



Common Challenges in SWM in Africa learned from survey by JICA

July 26 2022

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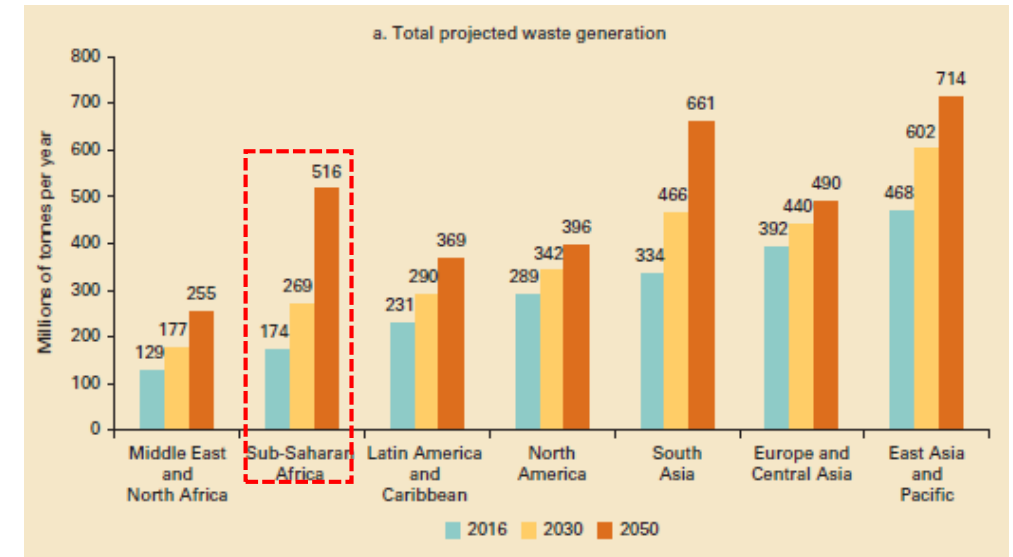
Table of Contents

1. Background and Objectives of the Survey
2. Target Countries and Cities
3. Survey Results of Target Countries and Cities
 - 3.1 Stages of Solid Waste Management (SWM)
 - 3.2 Stages of SWM of Target Countries and Cities
 - 3.3 Priorities of Target Countries
 - 3.4 Direction of Improvement of SWM
 - 3.5 Good Practices of Target Countries
4. Recommended Cooperation Framework for ACCP Members
5. Direction of Improvement in SWM by ACCP and Donors
6. Tools for Improvement of SWM
 - 6.1 Identification Tools for MSWM Overview
 - 6.2 Guidelines on Preparing a Response Plan for SWM during an Infectious Disease Outbreak

1. Background and Objectives of the Survey

[Background]

- The urban population in Africa has been growing at an annual rate of 3.58%, the fastest in the world, and is estimated to grow from 0.55 billion in 2018 to 1.26 billion by 2050.
- The amount of waste generated in Sub-Saharan Africa is estimated to increase from 174 million ton/year in 2016 to 516 million ton/year in 2050, a threefold increase.
- In most African countries, the collection rate is low, at less than 55%, and there is a possibility of illegal dumping of uncollected waste.
- The sanitation and public health are threatened by poor collection/sorting, intermediate treatment, recycling and final disposal.



Source: What A Waste 2.0, the World Bank

Figure Estimation of Waste Generation Amount

[Objectives]

To explore common challenges and effective measures for improvement of MSWM in the African countries.

2. Target Countries and Cities

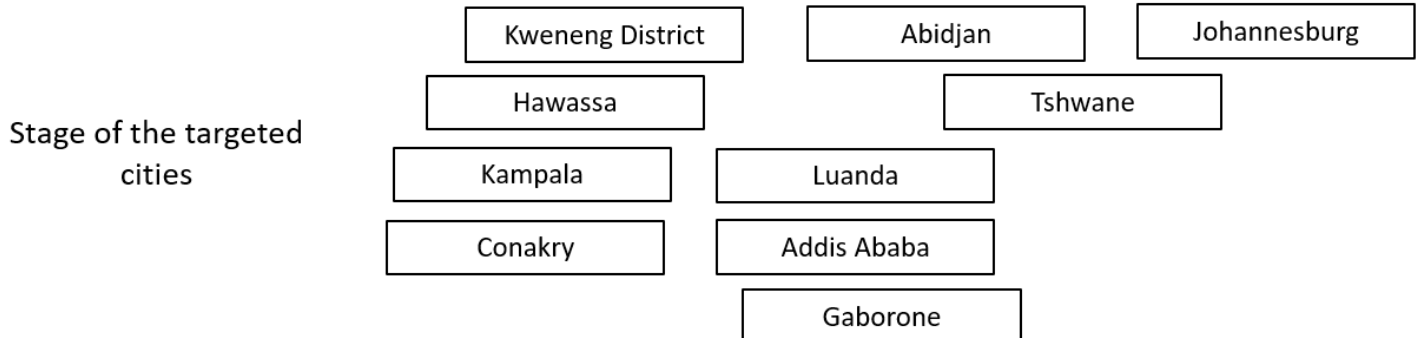
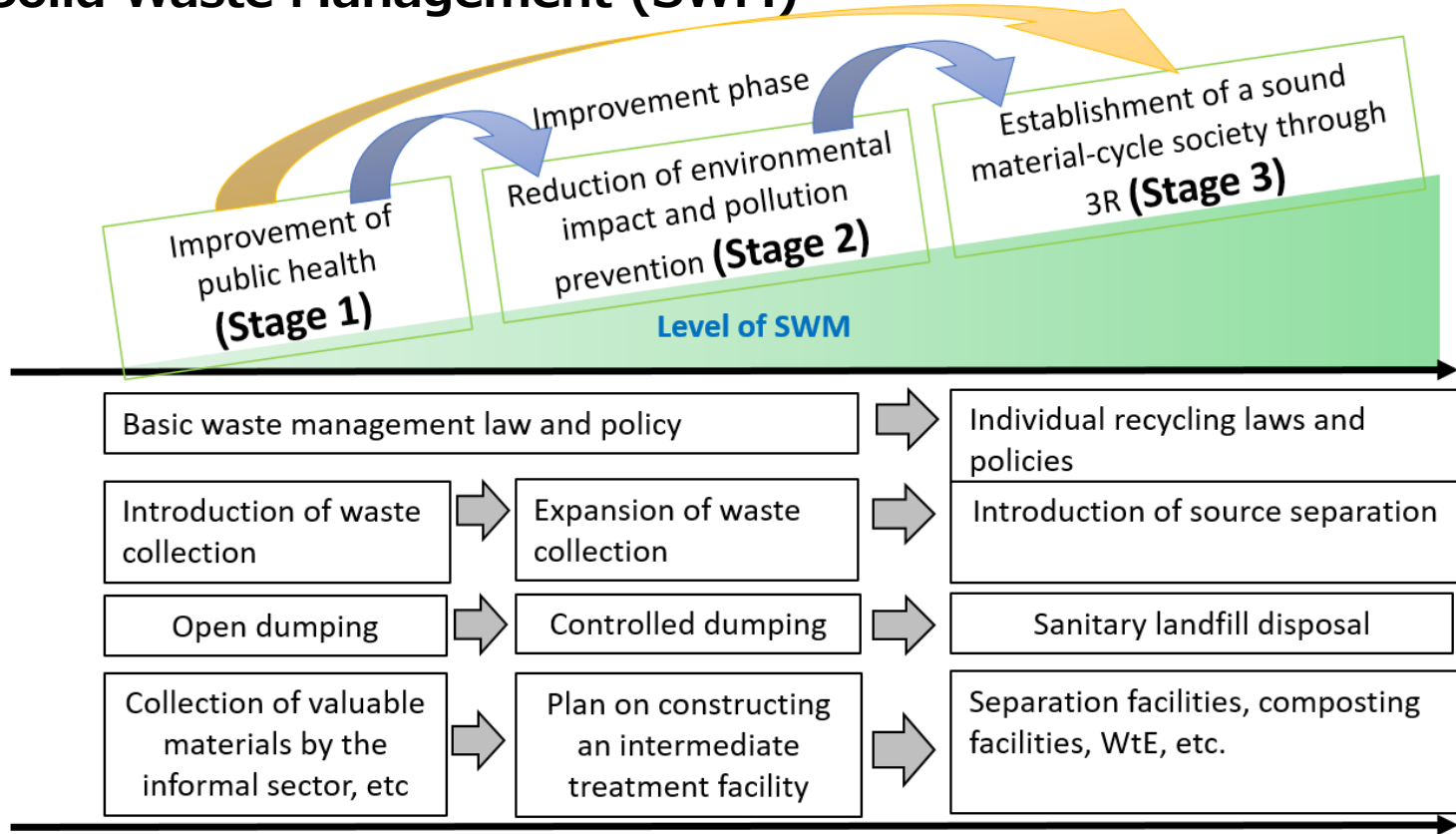
Outline of the target countries and cities, in which covers different size of population & GDP per capita are shown below.

