

Country Name	The Project for Promotion of Sustainable 3R Activities in Maputo
Republic of Mozambique	

I. Project Outline

Background	In Maputo City, the capital of Mozambique, urban solid waste management was promoted. For the reason, in 2007, under a cooperation with the German Corporation for International Cooperation (Deutsche Gesellschaft für Internationale Zusammenarbeit GmbH: GIZ), the “Master Plan for Solid Waste Management in Municipal Council of Maputo” (2007) (M/P) was formulated, and various efforts for a comprehensive waste management, including the introduction of 3R (Reduce, Reuse, Recycle) were carried out. However, due to the limited capacity of solid waste management of the Municipal Council of Maputo, the Mozambican authority responsible for the project, solid waste was not collected, transported, and disposed in appropriate manner. In response, it was necessary to strengthen the basic skills of CMM on solid waste management and the technical skills and policy-making skills for the introduction of 3R.														
Objectives of the Project	Through the reviewing and updating of the existing M/P, the preparation, implementation and monitoring of the Action Plans, the development of guidelines for solid waste management and 3R activities, the preparation, implementation and monitoring of pilot projects for waste collection and transportation, and the reviewing, improvement and implementation of public awareness programs for 3R, the project aimed at improving capacity for solid waste management in the Municipal Council of Maputo, thereby contributing to improvement of the urban environmental and living condition in Maputo City.														
	1. Overall Goal: The urban environmental and living condition in Maputo City is improved. 2. Project Purpose: Capacity for Solid Waste Management in the Municipal Council of Maputo is improved.														
Activities of the Project	1. Project site: Maputo City (excluding the municipal districts of Katembe and Inhaca) 2. Main activities: 1) Reviewing and updating of the existing M/P, 2) Preparing, implementing and monitoring of the Action Plans, 3) Development of guidelines for solid waste management and 3R activities, 4) Preparing, implementing and monitoring of pilot projects for waste collection and transportation, 5) Reviewing, improving and implementing of public awareness programs for 3R, etc. 3. Inputs (to carry out above activities) <table><tr><td>Japanese Side</td><td>Mozambican Side</td></tr><tr><td>1) Experts: 9 persons</td><td>1) Staff allocated: 20 persons</td></tr><tr><td>2) Trainees received in Japan: 8 persons</td><td>2) Land and facility: an office space in the</td></tr><tr><td>3) Trainees received in the third country: 8 persons (Brazil)</td><td>Municipal Council of Maputo</td></tr><tr><td>4) Equipment: vehicle, PC, printer, etc.</td><td>3) Local expense: utility cost</td></tr><tr><td>5) Local expense: cost for project activities</td><td></td></tr></table>			Japanese Side	Mozambican Side	1) Experts: 9 persons	1) Staff allocated: 20 persons	2) Trainees received in Japan: 8 persons	2) Land and facility: an office space in the	3) Trainees received in the third country: 8 persons (Brazil)	Municipal Council of Maputo	4) Equipment: vehicle, PC, printer, etc.	3) Local expense: utility cost	5) Local expense: cost for project activities	
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Project Period	(ex-ante) January 2013 – December 2016 (actual) March 2013 – May 2017	Project Cost	(ex-ante) 350 million yen, (actual) 541 million yen												
Implementing Agency	Directorate for Waste Management and Cemeteries (DMCS) (this was reformed to Directorate of Environment and Waste Management (DSMAS) in January, 2020), the Municipal Council of Maputo														
Cooperation Agency in Japan	Nippon Koei Co., Ltd.														

II. Result of the Evaluation

< Special Perspectives Considered in the Ex-Post Evaluation >

- Regarding the continuation status of project effects at the time of ex-post evaluation after project completion, the indicator 2 for the Project purpose, was verified in the technical aspect under sustainability.

1 Relevance
<p><Consistency with the Development Policy of Mozambique at the time of Ex-ante Evaluation></p> <p>The project was consistent with the Mozambique’s development policies such as “National Environmental Policy” (1995) promoting the introduction of appropriate solid waste management and recycle system and the construction and management of sanitary landfill and the draft of the “National Strategy for Integrated Solid Waste Management” aiming to promote a strategic solid waste management across the country.</p> <p><Consistency with the Development Needs of Mozambique at the time of Ex-ante Evaluation></p> <p>The project was consistent with the Mozambique’ development needs for strengthening the basic skills on solid waste management and the technical skills and policy-making skills for the introduction of 3R of the Municipal Council of Maputo.</p> <p><Consistency with Japan’s ODA Policy at the time of Ex-ante Evaluation></p> <p>The project was consistent with the Japan’s ODA policy for Mozambique¹. It sets “disaster prevention and climate change countermeasures”, including the enhancement of solid waste management in urban areas, as one of the three priority areas.</p> <p><Evaluation Result></p> <p>In light of the above, the relevance of the project is high.</p>
2 Effectiveness/Impact

