

## Financial Assistance Projects / Indicator Reference (Solid Waste Management)

Note: Those written in blue are Global Sustainable Development Goal (SDG) Indicators. In light of recent global trends, relevant Global SDG indicators are listed for project officers who may wish to refer to these indicators when formulating a project plan (setting indicators).

Development strategic objectives (*1)	Mid-term objectives	Mid-term sub-targets	Types of infrastructure	Indicators		Policy and methods for setting indicators	Reference projects by infrastructure type		
							Country name	Project name	Evaluation fiscal year
2. Technical improvement to achieve appropriate solid waste management (*)	2-2. Improvement of collection and transport	2-2-2 and 2-2-3. Expanded coverage, enhanced efficiency and improved quality of waste collection service	Waste collection and transportation vehicles (packer trucks, detachable container trucks, compactor trucks with container reversing gear, etc.), containers, and sets of equipment and tools for inspection and repair of collection and transportation vehicles	<b>Operation indicators</b>	<b>Basic indicators</b> (1) Amount of waste collected (tons per day) (2) Rate of Waste collection (percent) (3) Operating rate of waste collection vehicles	It is important that waste collection services be improved through the provision of waste collection equipment. Indicators should be set to measure improvements in these services as well as maintenance performance (applicable to service providers).  Amount of waste collected: Estimation based on the number of trips for waste collection and the capacity of each waste collection vehicle will be used in the case that no truck scale (scale to weigh incoming waste) is available at the final disposal site.  Waste collection rate (percent): (annual amount of waste collected divided by annual amount of waste generated). Estimation of waste generation amount requires data of <b>unit waste generation amount (kilograms per person per day)</b> , based on population and waste generation amount and composition in the target area.  <b>Operating rate of the waste collection vehicles: Indicators must fit the context, such as number of operating days per month, number of trips per day, mileage (kilometers) per day, and ratio of the number of operating vehicles per day to the total number of vehicles.</b>	Djibouti	The Project for Provision of Waste Management Equipment	2012
				<b>Effect indicators</b>	<b>Basic indicators</b> (1) Population covered by waste collection services (2) Reduced number of illegal dumping sites  <b>Supplementary indicators</b> (1) Improvement of the waste collection plan (2) Amount of special waste (e.g. medical waste) collected (The applicability of this indicator depends on the project) (3) Collection rate of waste collection fee (4) Unit cost of Waste <b>collection</b> (dollars per ton)	Indicators to measure the number of service recipients and improvements in the quality of services (applicable to service recipients)  <b>Waste fee collection rate (percent): number of recipients paying waste collection fee / population covered by waste collection services</b>  Waste <b>collection</b> cost (dollars per ton): total collection/disposal cost per ton. This cost will decline when waste collection efficiency is improved. It is a financial efficiency indicator.	Syria	The Project for Improvement of Equipment for Solid Waste Treatment in Local Cities (Phase 2)	2009
							Viet Nam	The Project for Supply of Equipment for Waste Management in Hanoi City	2007
							Palestine	The Project for Improvement of Waste Disposal Equipment	2005
							Kosovo	The Project for Improvement of Solid Waste Management	2010
							Sudan	The Project for Improvement of Solid Waste Management in Khartoum State	2013
							Bangladesh	The Project for Improvement of Solid Waste Management Equipment	2015

