personnel with technical and management skills and planning capability - Facility equipment, land and funding necessary for each project - Development of statistical information and research data - Strong will and involvement of the organizations' leaders In relation to the strengthening and capacity development of these elements, the following cases have been presented. ① In cases especially where there is little experience and the institutions and systems have not yet been developed, an approach

		that promotes capacity development through practice should be adopted, where activities (such as waste collection) are actually carried out and demonstrated. By actually attempting these activities and exposing them to the eyes of residents and officials, it is expected to generate various pressures and support. (Source No.1, No. 2) ② Providing opportunities that counterparts utilize the transferred knowledge and technologies and offer guidance to third parties. (Example: Providing opportunities for implementing project activities through pilot project management and holding seminars to transfer technology by counterparts to local cities) (Sources: No.1, No.2) ③ In cases where the counterpart consists of multiple agencies, they need to assist each other to achieve a common goal via, for example, by holding regular meetings. In addition, a mechanism that enables these C/P to have a friendly competition with each other and that fosters and strengthens their independence should be built. (Sources: No.1, No.2) ④ The effective utilization of past cooperation assets (such as trainees) should be designed and promoted. ⑤ The image of the goal/target to be realized should be clarified by utilizing trainings in Japan and in third countries. ⑥ Practical and effective approach methods will be adopted by, for example, actively utilizing organizations that have an impact on capacity development subjects. ⑦ Enhancing the common understanding on the goal and challenges between parties

		through visualization; For example, scoring and conducting the achievements and challenges of capacity development. ⑧ In order to prevent cases where the results of capacity development are not utilized due to personnel changes, necessary project manuals and guidelines should be developed. (Sources: No.1, No.2, No.5, No.6) 【Organizational and Capacity Development for Waste Management Promotion in Local Governments】 To enhance the capacity development of the local governments' waste management promotion, sufficient capacity development of not only local government officials, also the central governments' officials that provide guidance to local governments should be aimed (and, as a result, the assistance system of central government to local governemts should be established). Moreover, regarding the practice of capacity development, a channel that enables central and local government officials to discuss and build consensus should be established, and sufficient communication should be ensured. (Source: No. 4)
	Expected Effects	By utilizing the physical, human and intellectual capital related to waste management, effective management on both hard and soft aspects will be possible, leading to the improvement and efficiency of waste management.

Reference: Reference projects for the lesson / Sources

No.	Country	Project Name / Source	Keywords
1	South Sudan	The Project for Capacity Development on Solid	Technology transfer

		Waste Management in Juba	through practice and experience
2	Fiji	Waste Minimization and Recycling Promotion Project	Establishment of mechanism to foster and strengthen independence, and to promote competition (such as joint week example conferences)
3	Bangladesh	Solid Waste Management Study in Dhaka City	Organizational characteristics
4	Albania	Project for the Support of Waste Minimization and 3R Promotion	Establishment of channel between central and local governments
5	Sri Lanka	Capacity Upgrading Project for the National Solid Waste Management Support Center	Visualization of the results of capacity development
6	Panama	The Project for Improvement of Solid Waste Management for the Municipality of Panama in the Republic of Panama	Securing sustainability
7		JICA. 2004. For Assistance for Capacity Development in Developing Countries' Waste Sector – Aiming to Improve Society's Waste Management Capacity –	Organizational capacity, human capital, physical capital, intellectual capital

Knowledge Lesson Sheet		
Waste Management 9	Institutional Strengthening・Capacity Development	Participation of Communities and Residents

Lessons (Matters to be considered and applied)	
Lesson Type	**Lessons on project management (Cross-sectoral)** **Lessons for sectors and sectoral characteristics**
Keywords	Residents' understanding and participation, waste management by communities, education and mass media, CBO (Community-based Organization)[1], municipalities, 3R and separate collection, fare collection

Conditions for Application	Lessons (Countermeasures)	
In cases where waste management projects that necessitate participation and understanding of the communities and/or residents are implemented.	Point in time	Project planning stage Project implementation stage
	Countermeasures (Approach)	For the realization of residents' understanding and participation, active approach that takes into account the realities of countries and regions will be taken.
Risks (Considerations)		Because the meaning and character of target countries and regions differ greatly (there is greater importance in countries and regions with weak administrative organizations), it is desired to effectively promote participation and enable activity practices, on top of gathering sufficient information and understanding the situation.
When active participation cannot be obtained in projects where the participation of the community and residents is essential, there is a risk that the following problems will ensue. ① Appropriate operation and institutional design that reflects the residents' realities and needs cannot be provided. ② The project and system do not work as planned. ③ Appropriate service fees that are		【Elements that enhance the sustainability of waste management and resident involvement by the community】 Although waste management efforts conducted by the community are accompanied by difficulties in continuing them after the assistance has ended, their sustainability could be enhanced by paying attention of the following

[1] CBO（Community-based organization）：Organization constructed by the community

essential to ensure sustainability of operation cannot be collected. ④ There is a risk that a relationship of trust cannot be built, and projects can be deadlocked due to opposition from some residents. Without commitment of CBO, small businesses and roles of local governments on their assigned responsibility, sustainability of continuous efforts such as separate collection, valuables collection, will not be ensured. Particularly in regions with low education levels, household transmissions of information from children to adults become necessary. Without the knowledge and learning acquired at school, the residents' understanding and participation in the activities—which lead to information dissemination and attitude change—cannot be attained.		subjects and attempts, and by planning and implementing projects. • Find out the key targets and subjects (community leaders, CBO, women, local authorities, intermediary organizations such as NGOs) to encourage their active involvement in the activities. (For more details, see No. 6, P. 73-74) • The following cases exemplify attempts to promote the residents' understanding and participation. ① Implementation of community education and awareness programs (Specific activity examples) i. Continuous holding of stakeholder meetings to promote residents' understanding and participation, ii. Creation of programs that foster residents' understanding (provision of occasions for mutual learning between communities), iii. Creation of teaching materials for environmental education, iv. Practice activities to promote residents' awareness related to waste management, v. Raising publicity of achievements in consideration of the languages used in the community vi. Understanding of needs through residents' awareness surveys, vii. Continuous follow-up by the government. ② <u>Cooperation between CBO and local governments:</u> For the implementation of services of the CBO and micro-enterprises and local governments, the responsibility sharing and