	Country	City	Survey regarding Current Situation, Issues and Cooperation Framework	Population	GDP per capita (USD)
Field Survey	Cote d'Ivoire	Abidjan	✓	5,551,934 (2020)	1,691 (2019)
	Angola	Luanda	✓	8,801,035 (2020)	3,145 (2019)
	Ethiopia	Addis Ababa Hawassa	✓ ¹⁾	4,793,699 (2020) 429,170 (2020)	953 (2019)
	Guinea	Conakry	✓ ¹⁾	2,039,725 (2020)	950 (2019)
	Uganda	Kampala	✓	1,680,600 (2020)	910 (2019/20)
	Botswana	Gaborone Kweneng District	✓ ¹⁾	280,519 (2020) 387,096 (2020)	7,660 (2019)
	South Africa	Johannesburg Tshwane	✓ ¹⁾	5,926,668 (2021) 3,700,000 (2021)	5,978 (2019)

1) Due to the unstable situation and COVID-19, the field surveys by Japanese experts were cancelled and a remote survey was conducted using local resources.

3. Survey Results of Target Countries and Cities

3.1 Stage of Solid Waste Management (SWM)



According to "Waste Management Sector Position Paper (JICA June 2017, 4th Edition)", the waste management stage/ level was categorized as "Stage 1", "Stage 2", "Stage 3" as shown in the figure.

3. Survey Results of Target Countries and Cities

3.2 Stage of SWM of Target Countries and Cities

Country	City	Legal System	Collection and Transportation	Final Disposal	Intermediate Treatment and Recycling	Comprehensive Evaluation
Cote d'Ivoire	Abidjan	1	2	3	2	2
Angola	Luanda	1-2	1	2-3	2	2-
Ethiopia	Addis Ababa	2	2	1-2	2	2-
	Hawassa	2	1-2	1	1-2	1
Guinea	Conakry	1-2	1	1	1	1-
Uganda	Kampala	2	1	1	1	1-
Botswana	Gaborone	2	2	2	1	2-
	Kweneng District	2	1	2	1	1+
South Africa	Johannesburg	3	3	2	2	3-
	Tshwane	3	2	2	2	2+

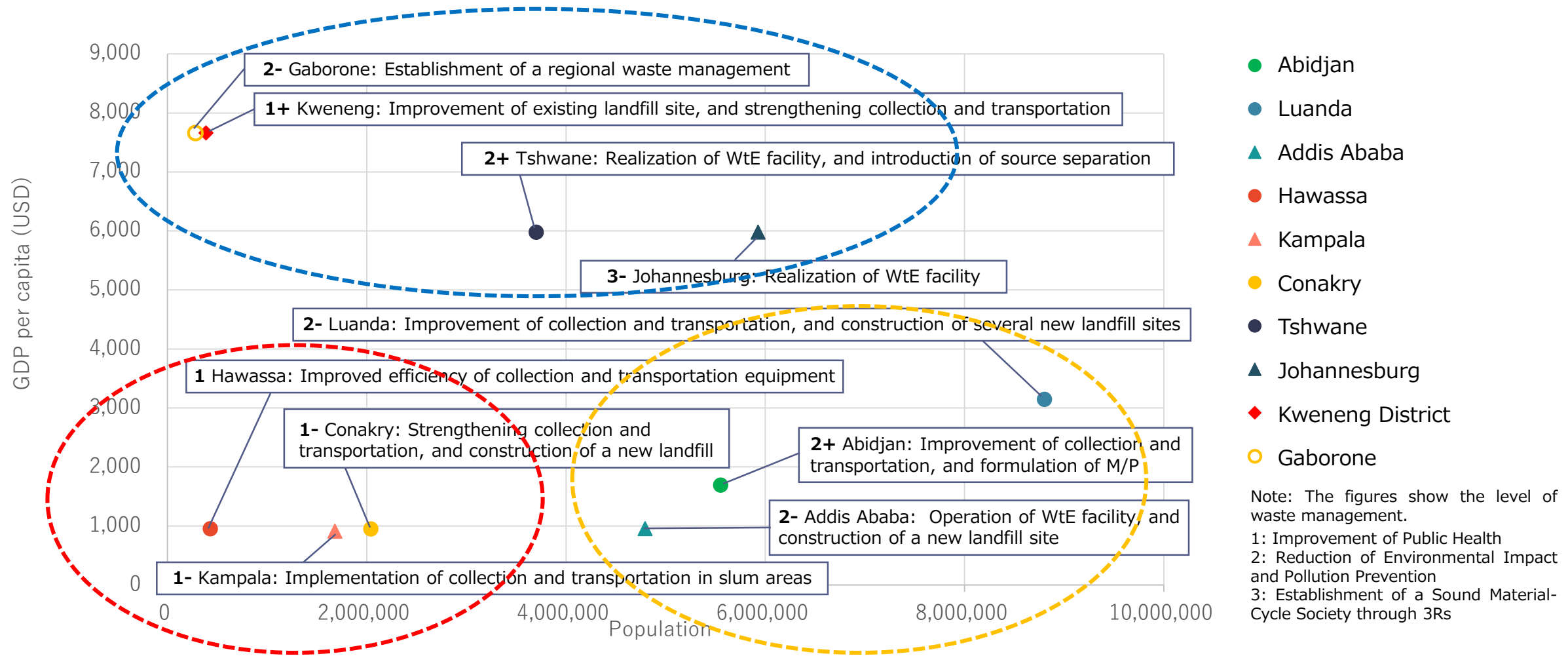
Classification according to the “stage” of development of waste management in each country.

- Stage 1 (red): Improvement of Public Health
- Stage 2 (Yellow): Reduction of Environmental Impact and Pollution Prevention
- Stage 3 (Blue): Establishment of a Sound Material-Cycle Society through 3Rs

3. Survey Results of Target Countries and Cities

3.3 Priorities of Target Countries

- The priorities of SWM in the target countries range from basic issues such as collection, transportation and final disposal to advanced ones such as development of intermediate treatment facilities and sorting waste.



3. Survey Results of Target Countries and Cities

3.4 Direction of Improvement of SWM

- The level of SWM in the target cities is different. The **good practices** of cities in higher levels of SWM can be useful for the cities in lower levels of SWM.
- As for the Stage 1 and Stage 2 countries, **mutual learning** and **horizontal linkages** through training and dispatch of experts within the African region will help to improve common basic problems of SWM such as collection, transportation, and final disposal.
- Intermediate treatment and recycling are important for improvement from Stage 2 to Stage 3. While many countries show interest in WtE, careful analysis including lessons learnt from developed countries are required to ensure proper and sustainable operation.
- It will be useful to develop **good practices** from countries with a high level of SWM and many experiences such as South Africa and disseminate them through ACCP.

3. Survey Results of Target Countries and Cities

3.5 Good Practices of Target Countries

- Outsourcing Waste Collection/ Transportation and Final Disposal to Private Sector (Abidjan/Cote d'Ivoire)



Waste Collection



Transfer Station

3. Survey Results of Target Countries and Cities

3.5 Good Practices of Target Countries

- Landfilling Operation and Management of Landfill Site (Luanda/Angola)



Landfill Area



Leachate Treatment Facility

3. Survey Results of Target Countries and Cities

3.5 Good Practices of Target Countries

- Improvement of Landfill Site with Fukuoka Method (Addis Ababa/Ethiopia)



Improvement Works at Koshe (Rappi) Landfill Site (2018)
(Source: Materials of ACCP Study Tour)



Installation of Leachate Collection Pipe
at Koshe (Rappi) Landfill Site (2018)
(Source: Materials of ACCP Study Tour)

3. Survey Results of Target Countries and Cities

3.5 Good Practices of Target Countries

- Privatization of Waste Collection Service (Kampala/Uganda)



Waste Collection Vehicle of Private Company



Customer Information System

3. Survey Results of Target Countries and Cities

3.5 Good Practices of Target Countries

- Treatment of E-Waste (Establishment of Recycling Center) (Kampala/Uganda)



Dismantlement of E-Waste

(Source: NEMA (<https://nema.go.ug/media/ugandas-first-national-e-waste-management-centre-launched>))



Recycling Center for E-Waste

3. Survey Results of Target Countries and Cities

3.5 Good Practices of Target Countries

- Promotion of Segregation at Source (Botswana)



Recycling Station in Gaborone
(Source: JICA Botswana Office)



Recycling Station at a Primary School in Gaborone
(Source: JICA Botswana Office)