¹ ODA country data collection (2013)

<Status of Achievement of the Project Purpose at the time of Project Completion>

The Project Purpose was partially achieved by the time of project completion. The M/P, including plans to promote sustainable 3R activities had not been approved by the Municipal Council of Maputo but being reviewed within the council (Indicator 1). Average score of capacity assessment achieved 4.31 points on average of 5 scale evaluation (Indicator 2). The number of times of holding workshops for the guideline, the Action Plan, and the M/P were not confirmed. However, it was confirmed that they were finalized by the end of the project (Indicator 3). The guidelines of solid waste management for Maputo city were approved by the Municipal Council of Maputo in March, 2017 (Indicator 4).

<Continuation Status of Project Effects at the time of Ex-post Evaluation>

The project effects have partially continued. The M/P was approved by the Municipal Council of Maputo (CMM) in December 2018 and has been used even at the time of ex-post evaluation. Although the Master Plan has not been updated yet, there is a plan to update it in order to incorporate to the M/P the new institutional structure, which includes Environmental Department, and the operation and management of the new sanitary landfill to be constructed in Katembe Municipal District. The Action Plan produced by the project has been used and implemented. Buckets Provision, which was proved as the most cost-effective way for separated collection by Impact Evaluation during the project, has not been adopted due to insufficient budget to purchase the buckets and install eco-points to promote source separation and recycling activities. Three (3) out of six (6) guidelines/manuals of solid waste management and 3R have been used. Although the normal solid waste management activities have been continued in the city, including in the pilot project sites, the pilot projects formulated by the project has not continued in the same way as planned because of financial constraints. The weigh bridge at Hulene dumping site was repaired in 2018, 2019, and 2021. The Hulene dumping site, in Maputo City, has not yet been closed or moved to Matola because the process depends on the construction of the new sanitary landfill in Mathlemele, Matola city, which also depends on the progress of reallocation/resettlement and compensation of the families occupying the area. DSMAS has continuously provided several capacity building activities within its organization and shared their experiences to CMM and other cities after the project completion

<Status of Achievement of Overall Goal at the time of Ex-post Evaluation>

The Overall Goal has been partially achieved at the time of ex-post evaluation. The number of reports on inadequate waste management decreased from 5,508 reports in 2017 to 1,209 reports in 2019 (Indicator 1). Amount of final waste disposal per person did not decrease from 0.59kg/day in 2017 to 0.59kg/day in 2020 due to development of the country which resulted in increase in population with more purchasing power and increased use of disposable materials. Another associated factor was the increased number of people living in Matola city in who usually dispose waste in Maputo city on the way to work (Indicator 2). The amount of collected recyclables has increased from 12t/month in 2017 to 72t/month in 2020. However, such recyclables are collected from microenterprises, small NGOs and individuals, not through CMM's interventions or support (Indicator 3). It was not verified if the number of residents who understand the definition and participate in 3R increased, since DSMAS and CMM did not have any data due to lack of specific survey or study (Indicator 4). Satisfaction of citizen for solid waste management also was not verified due to lack of data to assess residents' satisfaction (Indicator 5).

<Other Impacts at the time of Ex-post Evaluation>

Some positive impacts were observed at the time of ex-post evaluation. As positive impacts related to gender, women actively participated in the solid waste collection activities and recycling organizations such as "Recicla" and "Consol" associations established by female ex-waste pickers. In addition, the project contributed to the improvement of the waste pickers' behavior at Hulene dumping site. Through civic education or behavioral change campaigns, DSMAS advised waste pickers to avoid making fire at the dumping site and encouraged waste pickers to be organized in groups or associations and avoid spreading waste coming from the trucks. In addition, "African Clean Cities Platform" was established in the international knowledge-sharing seminar on waste management and "National Solid Waste Manager's Association (ANGER) was established with Mozambican C/Ps' own initiative.

No negative impacts were observed.

<Evaluation Result>

Therefore, the effectiveness/impact of the project is fair.