		mutual commitments will be confirmed. As a result, a mutual partnership will be formed and continuation of services will be ensured. For example, when introducing community-based waste management, it is necessary to establish a cooperative relationship among CBO which is responsible for primary collection, micro-enterprises that discharge different waste from municipal solid waste and have responsibility to appropriate treatment of it, and local government that conduct secondary collection to final disposal. ③ Citizen's participation from the project formation and planning stages: To actively utilize residents' ideas, organizational structure-making of services that take into consideration community participation from the formation and planning stages will be carried out (such as recruiting and applying slogans and logos of waste management activities from citizens). ④ Stability for operation and its finance : In order to create a system that is financially feasible and sustainable, a fee collection system should be established. i. Return should be expected for those who cooperate and follow rules, and if rules are not followed, appropriate incentives—such as applying penalties—will be granted. ii. Appropriate and affordable fee should be set to avoid creation of unfair feelings among residents or free rider problems. (Sources: No. 1, No. 2, No. 3, No. 4, No. 6) 【Practice of environmental education and

		information dissemination through schools】 • By offering opportunity to children to learn about the environment and waste issues in primary schools and to participate in activities, effects of promoting the understanding and participation in waste management at home will be promoted. • From the standpoint of ensuring sustainability, the involvement of relevant government agencies (such as the Ministry of Education) should be proceeded. (Source: No. 5) 【Information dissemination that effectively uses mass media, etc.】 • Using different opportunities—such as actively providing information on the various events and projects to mass media—information will be disseminated as to increase the citizens' interest in waste. (Source: No. 5)
	Expected Effects	Through citizens' understanding and active participation—which are essential to the promotion of waste management—projects and institutions that are sustainable and meet the needs of service users will be established and rooted.

Reference: Reference projects for the lesson / Sources

No.	Country	Project Name	Keywords
1	Kosovo	The Project for Enhancement of the Capacity for Waste Management toward Sound Material-cycle Society	Various efforts to involve the residents in activities
2	14 Pacific Countries	Japanese Technical Cooperation Project for Promotion of Regional Initiative on Solid Waste Management	Identification and promotion of involvement of key local groups
3	Palestine	The Project for Capacity Development on Solid	Active participation of

		Waste Management in Jericho and Jordan River Rift Valley in Palestine	beneficiaries and involvement・information transmission of associated parties
4	Vietnam	Implementation Support for 3R INITATIVE of Hanoi City for Cyclical Society	Mobilization and promotion of participation of a wide range of stakeholders
5	Pakistan	Project for Integrated Solid Waste Management Master Plan in Gujranwala	Active utilization of elementary school education and mass media
6		JICA. 2004. For Assistance for Capacity Development in Developing Countries' Waste Sector – Aiming to Improve Society's Waste Management Capacity –	CBSWM, sustainability of public participation

Knowledge Lesson Sheet		
Waste Management 10	3R	Appropriate Introduction of 3R

Lessons (Matters to be considered and applied)	
Lesson Type	**Lessons on project management (Cross-sectoral)** **Lessons for sectors and sectoral characteristics**
Keywords	**Development stage consideration, sound material-cycle society, 3R (reduce, reuse, recycle), 3R introduction, 3R promotion, economic and financial analysis, incentive provision, business benefit sharing, composting, rare metals recovery, E-waste (electrical and electronic equipment waste), soil pollution**

Conditions for Application	Lessons (Countermeasures)	
For promoting the introduction of 3R for the construction of sound material-cycle societies	Point in time	Project formation stage Project planning stage Project implementation stage
	Countermeasures (Approach)	It is important to take into consideration that the 3R introduction is a new approach in many developing countries, and appropriate actions must be taken. However, it is vital to perceive 3R as a form of waste management. 【Relevancy of 3R introduction in accordance with the country's development stage】 Because the need for 3R in developing countries varies significantly by their economic growth and city scales, assistance should be proceeded by understanding the development stages of target partner countries (regions). Nevertheless, even for low-income countries, the 3R issues (sorting at emission source, etc.) could be of important significances, rely on the needs that cause densely populated areas of capital cities etc., or from the point of view of rising awareness on the management of waste. 【Considerations when introducing recycling and waste reduction by the government】
Risks (Considerations) 【Consideration of assistance that reflects the country's development stage】 There is a risk of implementing assistance that do not meet the country's needs and priorities. 【 Clarification and sharing of economic and financial benefits of 3R introduction】 Despite the common understanding of the necessity of waste management, without recognizing		

the benefits (such as the meaning of investing public funds and from the financial standpoint), active cooperation and involvement of stakeholders for the promotion of waste management will not be obtained. There is, thus, the risk of not being able to sufficiently implement activities (especially when there are many stakeholders). 【Provision of appropriate incentives】 For projects that collect valuable resources, if appropriate incentives are not provided, there is a risk that their development and promotion will be delayed.		To introduce collection of valuable sources as measures, the following points should be noted. ① <u>Understanding the outlook of financial burden and considering measures by the government:</u> While identifying the financial burden when introducing separate collection and confirming their validity, necessary measures must be taken. ② <u>Promotion of dialogue with the emitters:</u> On top of identifying the major emitters, sufficient provision of information and dialogue should be conducted so that understanding should be obtained. At the same time, their hopes and perspectives should be actively incorporated. Clarifying the responsibilities of governments and emitters on valuable-resources recovery through dialogues is vital to establish cooperation from the emitters. ③ <u>Interventions into separate-collection mechanisms that are already conducted by the private sector:</u> Measures that, for example, supporting the collection of valuable resources conducted by the private sector, should be considered. If the balance of supply and demand in the market of valuable materials is destabilized by governmental collection schemes, the private sector will be threatened. (Source: No. 5, P. 96-97) 【The importance of clarifying and sharing benefits】 • Verification of the effects and progress of 3R using quantitative data will enable the activities to be linked directly to waste