3. Survey Results of Target Countries and Cities

3.5 Good Practices of Target Countries

- Establishment of South African Waste Pickers Association (SAWPA) with Support from the Government etc. (South Africa)



Waste Pickers at Harthley Landfill Site



Event by South African Waste Pickers Association
(Source: SAWPA (<https://wastepickers.org.za/>))

3. Survey Results of Target Countries and Cities

3.5 Good Practices of Target Countries

- Introduction and Operation of Waste Information System (South Africa)

environment, forestry & fisheries
Department: Environment, Forestry and Fisheries
REPUBLIC OF SOUTH AFRICA

National Waste Management Strategy
www.wastepolicy.co.za

Alternative Waste Treatment Guide

WMP TOOLKIT
Integrated Waste Management Plan

SAWIC South African Waste Information Centre

SAWIC home | Contacts | Sitemap

Welcome to the South African Waste Information Centre (SAWIC)

Waste Information Centre

- Chemicals & Waste Conferences
- Chemicals Management
- Decision regarding Waste Exclusion Applications
- Directions Regarding Measures to Address, Prevent and Combat the Spread of COVID-19 in Relation to Recycling of Waste
- Draft Documents for comment
- EPR Regulations and Notices
- Land Remediation & Industry Support
- SAWIS Implementation
- Terms of Reference (ToRs)
- Waste in South Africa
- Waste Policy and Regulations
- Waste Minimisation and Recycling
- Chemicals & Waste Authorisations
- Waste sources and types
- Waste Tariff Strategy & Model
- Licenses
- Waste Information Today
- Newsletters

Welcome to the South African Waste Information Centre!

This Waste Information Centre provides the public, business, industry and government with access to information on the management of waste in South Africa.

The Centre also provides users with access to the South African Waste Information System (SAWIS).

Waste Information System

The South African Waste Information System (SAWIS) developed by the Department of Environmental Affairs (DEA) in 2005, is a system used by government and industry to capture routine data on the tonnages of waste generated, recycled and disposed of in South Africa on a monthly and annual basis.

Required data providers to the system, may access SAWIS through the 'Login' on the right of this screen.

Publicly available reports generated from SAWIS are available through SAWIC 'Waste in South Africa'.

Waste Generation, Collection & Transportation, Recovery & Recycling, Treatment & Disposal, Analysis

SAWIS LOGIN

Username:
Password:
Login
Forgot password?

Register
Central Registry
Department of Environmental Affairs

Statistics
Waste Tonnage Reports

Licenses
Search for all issued licenses

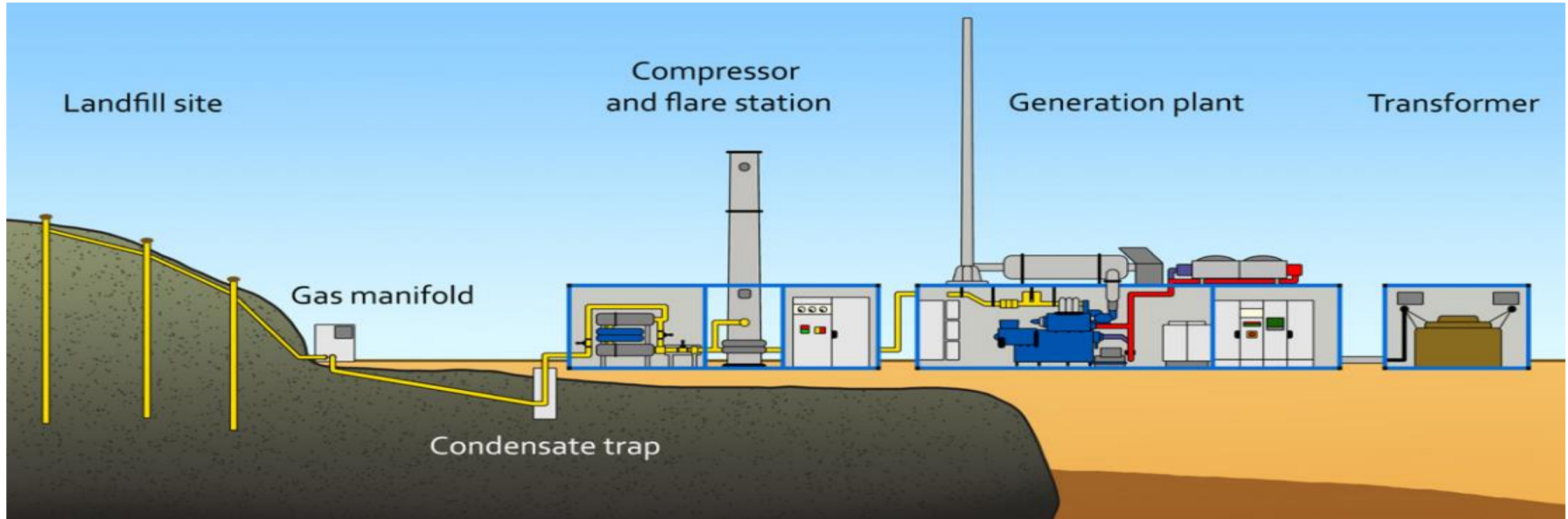
EPR
Extended Producer Responsibility

Website of South African Waste Information Center
(Information on solid waste management such as amount of waste disposed at landfills is available.)

3. Survey Results of Target Countries and Cities

3.5 Good Practices of Target Countries

- Introduction and Operation of Biogas Power Generation at Landfill site (Johannesburg/South Africa)



Concept of Biogas Power Generation Project
(Source: South Africa Local Government Association)

3. Survey Results of Target Countries and Cities

3.5 Good Practices of Target Countries

- Outsourcing of Collection Services to Private Sector and Managing and Monitoring by the Government (Abuja/Nigeria)



Introduction of Fixed-Time and Fixed-Place Waste Collection in Slum Area by Private Sector

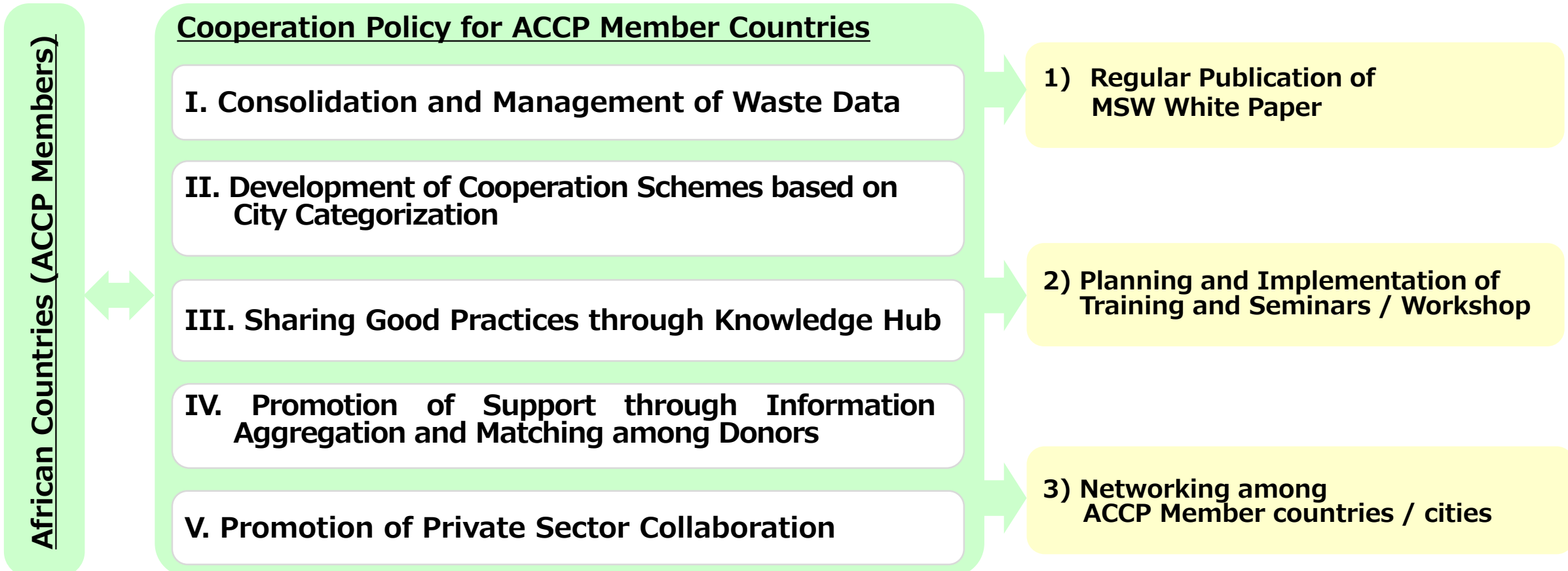


Monitoring of Waste Collection using Job Card

4. Recommended Cooperation Framework for ACCP Members

[Expected Roles and Contributions of ACCP]

To share information to all stakeholders involved in SWM in the African region, to share knowledge and mutual collaboration among countries in the region, and to promote support through information aggregation and matching among donors, with the aim of realizing clean cities and healthy lifestyles.