2. Technical improvement to achieve appropriate solid waste management (*)	2-2. Improvement of collection and transport	2-2-2 and 2-2-3. Expanded coverage, enhanced efficiency and improved quality of waste collection service	<b>Waste transfer stations and vehicles</b>	<b>Operation indicators</b>	<b>Basic indicators</b> (1) Capacity of the waste transfer station (2) Operating rate of the <b>waste transfer station</b> (3) Amount of waste <b>accepted</b> (4) Waste collection rate (percent) (annual amount of waste collected / annual amount of waste generated) (5) Operating rate of the <b>waste transfer</b> vehicles	The basic idea is the same as for waste collection equipment.  Population covered by waste collection services: Waste collection service coverage (the ratio of population covered by waste collection services to total population in the area) can also be utilized as an indicator.	Jordan	The Project for the Improvement of Solid Waste Management in the Greater Amman (Phase 2)	2009
				<b>Effect indicators</b>	<b>Basic indicators</b> (1) Population covered by waste collection services (2) Waste collection amount and rate (3) Reduced number of illegal dumping sites  <b>Supplementary indicators</b> (1) Improvement of waste treatment efficiency (Select the appropriate measurement method depending on the context of the site) (2) Waste fee collection rate  Reference: Global SDG Indicator 11.6.1: Proportion of urban solid waste regularly collected and with adequate final discharge out of total urban solid waste generated, by cities  Reference: JICA's 4th Medium-term Objective Indicator: Number of training activities in the area of environmental management (solid waste management)	<b>Operating rate of the waste transfer station: Actual amount of incoming waste to the station (tons per day) / Planned amount of incoming waste to the station (tons per day)</b>  <b>Operating rate of the waste transfer vehicles: Indicators fit the context, such as number of operating days per month, number of trips per day, and mileage (kilometers) per day.</b>	Laos	The Project for Improvement of Solid Waste Management in Environmentally Sustainable Cities	2013
2. Technical improvement to achieve appropriate solid waste management (*)	2-3. Introduction and improvement of intermediate treatment	2-3-1. Reduction and recycling	<b>Resource recovery and incineration facilities</b>	<b>Operation indicators</b>	<b>Basic indicators</b> (1) Operating rate of the resource recovery facility (percent) (2) Amount of waste <b>processed</b> at the resource recovery facility	Operating rate of the resource recovery facility (percent): amount of waste actually accepted at the facility (tons per day) / amount of waste planned to be accepted at the facility (tons per day)  It is important to assess the utilization of the facility. Therefore, the operating rate and the amount processed should be used as indicators.  If the project includes the development of incineration and/or compost facilities, appropriate indicators are necessary such as facility operating rate, <b>waste reduction rate, and reduction treatment rate (as well as power generation amount in the case of waste to energy plants).</b>	Palestine	The Project for the Improvement of Solid Waste Management in the West Bank	2012
				<b>Effect indicators</b>	<b>Basic indicators</b> (1) Amount of waste processed at the resource recovery facility (2) <b>Resource recovery recycling rate</b>  Reference: Global SDG Indicator 12.5.1. National recycling rate, tons of material recycled  Reference: Japanese Government's SDGs Implementation Guiding Principles Indicator: General waste recycling rate  Reference: JICA's 4th Medium-term Objective Indicator: Number of training activities in the area of environmental management (solid waste management)	<b>To apply the resource recovery recycling rate as an indicator, availability of data of waste generation in the waste collection service area should also be noted. Detailed calculation method of Global SDG Indicator 12.5.1 also needs consideration as it is still in the process of discussion in the international.</b>			

	2-4. Improving final disposal sites	2-4-3. Proper management and operation of final disposal sites	<b>Provision of the equipment for final disposal sites (landfill compactors, bulldozers, truck loaders, etc.) and construction / expansion of final disposal sites</b>	<b>Operation indicators</b> (1) Operating rate of the equipment at final disposal sites (2) Final disposal amount (tons per year)	<b>Basic indicators</b> (1) Final disposal amount (tons per year) (2) BOD concentration in the post-treatment leachate (milligrams per liter) (3) Condition improvement and <b>life extension</b> of the final disposal site  <b>Supplementary indicators</b> (1) COD concentration in the post-treatment leachate (milligrams per liter) (2) Application of soil cover  Reference: Global SDG Indicator 11.6.1: Proportion of urban solid waste regularly collected and with adequate final discharge out of total urban solid waste generated. by cities  Reference: JICA's 4th Medium-term Objective Indicator: Number of training activities in the area of environmental management (solid waste management)	To evaluate the situation of final disposal sites, proper operation of the facility and its quality (to promote sanitary landfills) are important. However, setting numerical indicators for qualitative improvement may be difficult because the improvement requirements vary depending on the site.  Operating rate of the equipment at final disposal sites: number of operating days per month  Final disposal amount (tons per year): waste accepted per year	China  Palau  India  China  China  Peru	The Project for Improvement of Solid Waste Management in Xian City  The Project for the Construction of National Landfill  Kolkata Solid Waste Management Improvement Project  Anhui Municipal Solid Waste Treatment Project  Hunan Municipal Solid Waste Treatment Project  Solid Waste Management Project (ODA Loan)	2008  2018  2005  2007  2007  2012
				<b>Effect indicators</b>	<b>Basic indicators</b> (1) Final disposal amount (tons per year) (2) BOD concentration in the post-treatment leachate (milligrams per liter) (3) Condition improvement and <b>life extension</b> of the final disposal site  <b>Supplementary indicators</b> (1) COD concentration in the post-treatment leachate (milligrams per liter) (2) Application of soil cover  Reference: Global SDG Indicator 11.6.1: Proportion of urban solid waste regularly collected and with adequate final discharge out of total urban solid waste generated. by cities  Reference: JICA's 4th Medium-term Objective Indicator: Number of training activities in the area of environmental management (solid waste management)	To evaluate the situation of final disposal sites, proper operation of the facility and its quality (to promote sanitary landfills) are important. However, setting numerical indicators for qualitative improvement may be difficult because the improvement requirements vary depending on the site.  Operating rate of the equipment at final disposal sites: number of operating days per month  Final disposal amount (tons per year): waste accepted per year	China  Palau  India  China  China  Peru	The Project for Improvement of Solid Waste Management in Xian City  The Project for the Construction of National Landfill  Kolkata Solid Waste Management Improvement Project  Anhui Municipal Solid Waste Treatment Project  Hunan Municipal Solid Waste Treatment Project  Solid Waste Management Project (ODA Loan)	2008  2018  2005  2007  2007  2012

(\*) Development Strategic Objectives 1 (enhancement of solid waste management capacity) is omitted because it is not associated with any financial assistance projects. Other irrelevant mid-term objectives and sub-targets are also omitted.