		reduction and economic value, which will lead to greater understanding. As a result, 1) thorough understanding about the project by the C/P, improvement of involvement and practice of 3R, as well as 2) the C/P's capacity improvement in coping with challenges via experiences in regularly grasping the situation will be expected. (Example: 1) By introducing truck scales, the progress of the 3R activities, as well as the disposal volume by waste (numerical data) will be utilized and verified; 2) In terms of management of E-waste, its value is shared by capturing the perspective of not only waste management, but also of resource-recycling of rare metals.) (Sources: No. 2, No. 3) • To foster the understanding of benefits of 3R, it is important to establish and plan appropriate incentives (as examples of economical incentives should mention, mechanism for purchasing sorted valuable materials from the waste producer; either, repayment of allocated cost to the waste producer; taxation benefits to the producers who are actively engaging in 3R practices, or introduction of awarding system; subsidiary supporting measures to the community, etc.) to implement the 3R and to carry out publicity and education programs to stakeholders. This point should be fully understood and, on top of appropriately setting the subjects, contents and methods, the project plan must be developed. (Sources: No. 1, 2, 3)
	Expected Effects	Appropriate introduction of the 3R will pave the path for environmental improvement and creation of sound material-cycle societies. It will also lead to the efficient use of resources.

		Because the amount of waste brought into final disposal sites will be reduced from the reduction of waste, it will contribute to the longevity of disposal sites. It is expected that smooth implementation will be promoted through active involvement of partner countries and stakeholders in the projects, and that the development of related companies and recycling of rare metals and resources will progress efficiently.

Reference: Reference projects for the lesson / Sources

No.	Country	Project Name	Keywords
1	Philippines	The Study on Recycling Industry Development in the Philippines	3R, incentive provision
2	Fiji	Waste Minimization and Recycling Promotion Project	3R, business benefits sharing, E-waste, rare metal recovery
3	Vietnam	Implementation Support for 3R INITIATIVE of Hanoi City for Cyclical Society	3R promotion, economic and financial analysis
4		JICA. 2015. Commitment to International Cooperation by JICA's Waste Management Sector	Development stage consideration, 3R introduction, recycling society
5		JICA. 2004. For Assistance for Capacity Development in Developing Countries' Waste Sector – Aiming to Improve Society's Waste Management Capacity –	Composting, soil pollution
6		JICA. 2007. JICA's activities for the promotion of 3Rs in developing countries and Japan's experiences in the promotion of 3Rs	Development stage consideration

Knowledge Lesson Sheet		
Waste Management 11	3R	Involvement of Stakeholders for 3R Promotion

Lessons (Matters to be considered and applied)	
Lesson Type	**Lessons on project management (Cross-sectoral)** **Lessons for sectors and sectoral characteristics**
Keywords	**Separate collection promotion, 3R (reduce, reuse, recycle) promotion council, reduction of plastic waste, EPR (extended producer responsibility), model business, government economic agencies, industry, recycle actors, 3R volunteers**

Conditions for Application	Lessons (Countermeasures)	
When introducing 3R for building sound material-cycle society and, in particular, when building relationships with the implementation system (municipalities, etc.) is required	Point in time	Project formation stage Project planning stage Project implementation stage
	Countermeasures (Approach)	For 3R promotion—in which cooperation between arrays of relationship entities is essential—the relationship-building of related entities will be fostered appropriately.
Risks (Considerations)		【Mobilization and promotion of participation of a wide range of stakeholders for 3R promotion】 As an approach to effectively implement the 3R, mobilization and participation of a wide range of relevant organizations and stakeholders should be encouraged. ① Cooperation with relevant ministries and agencies • Efforts for country-level policies are vital for 3R promotion, and planning and policymaking should be advanced while coordinating between ministries and agencies, as well as maintaining close collaboration with government agencies and industries that are considered to involve greatly in the 3R. In particular, at the
【The involvement of a variety of stakeholders】 When introducing the 3R afresh, it involves a new concept and set of efforts. If sufficient participation of stakeholders cannot be obtained, there is a risk that the introduction will not proceed smoothly. 【Continuity of citizen volunteer activities】 Activities by citizen volunteers are often introduced upon promotion of the 3R. However, if there are only expectations of involvement by		

citizen volunteers, there is a risk that the activities will not be continued or expanded after the end of the project. 【Stakeholder involvement】 In 3R promotion, there are specific roles that stakeholders play in each process—waste emission, separate collection, intermediate treatment and recycling regeneration—and without their coexistence and cooperation, the promotion of 3R become difficult.		implementation phase, cooperation with other ministries and related social sectors will become important; hence, their involvement from the early stage will be encouraged. • Because conferences between associated officials enable discussions of a wide range of challenges necessary for 3R promotion and play a role in aggregating knowledge and proposes ideas to policymaking institutions, their installation should be considered. (Sources: No. 2, No. 3) ② Involvement of citizens • Through frequent consultations, monitoring activities and implementation of public relations activities, active participation of model district officials (community representatives, waste pickers, merchants, etc.) in the model project will be encouraged. This will lead to greater understanding of the projects and their ownership. • Creation of 3R volunteer activities by citizens attract interest of young generations on environmental problems, and it is effective in promote proactive activities. On the other hand, the continuation of organizational management and activities by the residents, as well as the mechanisms and methods of dissemination of activities outside of the model districts must be examined from the project planning phase. (Source: No. 2) • There are cases where the citizen-level activity results are reflected in the policies and institutions in light of their, and they

		become an effective approach. (Source: No. 4) ③ Consideration of the stakeholders For the introduction of 3R, the different roles that stakeholders (recycle actors) play should be noted, as follows. General household: By sorting waste (such as glass, can, plastic and organic waste) at home, the proportion that will be collected by collectors and collection service operators will increase. Community: Community-based waste management has been attracting attention. One of its major components is the recycling activity conducted in the community. The contents of recycling are mainly composting of organic waste and collection of valuable materials. Offices, markets: The collection of packaging of products and goods is carried out widely, and it has contributed to the spread of EPR. Collection and recycling businesses: Further sorting is performed by the collection service operators. According to the location of the recycling materials consumers, transportation costs will vary. Waste collection workers, waste pickers: In the collection process, the collection is carried out by collection workers. A typical example consists on to sorting by placing baskets on the collection vehicles. In landfills, waste pickers collect the valuables/recyclables. Local governments: For objects that can be recycled, they will be incorporated into the recycling process by market principles without local government involvement. It should be noted, however, that separate

		collection by local governments increase the collection cost. (Source: No. 5, No. 6)
	Expected Effects	Appropriate intermediate treatment and 3R introduction will lead to environmental improvement and progress for the construction of a sound material-cycle society. In addition, they will lead to efficient use of resources. Improvement of the separate collection system will promote recycling and contribute to the creation of a sound material-cycle society.