4. Recommended Cooperation Framework for ACCP Members

I. Consolidation and Management of Waste Data

1) Assistance in Obtaining Waste-Related Data for Each Country/City

- Dissemination and guidance of data collection method through “WaCT (Waste Wise Cities Tool)” and “Identification Tools for MSWM Overview”

2) Centralized Consolidation, Management and Analysis of Waste-Related Data from Each Country

- Updating the “Africa Solid Waste Management Data Book 2019” and profile of each country / city, including monitoring of achievement progress of the SDGs, and aggregation to database
- Publication of **ACCP MSW White Paper**; around once per 2 years is recommended
- Inventory of relevant laws, regulations, standards etc. of ACCP countries
- Identification of good practices

II. Development of Cooperation Schemes based on City Categorization

Categorization by city size & level of SWM

Stage	Large City	Small/Medium City
Stage 1	Conakry	Hawassa, Kampala, Kweneng District
Stage 2	Abidjan, Luanda, Addis Ababa, Tshwane	Gaborone
Stage 3	Johannesburg	—

Advantages of Categorization

- The current stage of development of the city will be clarified.
- The experiences and lessons learned from cities at the next level will contribute to development of waste management of the city, and clarify activities and plan to be achieved.

4. Recommended Cooperation Framework for ACCP Members

III. Sharing Good Practices through Knowledge Hub

ACCP will achieve the utilize and strengthen local resources of each county and city by sharing knowledge and good practices within ACCP.

1) **Creation of Networking and Sharing of Knowledge and Good Practices among ACCP Countries**

- ACCP meetings, seminars, workshops, training and dispatch of experts within Africa
- Development of an online training system (ACCP Training Center)

2) **Sharing of Experience and Knowledge of Developed Countries**

- Training in developed countries; to deploy good practices including experience/ knowledge of Japanese local government and other donors
- Development of SWM related tools and guidelines

IV. Promotion of Support through Information Aggregation and Matching among Donors

ACCP can act as an intermediary between donors to facilitate the efficient and effective assistance programs by consolidating information and matching among donors, considering the categorization of cities, project components and assistance schemes.

V. Promotion of Private Sector Collaboration

ACCP is in a position to promote private sector investment by disseminating information on international competitive bidding schemes planned in member countries etc., and providing support for business matching.

5. Direction of Improvement in SWM by ACCP and Donors

[Category of Supports to be Considered]

- Common Item
- Waste Management
- Collection and Transportation
- Intermediate Treatment and Recycling
- Final Disposal
- Organization and Institution
- Finance
- Society and Community

[Level of Waste Management]

- Stage 1: Improvement of Public Health
- Stage 2: Reduction of Environmental Impact and Pollution Prevention
- Stage 3: Establishment of a Sound Material-Cycle Society through 3Rs



Waste Collection Using a Compactor Provided by JICA Grant Aid Project (2016, Sudan)



Improvement of Final Disposal Site by JICA Technical Cooperation Project (2013, South Sudan)



Visit to a Landfill Site as Part of Environmental Education Program through JICA Technical Cooperation Project (2016, Nigeria)

5. Direction of Improvement in SWM by ACCP and Donors

Item	Stage 1	Stage 2	Stage 3
Common Item	<ul style="list-style-type: none"> • <u>Identification of good practices</u> and publication of “MSW White Paper” • <u>Consolidation and provision of information</u> on supports among donors • <u>Dissemination of information</u> through ISWA etc. 		
Waste Management	<ul style="list-style-type: none"> • <u>Training</u> at ACCP Training Center (online training system) • Inventory of relevant laws, regulations, standards etc. of ACCP countries • Dissemination of the “Identification Tools for MSW Management Overview”. 		<ul style="list-style-type: none"> • <u>Training</u> in developed countries including Japan
Collection / Transportation	<ul style="list-style-type: none"> • <u>Dispatch of experts</u> to Africa • <u>Training</u> in Africa 		<ul style="list-style-type: none"> • <u>Training</u> in developed countries including Japan
Intermediate Treatment / Recycling	<ul style="list-style-type: none"> • <u>Training</u> in developed countries including Japan 	<ul style="list-style-type: none"> • <u>Training</u> in developed countries including Japan • Publication of bid notices on PPP projects etc. and business matching 	
Final Disposal	<ul style="list-style-type: none"> • <u>Dispatch of experts</u> to Africa • <u>Training</u> in Africa • Development of guidebook for landfill improvement and operation 	<ul style="list-style-type: none"> • Pilot project for landfill improvement by Fukuoka method • Development of guidelines for safe closure and site use 	<ul style="list-style-type: none"> • <u>Training</u> in developed countries including Japan
Organization / Institution	<ul style="list-style-type: none"> • <u>Training</u> at ACCP Training Center • Development of guidelines to be used for private sector outsourcing and management (collection and transportation) 		<ul style="list-style-type: none"> • <u>Training</u> in developed countries including Japan
Finance	<ul style="list-style-type: none"> • <u>Training</u> at ACCP Training Center 		<ul style="list-style-type: none"> • <u>Training</u> in developed countries including Japan
Society / Community	<ul style="list-style-type: none"> • <u>Dispatch of experts</u> to Africa • <u>Training</u> in Africa • Provision of guidelines for environmental education 		<ul style="list-style-type: none"> • <u>Training</u> in developed countries including Japan • Pilot project for raising public awareness to support source separation

6. Tools for Improvement of SWM

6.1 Identification Tools for MSWM Overview

This tool is to identify the overview of municipal SWM and consists of “Checklist” and “Standard Survey Items”.

1) Checklist

In the countries/cities where the needs for support on waste management have been expressed, basic information on SWM shall be organized whether they have a potential to formulate any projects.

2) Standard Survey Items

- Survey items for detailed design projects shall be organized systematically.
- SWM stage, issues and possible measures can be clarified.

Type	Checklist		
General Overview	<ol style="list-style-type: none"> 1. Target country/region/city 2. Issues and key factors in waste management 3. Overview of Waste Management 4. Donor Support 		
Basic Information	<table border="0"> <tr> <td> <ol style="list-style-type: none"> 1. Organization/Institution 2. Finance 3. Society/Community </td> <td> <ol style="list-style-type: none"> 4. Collection and transportation 5. Intermediate treatment/Recycling 6. Final disposal </td> </tr> </table>	<ol style="list-style-type: none"> 1. Organization/Institution 2. Finance 3. Society/Community 	<ol style="list-style-type: none"> 4. Collection and transportation 5. Intermediate treatment/Recycling 6. Final disposal
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Major Item	Country	City	Contents of Standard Survey Items
1. General Information	✓	✓	Population, Topography, Climate, Economy, Basic infrastructure, Donor support
2. Organization/Institution	✓	✓	Organizational structure, Laws and regulations, Policies and plans
3. Finance	✓	✓	Financial management, Expenses, Income
4. Society/Community		✓	Resident participation, Environmental education and awareness-raising activities, Informal sector
5. Waste management		✓	Overview of waste management
6. Storage and discharge		✓	Waste separation/disposal, primary collection, Road cleaning
7. Collection and transportation		✓	Overview of secondary collection, Overview of transfer stations, Transfer station operation and maintenance
8. Intermediate treatment/Recycling		✓	Overview of intermediate treatment and recycling facilities, Venous industry
9. Final disposal		✓	Overview of final disposal sites, Operation and maintenance of final disposal site, Open dumping site

6. Tools for Improvement of Solid Waste Management

6.2 Guidelines on Preparing a Response Plan for SWM during an Infectious Disease Outbreak

[Purpose]

To assist developing measures to prevent the spread of COVID-19 as well as operational continuity plans for waste management in the event of an infectious disease outbreak.

This Guideline

Chapter1 Purpose and Structure of this Guideline

Chapter2 System Establishment

(1) Crisis Management System

(2) Information Management System

(3) Emergency Contact System

Chapter3 Assessing Infection Risk and Considering Infection Prevention Measures

(1) Assessing Infection Risk

(2) Implementing Infection Prevention Measures

Chapter4 Securing Elements Critical for Operational Continuity (Personnel and Supplies)

(1) Preparing a Personnel Plan and Securing Personnel

(2) Preparing a Supplies Procurement Strategy and Securing Supplies

Chapter5 Measures to Implement if Elements Critical for Operational Continuity (Personnel and Supplies) are in Short Supply

Chapter6 Response in the Event that Staff Becomes Infected or a Nationwide Infectious Disease Outbreak Occurs

Chapter7 Education and Training

Chapter8 Inspection and Corrective Measures



Operational Continuity Plan

Thank you.

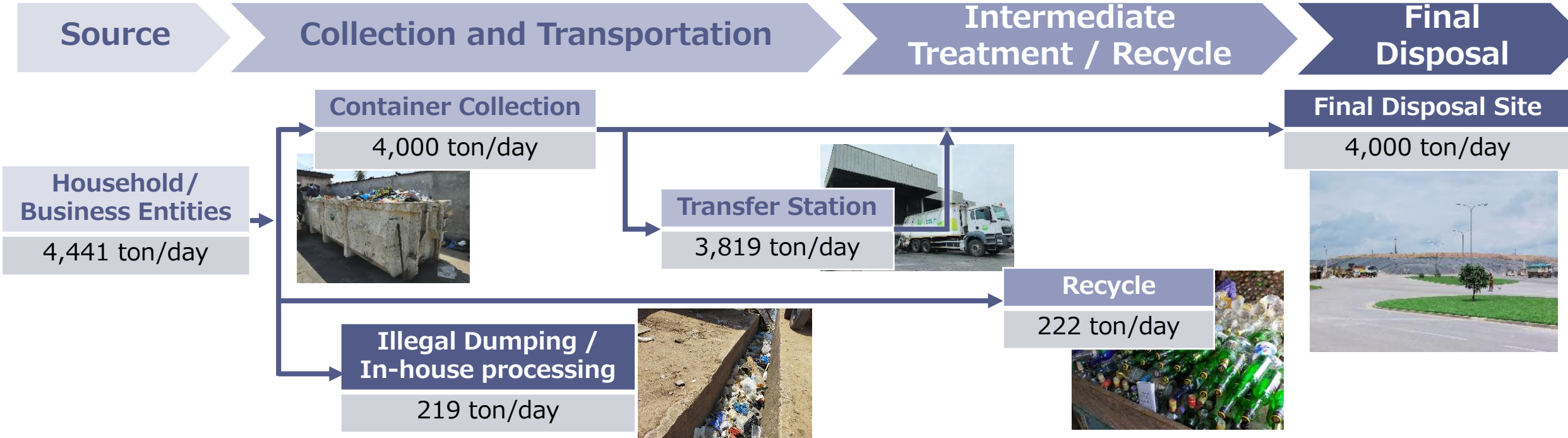
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Appendix:

Current Situation and Issues on SWM of Target Countries and Cities

(1) Solid Waste Management in the Republic of Cote d'Ivoire <Abidjan Autonomous District (DAA)>

Field Study
2021.7.5~7.16



Implementation Agency

- Waste management in Abidjan city is carried out by the National Waste Management Agency (ANAGED), a central government agency.

Collection and Transportation

- Collection and transportation of waste is outsourced by ANAGED to two private companies.
- There are three transfer stations in operation in the city, and two more are under construction.

Final Disposal

- The Kossihouen landfill is the only landfill in the city, and approximately 1/3rd of the landfill area has already been used.
- This landfill is equipped with leachate collection pipes and treatment facility.
- There are plans to construct a new landfill with the assistance of the World Bank.

(1) Solid Waste Management in the Republic of Cote d'Ivoire <Abidjan Autonomous District (DAA)>

Field Study
2021.7.5~7.16

Issues (red letters are those related to priority issues)

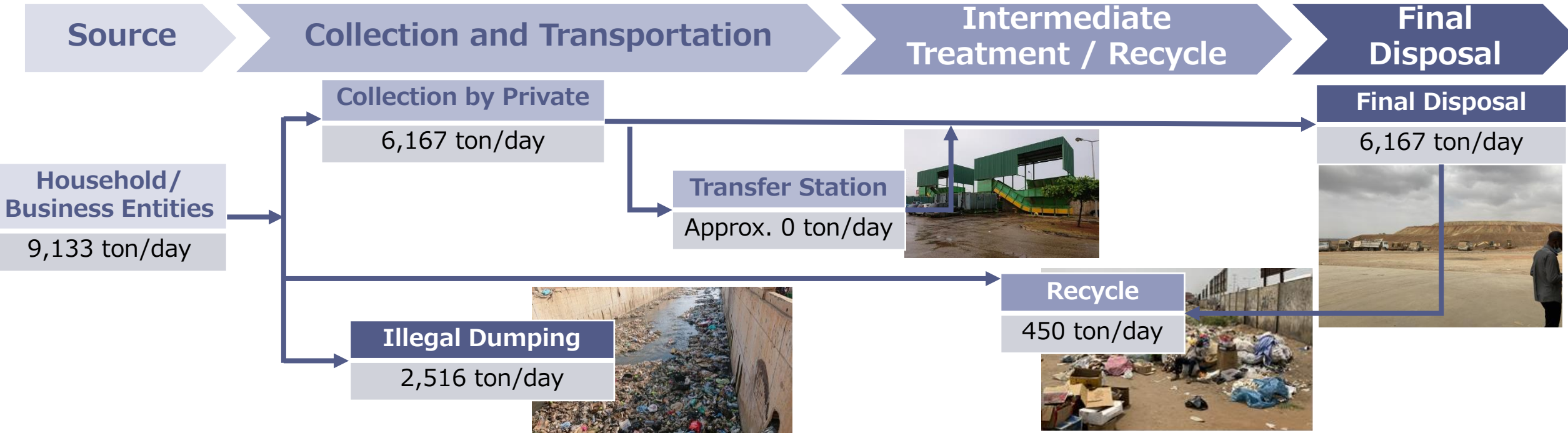
- **Legislations:** SWM in Cote d'Ivoire is based on "the Environmental Code", but it has not been revised since it came into effect in 1996. In addition, no ordinance has been enacted at the municipal level, such as in DAA. It is necessary to formulate a basic law for SWM.
- **Improvement of waste collection in low-income communities:** there are still many areas where waste collection is not provided, such as slums and other inaccessible areas.
- **Improvement of waste collection in the 6 satellite communes around DAA:** Illegal dumping is significant in the 6 communes
- **Promotion of recycling:** Recycling is done by private recyclers and collection of recyclable materials is done by SMEs. They extract recyclable materials during the primary collection or buy them from each household.
- **Development of a SWM master plan and action plans for Greater Abidjan:** there is no master plan for SWM in Greater Abidjan including the surrounding communes.
- **Review of the collection system, including the transportation system using transfer stations after the operation of the new landfill:** a review of the collection system, including the transportation system using transfer stations, is required for the operation of the two disposal sites, located in the east and west of the country.
- **Involvement of residents in the implementation of appropriate waste management:** some programs for raising public awareness have been conducted, but they are limited due to the lack of budget

Good Practice The outsourcing of collection and transportation, and landfill operation to the private sector.

- Outsourcing of collection and transportation: the waste collection rate, which was low before outsourcing to the private sector, has improved to 80-90%
- Outsourcing of landfill operation: the landfill operation has been successful in terms of leachate treatment, soil covering, etc.
- On the other hand, since the private contracting fee is based on the amount of waste delivered to the landfill, recycling at the collection stage is limited in order to secure disposal amount. Accordingly, Abidjan has an issue of low recycling rate.

(2) Solid Waste Management in the Republic of Angola <Luanda Province>

Field Study
2021.10.16~10.30



Implementation Agency

- Waste management in Luanda province is implemented by outsourced private companies under contracts with the Luanda provincial government through the provincial public corporation.

Collection and Transportation

- The provincial government corporation and private companies contracted by the provincial government are responsible for collection and transportation.
- Transfer stations have stopped operating and they are currently used as depo site and workshops

Final Disposal

- Mulenvos landfill, the only landfill in the province has a remaining lifespan of 16 years.
- This landfill is equipped with leachate collection and drainage pipes, leachate reservoirs and recirculation facilities, and weighbridges.
- Considerations are under way to upgrade the landfill with intermediate treatment facilities using PPP scheme.

(2) Solid Waste Management in the Republic of Angola <Luanda Province>

Field Study
2021.10.16~10.30



Issues (red letters are those related to priority issues)

[Central Government]

- **Strengthening management of private contractors:** Waste collectors etc. are conducting inappropriate SWM
- **Development of waste management data system:** There is no system in place to collect and manage information on waste management data
- **Development of training and capacity building system:** There is a lack of training programs and capacity building opportunities at the level of provincial and municipal administrators.
- **Establishment of branch offices of NWA:** Due to lack of personnel and financial resources, branch offices have not been set up.

[Luanda Provincial Government]

- **Strengthening management of waste collectors and capacity for collection and transportation:** Due to the insufficient capacity, large amount of waste is uncollected.
- **Strengthening of awareness-raising among residents and measures against illegal dumping of wastes in rivers:** uncollected waste is illegally dumped into rivers and other areas.
- **Strengthening of the final disposal system:** The landfill is the only final disposal site, leading to inefficient transportation of waste.
- **Formulation of strategies for a circular economy :** A strategy towards Circular Economy has not been formulated.