Reference: Reference projects for the lesson / Sources

No.	Country	Project Name / Source	Keywords
1	Philippines	The Study on Recycling Industry Development in the Philippines	Separate collection promotion, EPR, free rider
2	Vietnam	Implementation Support for 3R INITIATIVE of Hanoi City for Cyclical Society	Model business, 3R volunteers, 3R promotion council, continuity of volunteer activities
3	Mexico	Development of Waste Management Policy Based on 3Rs in Mexico	Government economic agencies, industry
4	Bangladesh	Project for Strengthening of Solid Waste Management in Dhaka City	Policy and institution building, bottom-up approach
5		JICA. 2004. For Assistance for Capacity Development in Developing Countries' Waste Sector – Aiming to Improve Society's Waste Management Capacity –	Recycle actors
6		UNEP. 2014. Valuing Plastics. The Business Case for Measuring, Managing and Disclosing Plastic Use in the Consumer Industry	EPR, reduction of plastic waste

Knowledge Lesson Sheet		
Waste Management 12	Collection and Transportation	Waste Collection and Transportation

Lessons (Matters to be considered and applied)	
Lesson Type	**Lessons on project management (Cross-sectoral)** **Lessons for sectors and sectoral characteristics**
Keywords	**Collection method, collection businesses, recovery of valuable materials, collection method, discharge practices, door-to-door collection, street collection, site collection, bell collection, transference station**

Conditions for Application	Lessons (Countermeasures)	
When conducting reviews and improvements of waste collection and transportation	Point in time	Project formation stage Project planning stage Project implementation stage
Risks (Considerations)	Countermeasures (Approach)	【Selection elements of the collection method】 The technical hurdle in waste collection entails selecting the optimal collection method (such as equipment that are used, frequency of collection and staffing). The following elements, thus, should be considered. • The volume and type of waste • Financial capacity of local governments (available budget to sustainably carry out waste collection and transportation) • Road conditions • The waste producers' will (or lack of will) for cooperation • Lifestyle • Housing environment • Land use of residential area • Climatic conditions • Socioeconomic factors • Natural and cultural factors For the selection of collection methods, priorities to be considered based on the region's
【Challenges in collection activities (especially in urban areas)】 In cases where waste collection and transportation are not smoothly carried out—especially in cities that are experiencing population growth and sprawling of residential areas (a phenomenon where, due to the rapid development of cities, urban areas haphazardly spread to the suburbs)—the provision of waste collection and transportation services does not spread across the entire region, and there is a high possibility that the objective of "removing waste from living space" cannot be achieved.		

【Costs relating to collection and transportation businesses】 Because waste collection and transportation are the most costly activities of the sanitation management in the cities of developing countries, the service system will become vulnerable unless economic improvements are made.		circumstances should be confirmed; for the introduction of collection operations, decisions will be made based on both technical and non-technical factors. In particular, waste collection and transportation are often the most costly procedures insanitation management. Thus, it should be aimed to bolster the efficiency of the collection routes and time by choosing hours in which traffic jams can be avoided. It is necessary to review the advisability of the transfer station described below and to strive to reduce transportation costs to disposal sites. (Source: No. 2, P. 89 – Detailed collection method references) 【Utilization conditions for small-scale private organizations】 There is an increasing number of cases where small-scale private organizations—such as NGOs, CBOs (community-based organizations) and microenterprises—take the roles for the waste collection business. However, long-distance transportation cannot be expected from small private organizations and the involvement of local governments becomes essential in order to achieve removal of waste from living space. (Sources: No. 1, No. 2) 【Introduction of transfer station】 In urban areas, final disposal sites are often located far from the city center. This leads to the following problems. • From the viewpoint of transportation energy and work efficiency of collection workers, it is economically wasteful. • Due to the low morale of workers and drivers, as well as the weak management of collection work, there have been cases

		where waste has been dumped illegally during the transportation process. To solve these problems concerning long-distance transportation, it is essential to consider the introduction of "transfer station", in which waste is reloaded from collection vehicle to larger vehicles (such as trailers). The efficiency of transportation will be enhanced if these transfer stations are located as close as possible to the waste collection areas; at the same time, however, if they are located close to residential areas, considerations for the environment, hygiene and social factors need to be deliberated. (Source: No. 2) 【Issues concerning the recovery of valuable materials at the collection stage】 During the collection stage, collection workers often collect valuable materials. In many cases, valuable materials collected during the collection process and their gains on sale have and continue to function as an important source of income to compensate the low payment. Hence, in conjunction with institutional and administrative control, an approach from the social issues standpoint is required.
	Expected effects	Proper collection and transportation of waste contributes to high-quality public health and environmental conservation in the region. Furthermore, because waste collection and transportation are the most costly components of waste management, considering the appropriateness from socioeconomic aspects will contribute to the sustainability of projects and operations.

Reference: Reference projects for the lesson

No.	Country	Project Name / Source	Keywords
1	Oceania	Japanese Technical Cooperation Project for Promotion of Regional Initiative on Solid Waste Management	Waste collection system by communities
2	Bangladesh	Project for Strengthening of solid waste management in Dhaka city	Waste management reinforcement approach
3		JICA. 2004. For Assistance for Capacity Development in Developing Countries' Waste Sector – Aiming to Improve Society's Waste Management Capacity –	Collection method, collection businesses, collection of valuable materials, portable collection, discharge practices, door-to-door collection, street collection, site collection, bell collection
4		GIZ. 2013. Operator Models. Respecting Diversity: Concepts of Sustainable Waste Management	Door-to-door collection, primary collection, secondary collection, transference station
5		IDB-AIDIS-PaHO. 2011. Regional Evaluation on Urban Solid Waste Management in Latin America and the Caribbean – 2010 Report	Collection method, collection method, relay base
6		UN-Habitat. 2011. Collection of Municipal Solid Waste. Key issues for Decision-makers in Developing Countries	Collection method, discharge practices

Knowledge Lesson Sheet		
Waste Management 13	Final Disposal Site	Selection of the Location for Final Disposal Site

Lesson Learned (Consideration & Application)	
Type of Lesson Learned	**Lessons on project management (Cross-sectoral)** **Lessons for sectors and sectoral characteristics**
Keywords	**Securing new land, private property, treatment facility location, consensus building, securing disposal sites, site selection conditions, NIMBY avoidance, land arrangements, SEA (Strategic Environmental Assessment)**

Applicable Cases	Countermeasures	
When selecting the location of new final disposal sites and expanding existing disposal sites (partially applicable for the site selection for intermediate treatment facilities such as transfer stations, incineration facilities and composting facilities)	Application Timing	Project formation stage Project planning stage
	Countermeasures (Approach)	For smooth construction of final disposal sites, the location will be selected and land will be secured appropriately.
Risks (Where no countermeasures are taken)		Because the selection procedures of final disposal sites entail very sensitive social issues, it should be sufficiently noted that they may become political problems.
Final disposal sites without appropriate site selection procedures inhibit their smooth construction. E.g., the risk that construction plan will not proceed as planned will be higher, when the NIMBY mentality cannot solve and consensus building with the civilians is not sufficient enough. Moreover, not only do cases where the selected sites are characterized by highly permeable formations, vulnerable slopes and ground that is prone to deep-seated landslides raise concerns of		【Land procurement in the construction of waste disposal sites】 In principle, for the selection of waste disposal sites, land procurement must be arranged in line with technical adequacy and environmental and social considerations. Land for facility development of waste disposal needs to clear various conditions necessary for its legal rights and use (including requirements of the transfer prohibition law), which should be carefully arranged. The acquisition of land must be confirmed in writing. If securing new land for the development of

environmental pollution and destruction, they may also reinforce citizens' NIMBY mentality. (Considerations) ・ In order to obtain citizens' understanding, appropriate technologies and measures (baseline surveys, environmental protection measures, monitoring and system maintenance, etc.) become necessary, which raises the costs of the disposal sites' construction and operations.		landfill sites is extremely difficult, the rehabilitation and reusing of existing landfills will be considered as one of the options. (Sources: No. 1, No. 2, No. 3, P. 100) 【Conditions relating to the selection of final disposal sites】 The location of final disposal sites should satisfy the following conditions. ① To be located far from residential areas. ② To be located far from water sources. ③ It can secure necessary waste volumes. ④ It is legally and financially available. ⑤ Transportation distance is short. ⑥ Agents for cover soil can be supplied nearby. ⑦ There are no risks of flooding and landslides. ⑧ There is impermeable layer on the ground. ⑨ It is located far from airports. ⑩ The catchment area is small. ⑪ It is located far from natural parks, historic sites and other sites that are subject to conservation. (Source: No. 3, P. 101) 【Consensus with residents】 Consensus for the construction and expansion of final disposal sites will be achieved by focusing on the following viewpoints. ① Removal of the residents' discomfort and concerns towards disposal sites: Because a majority of existing final disposal sites take the form of open dumping, citizens cannot correctly understand the concept of sanitary landfills, and there is a tendency to oppose disposal sites. Hence, it is important to eliminate these deeply-rooted stereotypes

		on disposal sites through public hearings and educational activities. ② Citizens' participation in disposal site projects from the planning phase: In consideration of the backdrop of increased diversification of citizens' consciousness and the importance of consensus building in the recent years, it is important for citizens to participate in the decision-making process from the planning stage. ③ Construction of monitoring system that involves citizen representatives: By implementing periodic monitoring, continuous and proper operation management of disposal sites will become possible. It is also effective to alleviate and eliminate the citizens' discomfort towards disposal sites, as well as to promote citizens' participation in projects. (Source: No. 3, P. 76-77)
	Expected Effect	Appropriate site selection leads to avoidance of the residents' NIMBY mentality and also serves as a precedent for successor projects.

Reference: Reference projects which lessons were learned

No.	Country	Project Name	Keywords
1	Philippines	The master plan on solid waste management for Boracay Island and Municipality of Malay	Securing of new land
2	Bangladesh	Solid Waste Management Study in Dhaka City	Private property
3		JICA. 2004. For Assistance for Capacity Development in Developing Countries' Waste Sector – Aiming to Improve Society's Waste Management Capacity –	Location of treatment facilities, consensus building, securing of disposal sites, conditions for site selection, NIMBY avoidance
4		USAID. 2014. Sector Environmental Guidelines: Solid Waste Generation, Handling, Treatment, and	Conditions for site selection

		Disposal.	
5		GIZ. 2013. Operator Models. Respecting Diversity: Annex 3 -CIGRES Case Study.	Land arrangements
6		GIZ. 2013. Operator Models. Respecting Diversity: Annex 6 - Qena Case Study.	Land arrangements
7		The World Bank, Sustainable Development Department, Europe and Central Asia Region (ECSSD). 2011. Solid Waste Management in Bulgaria, Croatia, Poland and Romania. A cross-country analysis of sector challenges toward EU harmonization. Report No. 60078-ECA.	Conditions for site selection, NIMBY avoidance, SEA