Good Practice

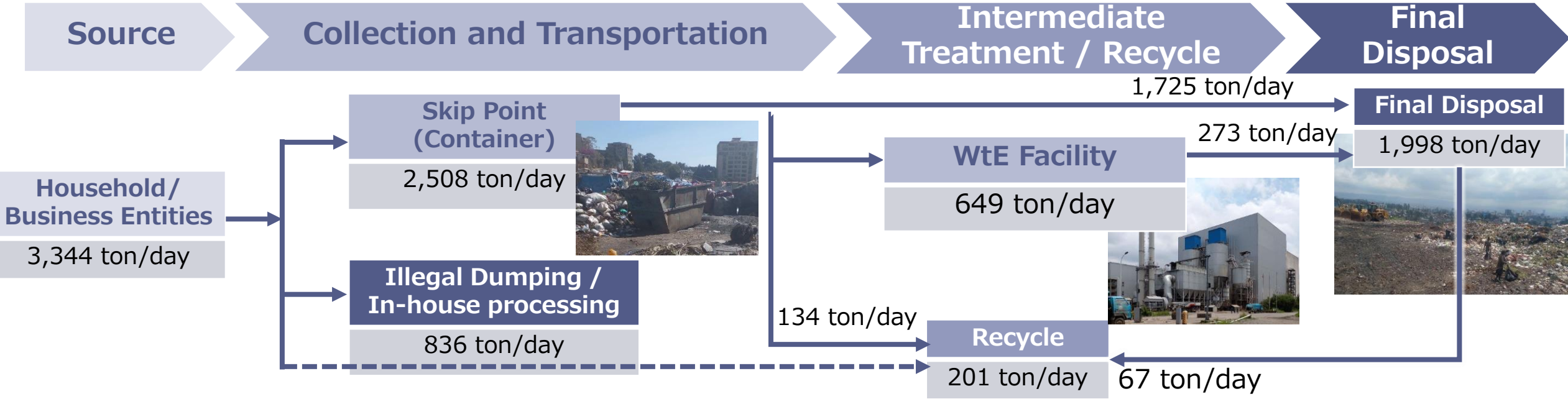
Landfilling Works and Operation and Management of the Landfill Site

- Waste disposed at Mulenvos landfill is properly covered with soil, and there is no bad odor, and no flies
- The landfill has a stable slope with level perimeter berms every 7 meters in height.
- Although there are some issues to be addressed, such as the management of the waste pickers, the landfill operation and covering work are being carried out in an exemplary manner.

(3) Solid Waste management in the Federal Democratic Republic of Ethiopia <Addis Ababa>



No Field Study

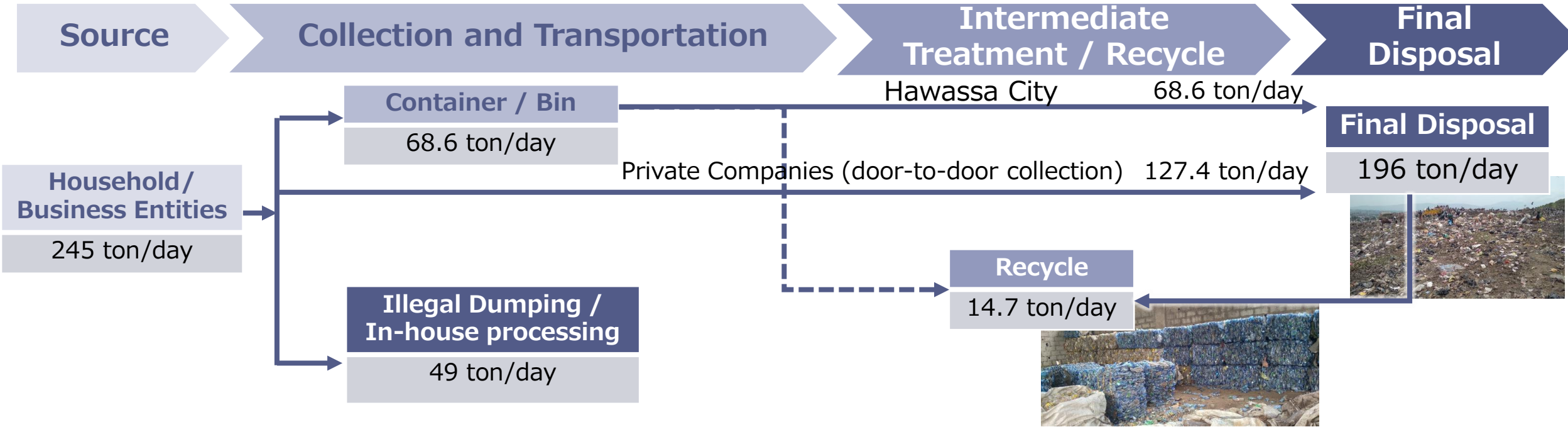


- Implementation Agency**
 - Solid waste management in Addis Ababa city is carried out by Addis Ababa Solid Waste Management Agency (AASWMA).
- Collection and Transportation**
 - Waste collection and transportation, and operation of transfer stations are outsourced to private companies.
- Intermediate Treatment**
 - Rappi WtE facility was built in 2018 adjacent to the Koshe final disposal site by China's Electric Power Works Co. and Cambridge Industries Ltd. of the United Kingdom.
 - The facility is operated by Ethiopia National Power Corporation.
- Final Disposal**
 - Koshe final disposal site is the only final disposal site which has a remaining lifespan of two years.
 - Although the Sandafa final disposal site was built with the support of AFD, it was forced to close in 2017 due to opposition from nearby residents.

(3) Solid Waste management in the Federal Democratic Republic of Ethiopia <Hawassa>



No Field Study



Implementation Agency

- Waste management in Hawassa city is carried out by the Hawassa city government.

Collection and Transportation

- Waste collection is conducted in two ways: direct collection by the city management and collection by private companies and the informal sector.

Final Disposal

- Hawassa final disposal site, the only final disposal site in the city is directly operated by the city.
- In addition to municipal waste the disposal site accepts industrial and construction waste as well, is an open dump site, and has a very small remaining disposal capacity.
- There is information that the World Bank will support the development of a new disposal site.

(3) Solid Waste management in the Federal Democratic Republic of Ethiopia <Addis Ababa / Hawassa>

No Field Study



Issues (red letters are those related to priority issues)

[Addis Ababa]

- **Strengthening collection and transportation and eliminating illegal dumping:** it is estimated that approximately 25% of the volume generated is illegally dumped
- **Stable operation of Rappi WtE facility :** Approximately only half amount of waste has been brought in the facility compared to the amount of waste planned to be treated.
- **Appropriate treatment of incinerator ash:** there are no laws, regulations, or systems regarding the disposal of incinerator ash, therefore, appropriate ash treatment has not carried out.
- **Difficult situation at the Koshe landfill:** The only landfill in use in the city of Addis Ababa is the Koshe landfill, which has already far exceeded its planned capacity

[Hawassa]

- **Collection improvements:** donkey carts are mainly used for waste collection, which are inadequate and inefficient.
- **Existing landfill improvement:** the existing landfill is an open dumping and needs to be improved by using heavy equipment for compaction and soil covering, and by installing gas vent pipes.
- **New landfill operation :** There are reports that the World Bank will provide support for the development of a new landfill, but the city needs to clarify the future schedule and operational plan.