Reference Notes / Reference Examples	出典
Other donors' standards in conditions relating to the site selection of final disposal sites	No. 4
Technical measures for NIMBY avoidance in final disposal sites	No. 3. p. 77
Related to site selection of final disposal sites, for the avoidance of the NIMBY phenomenon, strict technical standards due to the introduction of SEA, environmental standards, example of Dublin City (Ireland) that exemplifies the need for public consultation	No. 7
"Cases of Cambodia, Laos and Sri Lanka"—consensus building between residents in new disposal sites	No. 3
Appropriate land arrangements, effects of final disposal sites operated by local government coalitions that take into consideration environmental and social considerations (including intermediate treatment facilities and facilities for the collection of valuable resources)	No. 5
Related to the location of sanitary landfills that were certified by the environmental impact assessment system, mismatch between the regulators of land use, the example of Qena City (Egypt) where seizure for development occurred	No. 6

Knowledge Lesson Sheet		
Waste Management 14	Final Disposal Sites	Improvements /Closure of Existing Final Disposal Sites

Lessons (Matters to be considered and applied)	
Lesson Type	**Lessons on project management (Cross-sectoral)** **Lessons for sectors and sectoral characteristics**
Keywords	**Final disposal site, optimization of final disposal sites, disposal site follow-ups, rehabilitation of existing landfills, open dumping, sanitary landfill, environmental and social considerations, landfill closure, waste picker organization**

Conditions for Application	Lessons (Countermeasures)	
When building new final disposal sites, improving existing final disposal sites and closing final disposal sites	Point in time	Project formation stage Project planning stage Project implementation stage
	Countermeasures (Approach)	Improvements and closures of final disposal sites must be conducted by taking into consideration their level, management level and social aspects.
Risks (Considerations)		Because waste does not disappear to zero even if progress is made in waste management, improvements in final disposal sites that process the waste have important implications. Realization of the improvements of existing disposal sites is a prerequisite for smooth operation of new disposal sites. In order to successfully improve final disposal sites, step-by-step improvements (from open dumping to controlled dumping, and further to sanitary landfill systems) that reflect the technical and personnel standards and improvement levels in partner countries, development of management and operations, as
During the process of improvement and closure of final disposal sites, if sufficient considerations are not taken from technical, financial and environmental standpoints, there is a risk of environmental degradation and of not achieving sustainable waste disposal and management. Moreover, there is a possibility that it will reinforce the residents' NIMBY[2] mentality.		

[2] NIMBY (not in my back yard) : A mentality that admits the need for facilities but opposes their construction in their own residential spaces

【Considerations】 • To obtain citizens' understanding, the application of appropriate technologies and measures (baseline surveys, environmental conservation measures, establishment of monitoring system, etc.) becomes necessary. It is necessary to take into account in the operational plan, the required time and expenses for those measures.		well as considerations for the socially vulnerable people (such as waste pickers working at the disposal sites) are necessary. (Source: No. 4, P. 100) 【Step-by-step improvements of open dumping】 The following outlines improvement methods for concrete problems caused by open dumping. ① Management of the waste hauled in ② Clarification of disposal site boundaries ③ Soil cover of landfills at any time ④ Development and management of passageways and hall roads ⑤ Treatment of leachate ⑥ Prevent flyaway of waste ⑦ Cooperation with waste pickers (Source: No. 4, P. 98-99) 【Option for final disposal site: "Fukuoka Method," a semi-aerobic landfill structure】 Conditions for application: In cases where, for the construction of new disposal sites and improvement of existing facilities, the construction costs and operating expenses are required to be inexpensive, and methane gas capture is not a required option. However, the target countries should not have problems regarding the application of emission and effluent standards (rainfall volume is little and there is little generation of leachate, the proportion of waste that generate methane gas is low). Considerations: Because developing countries encounter difficulties in taking technical measures such as leachate-controlled type landfills or non-leachate-controlled type (least-controlled) landfills due to both financial and technical hurdles, improved methods that

		are inexpensive and can be replicated by locally available technologies are necessary. On the other hand, if considering the application of methane gas capture (power generation, city gas), it is necessary to take into account the necessity of selecting anaerobic disposal sites. (Application examples) 1) Japanese Technical Cooperation Project for Promotion of Regional Initiative on Solid Waste Management 2) Waste Minimization and Recycling Promotion Project 【Improvement of final disposal sites with low management standards】 To improve final disposal sites with low management levels, the development of the following basic conditions of management and operation should be steadily promoted. ① Ensuing employment of specialists (eventually installing management organizations) ② Education programs that foster specialists' interest in the projects (successful examples of improvement via projects) ③ Establishing structures to secure operating costs ④ Implementation of periodic monitoring (on items such as waste scattering, running conditions of vehicles, gas from landfill, water quality of leachate) (Sources: No. 3, No. 4) 【Considerations for waste pickers】 Instead of eliminating waste pickers from final disposal sites, coexistence and symbiosis with them should be considered. ① Short-term efforts (from the perspective of ensuring safety): Rule-setting of waste

		collection and bulldozer operations, improvement of unsanitary working environments ② Long-term efforts (categorization shift to more dignified work): organization of micro enterprises, employment in recycling centers (Source: No. 4) 【Closure of final disposal sites】 (During closure) Final disposal sites that have completed their life spans should be closed using appropriate technologies. When closing, they will be treated with final soil covers, and their surfaces and slopes will be stabilized. (Post-closure) In order to ensure physical and chemical stability of the closed area, the following items should be monitored. - Land subsidence - Temperature and composition of landfill gas - Water quality of leachate - Water quality of groundwater and surface water that might have been affected Appropriate post-closure management of disposal sites is a requirement to avoid environmental impacts and for the use or rejection for other applications such as farmland and parks. (For more details, refer to Sources No. 4, P. 82, 101-102) 【Improvement of management capacity of disposal sites regarding comprehensive waste management measures (development of plans and guidelines)】 Because development of facilities related to sanitary landfills—such as improvements of

		existing disposal sites, closure of improper disposal sites and construction of new sites—is accompanied by large financial expenditures, securing these financial resources has become a severe problem for many local governments and administrative unions. When developing dissemination plans and guidelines on comprehensive waste management, it is essential to conduct adequate discussions on the financial aspects and include countermeasures to enhance their effectiveness. (Source: No. 2)
	Expected effects	Not only do final disposal sites that take into consideration hygienic and environmental factors enable sustainable waste processing and management, they also thwart the NIMBY phenomenon and contribute to the convenience of successor approaches.

Reference: Reference projects for the lesson / Sources

No.	Country	Project Name	Keywords
1	Malaysia	Study on the Safety Closures and Rehabilitation of Landfill Sites in Malaysia	Environmental issues, landfill closure
2	El Salvador	The Project on Integrated Solid Waste Management for Municipalities in El Salvador	Disposal site follow-up
3	South Sudan	The Project for Capacity Development on Solid Waste Management in Juba	Appropriate technology awareness
4		JICA. 2004. For Assistance for Capacity Development in Developing Countries' Waste Sector – Aiming to Improve Society's Waste Management Capacity –	Revision of open dumping, landfill closure
5		IDB-AIDIS-PAHO. 2011. Regional Evaluation on Urban Solid Waste Management in Latin America and the Caribbean -2010 Report.	Revision of open dumping, waste picker organization
6		USAID. 2014. Sector Environmental Guidelines: Solid Waste Generation, Handling, Treatment, and Disposal.	Optimization of final disposal sites

Reference Notes / Reference Examples	Source
Notes for the optimization of final disposal sites (revision of open dumping, conditions for sanitary landfills, treatment of leachate)	No. 6
Cases of appropriate follow-up assistance in light of the progress of landfill of waste disposal sites	No. 2
The effects of waste picker organization for the adequacy of open dumping (case of Brazil) (life extension of final disposal sites, increase in recycling rate, expansion of separate collection areas, increase in waste picker income, tax revenues resulting from market trade of the collection of valuable resources)	No. 5

Knowledge Lesson Sheet

Waste Management 15	Pilot Project	Planning and Implementation of Pilot Project

Lessons (Matters to be considered and applied)	
Lesson Type	**Lessons for sectors and sectoral characteristics**
Keywords	Pilot project, model building, existing system, schedule management, local government, capacity development, citizen understanding and participation

Conditions for Application	Lessons (Countermeasures)	
When carrying out pilot projects and model-building related to waste management	Point in time	Project planning stage Project implementation stage
	Countermeasures (Approach)	In implementing pilot projects, as well as in planning and implementing model-building, necessary considerations concerning their specific contents, implementation methods and implementation time should be given. 【 Clarification of the purpose of implementation】 • The objectives of implementing pilot projects and model building are centered around 1) the strengthening and system construction of individual municipalities; 2) the collection of information for policies, system deliberations and design; and 3) capacity development of C/P and associated officials, and promotion of the citizens' understanding and participation. • Based on the project objectives (priority issues that must be resolved) of cooperation projects and the division of roles between partner countries and JICA, the goals and positioning of pilot projects and models will be clarified. The design, content configuration and system construction will be conducted along these objectives, and indicators that aim for their dissemination will be set. (Example: Pilot projects will be set for each task,
Risks (Considerations)		
In cases where the purpose of implementation cannot be clarified, contents cannot be embodied and adjustments with the existing system cannot be made, there is a risk that appropriate pilot projects would not be implemented and model building would not be realized. If the pilot project itself is delayed, there is a risk that the objective of the entire project would not be achieved within the project period.		

		and solutions for each task will be examined.) • In particular, when carrying out new and inexperienced initiatives (efforts that seek behavioral changes) in partner countries, specific goals will be set in a way that is consistent with the actual situation and technical levels of partner countries. (Sources: No. 3, No. 5) 1. <u>Strengthening of individual municipalities and system construction</u> 【Consideration for sustainability】 • Securing sustainability of the pilot project model is a vital requirement. From technological, financial and systematic standpoints, the principle is to set objectives that can be sustained by local efforts, and, as needed, capacity development in technological, financial and system aspects—which are necessary to ensure sustainability—will be internalized into the projects. It should be noted that, for the pilot project to be sustained, the basic premise is that its implementation offers benefits for the associated parties in target countries and regions. By effectively utilizing opportunities (such as seminars), understanding of the parties on the projects' implications will be obtained during the implementation of technical cooperation. (Source: No. 3) 2. <u>Information collection for deliberation and formulation of policies and institutions</u> Understanding that the realities of regions in which the projects aim to spread the model vary widely, contents of the models must be considered sufficiently. (See Knowledge 17 for the dissemination of model building) (Source: No. 4)

		3. Capacity development of C/P and officials and promotion of citizens' understanding and participation • Through experiencing and verifying the results of waste management practices, the implementation of pilot projects and model building offer important opportunities (learning space) for capacity development of C/P and promotion of citizens' understanding and participation. They should be actively utilized. • When conducting capacity development measures, a comprehensive outlook should be encouraged and strengthened by ensuring 1) sufficient human resources and personnel for the C/P; 2) technology transfers through thorough OJT; and 3) policies, institutions and social systems. • By clarifying the objectives and positioning of pilot projects and models, issues that the C/P must address can be identified, contributing to the promotion of greater understanding of the associated parties. (Sources: No. 1, No. 3, No. 5) 【Sufficient coordination with the existing system】 • In many cases, the implementation of pilot projects and model building entail introducing new systems in target countries and regions; however, in some cases, the target regions have related, already-existing systems. Therefore, the impact of the existing system (especially if there are enough incentives to utilize the new system) needs to be fully considered, and the contents and methods of the introduction system must be scrutinized. Because local governments are responsible for the operation and management of

		the new system, they must be involved from the initial phases of the project, and its diffusion should be conducted through the municipalities. (Source: No. 2) 【Implementation of the contents by presenting appropriate case studies】 Greater understanding for the C/P of the specific contents to be realized will be fostered by effectively utilizing in-Japan training and country-specific training (or third-country training) and presenting concrete targets and feasible case studies. (Sources: No. 3, No. 5) 【 Schedule management of pilot project implementation and model building】 • When conducting pilot projects that occupy a large position in technical cooperation (especially pilot projects that require constructions of related facilities), their delays in implementation greatly impact the outcome of the entire cooperation. In developing countries, each process (approval procedures, etc.) often takes time. By thoroughly managing the schedule—such as by clarifying the tasks from the planning stage and appropriately conducting necessary measures to resolve these tasks—the implementation of pilot projects will be advanced as planned. (Source: No. 2)
	Expected effects	By constructing pilot projects and model building that ensure high achievements and sustainability, it is expected that waste management—a real condition in partner countries and region—will be spread widely, and it will contribute to building capacities of the

		officials and development of institutions and plans.