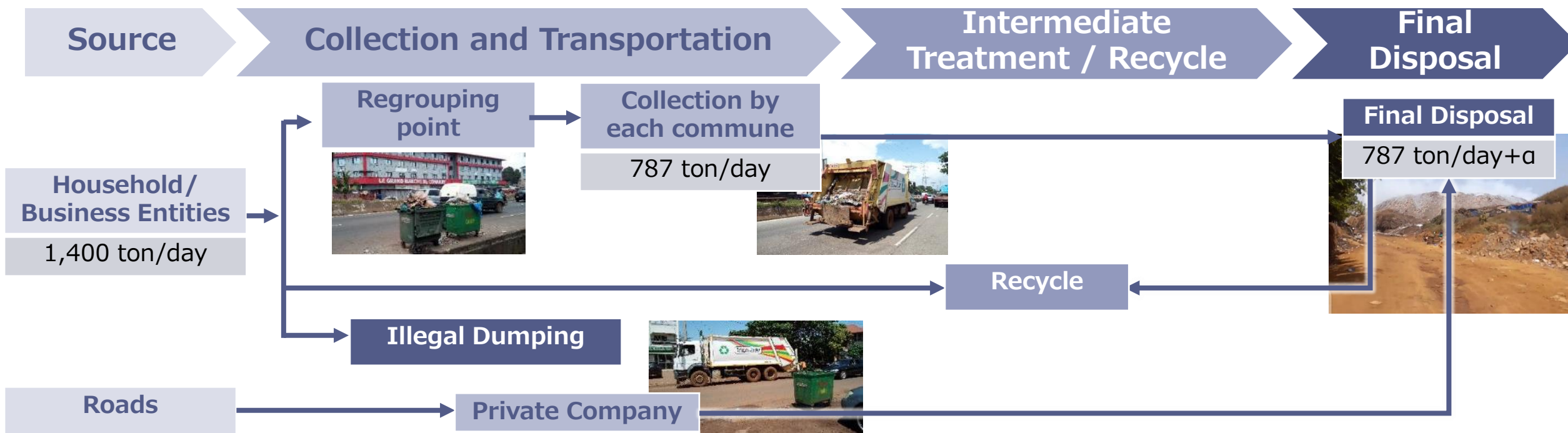
Good Practice Improvement of the Koshe landfill to the Fukuoka method

- The improvement works to Fukuoka method was implemented with the support of UN-Habitat and other organizations.
- The improvement to the Fukuoka method has improved the overall appearance of the landfill, reduced odors and flies, and reduced the odor of leachate, and the improvement project is highly appreciated by residents living adjacent to the landfill.
- On the other hand, it is necessary to improve not only the tangible aspects, but also the staff capacity for the operation of the landfill and other aspects.

(4) Solid Waste management in the Republic of Guinea

<Conakry City>

No Field Study



Implementation Agency

- Solid waste management in Conakry city is carried out by the Conakry city government.

Collection and Transportation

- Waste collection is outsourced to a private company.

Final Disposal

- Miniere landfill, the only landfill in Conakry city has a remaining lifespan of three years.
- The landfill is not equipped with any environmental conservation facilities, such as leachate collection pipes and storage ponds.
- Although the site is operated by a private company, soil covering is not applied and fires also have occurred.

(4) Solid Waste management in the Republic of Guinea

<Conakry City>

No Field Study



Issues (red letters are those related to priority issues)

- **Developing a new landfill due to the short remaining lifespan of existing landfill:** The remaining lifetime of the Miniere Landfill is only 3 years. The construction of the Baritode Technical Center (BTC) (including a landfill, WtE facility, etc.) is under consideration, and this needs to be completed without delay.
- **Improving the operation of existing landfill :** : In the meantime, the Miniere Landfill will continue to be used at least for a few years until the BTC is ready. However, the current operating conditions of this landfill are not appropriate. Application of soil cover is insufficient, fires have occurred frequently, and a slope collapse resulted in a fatality in 2017.
- **Strengthening waste collection capacity:** The rate of waste collection is low at 56%, and there is a high possibility that a large amount of waste is illegally dumped. In particular, there is a low fee collection rate for waste collection services paid by households and business establishments to PMEs, which are responsible for primary collection. There is a possibility that primary collection is not functioning well and hence the increased illegal dumping.

(5) Solid Waste management in the Republic of Uganda <Kampala City>

Field Study
2022.1.10~1.22



Implementation Agency

- Waste management in Kampala is carried out by the Kampala Capital City Authority (KCCA), through its Urban Division

Collection and Transportation

- Kampala city is divided into six zones, five of which have privatized collection and transportation.
- Three private collection companies provide collection services under individual contracts with households and offices.
- In the remaining zone, KCCA directly operates waste collection.

Final Disposal

- Kiteezi landfill is the only landfill in the city, and its remaining lifespan is very short.
- KCCA is planning to develop a new landfill site, Dbundu landfill site under a PPP scheme.

(5) Solid Waste management in the Republic of Uganda <Kampala City>

Field Study
2022.1.10~1.22



Issues (red letters are those related to priority issues)

- **Implementation of various policies:** In recent years, various laws and policies have been enacted and developed, however, enforcement and implementation of these laws and policies have not kept pace.
- **Strengthening of waste collection including in slum areas:** In slum areas where there is not enough capacity to pay for collection services, collection is not satisfactory and sanitary conditions are poor due to scattered waste.
- **Development of Dbundu landfill and safe closure of Kittezi landfill:** Kittezi landfill has already exceeded its disposal capacity and is considered to be in a dangerous situation due to the possibility of slope collapse.
- **Formulation of policies to create a sound material-cycle society:** JICA Study Team was not able to identify any policies or measures related to recycling, etc. (it is thought that they have not been formulated). As a future challenge, it is required to develop policies and systems with a view to creating a sound material-cycle society. This may be addressed in the formulation of waste management policies supported by the GGGI.

*The abovementioned issues were identified, but JICA Study Team considers that other donors are already providing some support and the scope of new support is limited.

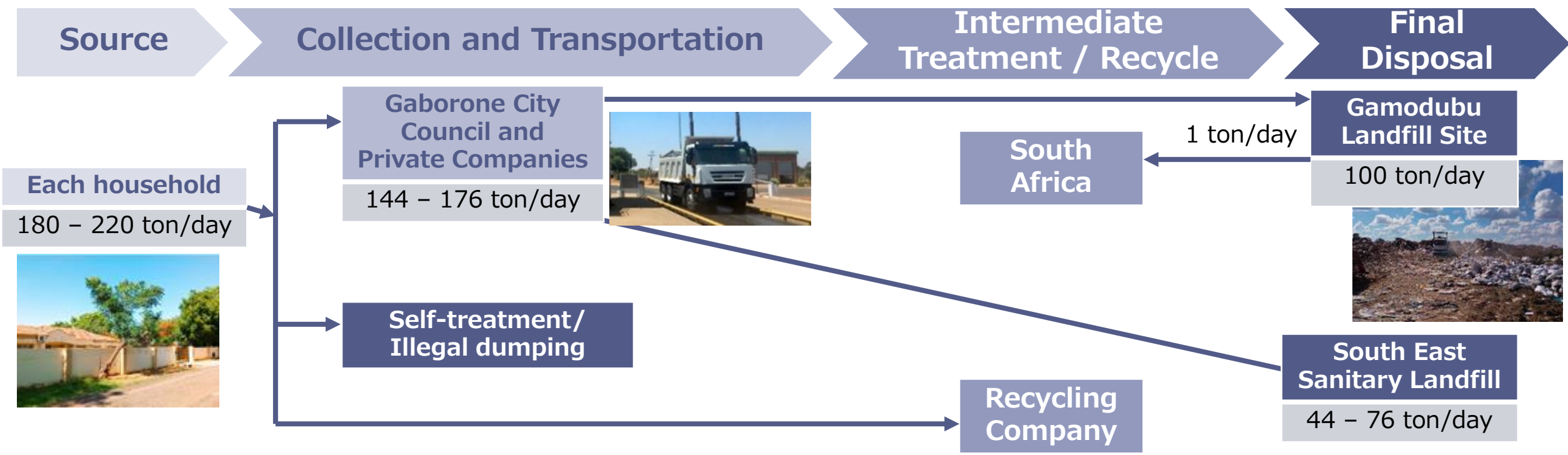
Good Practice

- **E-waste recycling center:** Although the e-waste recycling center is not fully operated, it is considered to be an advanced initiative in the African region. It is also one of the good practices that has been realized despite the problems in implementing the policy.
- **Privatization of waste collection service:** The waste collection in Kampala City has been privatized. Although there are many issues involved in privatization, such as the management of contractors and dealing with slum areas, it is one of the measures worth considering in Africa where there are financial constraints.

(6) Solid Waste management in the Republic of Botswana

<Gaborone City>

No Field Study



Implementation Agency

- Waste management in Gaborone city is carried out by the Gaborone city government.

Collection and Transportation

- Collection and transportation service is conducted both directly by the city and outsourced to private companies.

Final Disposal

- Most of the waste in Gaborone city is disposed in Gamodubu Regional Landfill which is operated by Kweneng district council, while some waste is disposed in South East Sanitary Landfill operated by Southeast district council.

(6) Solid Waste management in the Republic of Botswana

<Kweneng District>

No Field Study



Implementation Agency

- Waste management in Kweneng district is carried out by Kweneng district council and its three sub district councils.

Collection and Transportation

- Basically, waste collection is directly conducted by the local government. However, due to a lack of collection vehicles, wastes in small villages in rural areas are collected by private individuals or private companies using donkey carts and small tractors.

Final Disposal

- Wastes in Kweneng district are disposed in Gamodubu landfill. The site is operated by Kweneng district council and receives waste collected in Gaborone City and Southeast district (including industrial and medical wastes). The landfill's remaining lifespan is approximately ten years.

(6) Solid Waste management in the Republic of Botswana

<Gaborone City / Kweneng District>

No Field Study

Issues (red letters are those related to priority issues)

[Central Government of Botswana]

- **Strengthening the legal system:** With regard to solid waste management in Botswana, there is a basic law on solid waste management, the “Waste Management Act”, but it was formulated in 1998 and has not been updated.

[Gaborone City and Kweneng District]

- **Strengthening of regional waste management system and preparation of master plan:** collection and transportation of waste is carried out by the city government and district councils (sub-district councils). However, only two sanitary landfills: Gamodubu Regional Landfill in Kweneng District and South East Sanitary Landfill in South East District are available. Therefore, it is necessary to plan for SWM from a regional perspective and include neighboring municipalities in the planning process. Examine 3R measures such as collection of separated recyclable materials, and implement pilot projects in the M/P.

[Kweneng District]

- **Improvement of waste collection:** the waste collection rate in the district is low at approx. 60%, and illegal dumping has become a problem. Due to the vast area of the district, wastes from villages in suburbs cannot be transported to the landfill and are disposed of at numerous dumping sites in the district.
- **Improvement of existing landfill:** there have been a number of incidents of fires breaking out at Gamodubu Regional Landfill. In addition, the current waste disposal cell in operation is almost full and is in need of expansion.

WtE

- There are no projects related to WtE being implemented in Botswana. In 2020, a F/S study was conducted by the Energy Department of the Ministry of Minerals, Energy and Water Resources with the support of UNDP. The report states that it is necessary to investigate the status of recycling, to ensure that the legal system is in place, and to determine the quality and quantity of waste before implementing the WtE project.

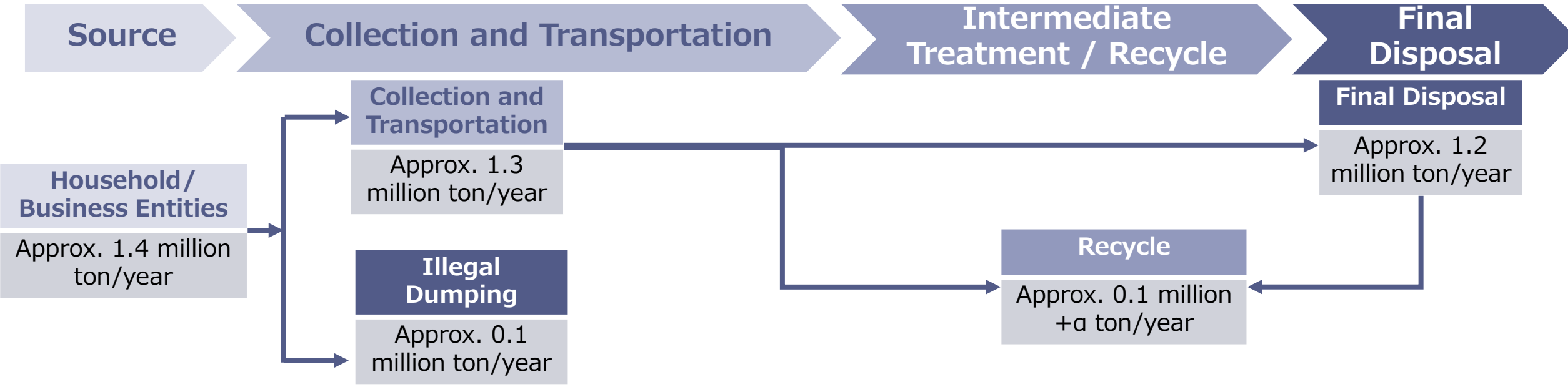
Good Practice

- **Integrated Waste Management Policy:** This policy provides role sharing of SWM, as well as approaches and strategies for SWM at each stage of the system including 3R
- **Promotion for Segregation at Source :** This promotion project is underway, but this would be one of the good practices

(7) Solid Waste management in the Republic of South Africa

<Johannesburg>

No Field Study



Implementation Agency

- Waste management in Johannesburg city is carried out by the City of Johannesburg (CoJ).

Collection and Transportation

- CoJ outsources the collection, transportation, disposal and cleaning of municipal solid waste in the city to a private company, Pikitup Johannesburg.

Intermediate Treatment

- Currently, a project is underway to introduce alternative waste treatment technologies, including a WtE facility.
- Development Bank of Southern Africa (DBSA) is cooperating with CoJ on both financial and technical aspects.

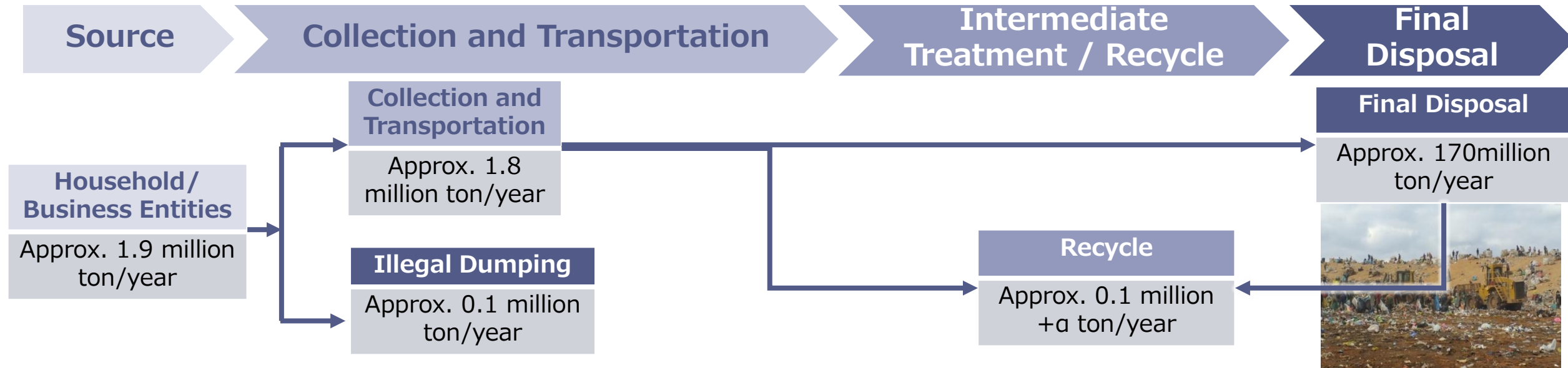
Final Disposal

- There are six landfills in Johannesburg (two of which are closed) and three privately owned landfills in the North Region.
- All of these landfills are licensed facilities under the law.
- Three of the landfills have power generation facilities that use biogas generated from the landfills.

(7) Solid Waste management in the Republic of South Africa

<Tshwane>

No Field Study



Implementation Agency

- Waste management in Tshwane city is carried out by the City of Tshwane (CoT).

Collection and Transportation

- The collection and transportation is carried out by CoT through outsourcing to private contractors.

Intermediate Treatment

- As in Johannesburg city, a project is underway to introduce alternative waste treatment technologies, including a WtE facility.

Final Disposal

- There are ten landfills in Tshwane city, of which six have already stopped receiving waste and only four are currently in operation.
- All four landfills are operated by CoT.

(7) Solid Waste management in the Republic of South Africa

<Johannesburg / Tshwane>

No Field Study



Issues (red letters are those related to priority issues)

- | | | |
|----------------|--|--|
| [Johannesburg] | <ul style="list-style-type: none">● Expansion of Source separation area● Financing toward the introduction of a mechanized transfer stations | <ul style="list-style-type: none">● Improvement of Waste Information System● Promotion of construction project for intermediate treatment facility |
| [Tshwane] | <ul style="list-style-type: none">● Grasping the actual status of waste management systems● Thorough implementation of source separation | <ul style="list-style-type: none">● Developing an integrated SWM plan● Promotion of construction project for intermediate treatment facility |

WtE

- [Johannesburg]
- Biogas power generation plants have been introduced at 3 of the 4 operating public landfill sites, but they are not achieving their power generation targets.
 - CoJ will face significant challenges on how to implement bidding, select contractor, manage construction and operation, and accumulate experience utilizing PPP scheme for projects for waste treatment facility including WtE which is now in the phase of procurement preparation
- [Tshwane]
- CoT has plans to implement projects for introducing alternative waste treatment technology and biogas power generation plants, but the projects are at standstill due to the financial problem of CoT

Good Practice

- **Establishment and operation of advanced information management system:** “South Africa Waste Information System” (SAWIS) was established in line with the law and this system comprehensively collects and analyses waste information and it also publicizes this information through the on-line platform
- **South African Waste Pickers Association (SAWPA):** SAWPA has been established with the aim to protect the rights of waste pickers and integrate them officially in one organization so that they can work with more ease and safety. SAWPA was established with the aim to integrate the waste pickers and provide them a platform to have their views heard by the central government and municipalities. SAWPA is financially supported by the central government, municipalities, and other organizations.