Reference: Reference projects for the lesson

No.	Country	Project Name	Keywords
1	Sri Lanka	Capacity Upgrading Project for the National Solid Waste Management Support Center	Capacity development of C/P through the implementation of the pilot project
2	Thailand	A Pilot Project to Construct a Recycling System in Southern Thailand	Sufficient considerations for existing systems and involvement of local governments, schedule management for the implementation of facility construction
3	Mongolia	The Study on Solid Waste Management Plan for Ulaanbaatar City	Ensuring sustainability
4	Fiji	Waste Minimization and Recycling Promotion Project	Concrete and practical goal-setting, utilization of in-Japan training and approach that are adapted to the realities and capacities of partner countries
5	Kosovo	The Project for Enhancement of the Capacity for Waste Management toward Sound Material-cycle Society	Setting of appropriate pilot projects in light of challenges

Certified / Authorized Knowledge Lesson Sheet		
Waste Management 16	Pilot Project	Dissemination of the Good Practice

Lesson Learned (Consideration & Application)	
Type of lessons learned	**Lessons for sectors and sectoral characteristics**
Keywords	Model diffusion, pilot project, capacity building of government, local governments, system of diffusion implementation, counterpart

Applicable Cases	Countermeasures	
When expanding and disseminating models including results of pilot projects built in particular regions to other regions	Application Timing	Project planning stage Project implementation stage
	Countermeasures (Approach)	In order to realize the smooth dissemination of constructed models, it should be conducted appropriately in each project stage.
Risks (Where no countermeasures are taken)		The models constructed in projects and pilot project initiatives are assumed to be continued and disseminated in partner countries after the completion of these projects. Thus, at each stage of the project, it is necessary to properly carry out support required for the realization of smooth dissemination. 1. <u>Timing of project formulation and planning</u> 【Verification of the effectiveness of the dissemination project】 • The keys to dissemination activities are the capacity of central and local governments and the administrative system. Thus, the following two points must be fully discussed during the project formulation and planning stages, and the effectiveness of the model dissemination must be confirmed. ① Whether the capacity of central and local governments (policies for waste
• Even if the projects are smoothly introduced in the target regions, without appropriate dissemination measures, they may not be introduced in other regions or, even if introduced, may not be established.		

		management and the introduction of the 3R, development capacity for strategic plans) and the administrative system (ordinances of related laws and regulations, application of the investment plan of public works for the management planning practice at the municipal level, assistance to conform local government associations for broad-based managements) are at a sufficient level to conduct model transfers. ② Whether, through the project, capacity enhancement of central and local governments—which is central to the success of model dissemination—can be realized. (Sources: No. 3, No. 4) 【Project plan for the realization of smooth dissemination】 • From the standpoint of promoting smooth dissemination of the constructed model, the following should be noted during the project planning phase. ① Appropriate model contents in light of dissemination prerequisites in partner countries (for example, if the realization of separate waste collection is a prerequisite for model transfer, whether the model can be implemented of if it can be internalized into the project) ② Model contents based on conditions for the dissemination in partner countries (policies, institutions, organizations, budget, technical level) ③ Selection of counterparts and project sites (whether outreach to relevant agencies and local governments responsible for the dissemination is possible, whether the

		installation of new organizations (committees, etc.) is possible) ④ Setting of appropriate scales of model projects in light of dissemination scales (if the scale of dissemination is envisaged to be large, its validity may not be recognized by the recipient government and, thus, there is a possibility that the dissemination would not be realized.) ⑤ Capacity development of stakeholders ⑥ Construction and utilization of dissemination processes, organization and line (existing chain of command) that take advantage of the governmental characteristics of target countries ⑦ Development of tools necessary for dissemination (manuals, publicity materials, etc.) (Sources: No. 1, No. 5) 2. <u>Timing of project implementation</u> 【Appropriate technology transfer and system construction for the dissemination agency】 • Partner country institutions are responsible for the actual dissemination of the model. Understanding that waste management agencies—especially the local government—do not count sufficient personnel and are characterized by vulnerable organizational structures, capacity development and system construction via appropriate technology transfers should be conducted during the project period. In particular, the following approaches have been beneficial. ① To enhance the sense of ownership, seminars will be held with the participation of C/P and stakeholders, and they will provide proactive participation as

		presenters. ② (Not limited to pilot project areas) Capacity development and system construction will be examined and promoted at central and local levels that anticipate development into other regions. In doing so, the know-how of central government officials responsible for nationwide dissemination should be accumulated, and incentives for associated parties should be provided. ③ Information related to the project must be widely distributed to officials responsible for the model dissemination. (Source: No. 2)
	Expected Effects	By smoothly disseminating to many regions the constructed model that reflects the realities of target countries and regions, waste management is expected to be promoted extensively. Furthermore, the effectiveness and efficiency of the assistance is expected to be magnified.

Reference: Reference projects which lessons were learned

No.	Country	Project Name	Keywords
1	El Salvador	The Project on Integrated Solid Waste Management for Municipalities in El Salvador	Involvement and know-how accumulation of central government officials
2	Sri Lanka	Capacity Upgrading Project for the National Solid Waste Management Support Center	Appropriate implementation system for the dissemination of results
3	14 Pacific countries	Japanese Technical Cooperation Project for Promotion of Regional Initiative on Solid Waste Management	Capacity and administrative system of the central government
4	Philippines	Establishment of Ecological Solid Waste	Capacity and

		Management in Three Cities	administrative system of the central government
5	Vietnam	Implementation Support for 3R INITIATIVE of Hanoi City for Cyclical Society	Sufficient consideration and ingenuity for the dissemination of model projects
6	Mongolia	The Study on Solid Waste Management Plan for Ulaanbaatar City	Ensuring sustainability