Achievement of Project Purpose and Overall Goal

Aim	Indicators	Results	Sources									
(Project Purpose) Capacity for Solid Waste Management in the Municipal Council of Maputo is improved.	Indicator 1: The Master Plan (M/P) for post-termination of the project including plans to promote sustainable 3R activities is approved by the Municipal Council of Maputo.	<u>Status of the Achievement: Not Achieved (Achieved)</u> (Project Completion) <ul style="list-style-type: none">The final draft of the M/P was not approved but being reviewed within the Municipal Council of Maputo. It was approved in December 2018. (Ex-post Evaluation) <ul style="list-style-type: none">The M/P was being used by the Municipal Council of Maputo even at the time of ex-post evaluation. Although the M/P has not been updated yet, there is a plan to update it in order to incorporate the new institutional structure, which includes Environmental Department, and the operation and management of the new sanitary landfill to be constructed in Katembe to the M/P.	Project Completion Report, DSMAS									
	Indicator 2: Average score of capacity assessment achieves at least 3 point of 5 scale evaluation.	<u>Status of the Achievement: Achieved (Continued)</u> (Project Completion) <ul style="list-style-type: none">The results of the capacity assessment achieved 4.31 points on average. [Results of capacity assessments for each output] <table><thead><tr><th>Topic</th><th>Score</th></tr></thead><tbody><tr><td>Current Status Analysis Capacity Development</td><td>4.62</td></tr><tr><td>Urban Area Collection & Transportation Capacity Development</td><td>4.47</td></tr><tr><td>Suburban Area Collection & Transportation Capacity Development</td><td>3.87</td></tr><tr><td>Financial Management Capacity Development</td><td>4.29</td></tr></tbody></table>	Topic	Score	Current Status Analysis Capacity Development	4.62	Urban Area Collection & Transportation Capacity Development	4.47	Suburban Area Collection & Transportation Capacity Development	3.87	Financial Management Capacity Development	4.29
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	(Ex-post Evaluation) <ul style="list-style-type: none">Refer to the sustainability of the technical aspects														
Indicator 3: Workshops to share and examine drafts of the Guideline, the Action plan, and the M/P for post-termination of the project, are held among related authorities and stakeholders at least 2 times during the project period.	<p>Status of the Achievement: Partially achieved (Continued)</p> <p>(Project Completion)</p> <ul style="list-style-type: none">The number of times of holding workshops for the guideline, the Action Plan, and the M/P were not confirmed. However, it was confirmed that they were finalized by the end of the project. <p>(Ex-post Evaluation)</p> <ul style="list-style-type: none">CMM exchanged information and experience in SWM with Matola and Inhambane Municipalities in 2020 and with Vilankulos Municipality in the first quarter of 2021.Maputo Municipality could participate and share experiences in the National Assembly of Solid Waste Management in November 2019, where 100 people from different institutions and sectors, including municipalities and other stakeholders participated.CMM also organized in 2021 a local Assembly in the Municipal District of KaMubukwana aiming to discuss urban solid waste management related issues.	Project Completion Report, DSMAS													
Indicator 4: Guidelines of solid waste management for Maputo City are approved by the Municipal Council of Maputo.	<p>Status of the Achievement: Achieved (Partially Continued)</p> <p>(Project Completion)</p> <ul style="list-style-type: none">The guidelines of solid waste management for Maputo city were approved by the Municipal Council of Maputo in March 2017. <p>(Ex-post Evaluation)</p> <ul style="list-style-type: none">Three guidelines formulated by the project were used after the project completion (Guideline for Preparation of the Master Plan for the Integrated Management of Municipal Waste, Guideline for Improvement of Waste Collection and Transportation in the Urban Area and the Guideline for Introduction of 3R Activities) and other three were not used.The reason why the CMM did not use the other guidelines was lack of continuation of the related pilot projects, which was also associated with financial constraints within the municipality.	Project Completion Report, DSMAS													
(Overall Goal) The urban environmental and living condition in Maputo City is improved.	Indicator 1: The number of reports on inadequate waste management is decreased.	<p>Status of the Achievement: Partially achieved</p> <p>(Ex-post Evaluation)</p> <ul style="list-style-type: none">The number of reports on inadequate waste management has decreased from 5,508 reports in 2017 to 1,209 reports in 2019. <p>[No. of reports on inadequate waste management]</p> <table><tr><td>2016</td><td>2017</td><td>2018</td><td>2019</td><td>2020</td></tr><tr><td>3,047</td><td>5,508</td><td>3,768</td><td>1,209</td><td>No info.</td></tr></table> <ul style="list-style-type: none">The number of reports on inadequate waste management increased in 2017 because of the Participatory Monitoring Pilot Project (Monitoria Participativa Maputo, MOPA) platform that was introduced. Because of MOPA, using mobile phone, residents were able to report to CMM problems related to waste collection services. Accordingly, the CMM conducted some awareness campaigns and waste collection companies to improve their services and promoted civic education about the waste disposal. Such interventions resulted in the reduction of the number of reports on inadequate waste management in 2018 and 2019.It was not possible to have the number of reports on inadequate waste management in 2020 as the MOPA system stopped functioning in the same year because of financial constraints, and it was the only source of information about residents' report on inadequate solid waste management services. The Municipal Council of Maputo has a plan to reactivate the MOPA platform, but without a specific date.	2016	2017	2018	2019	2020	3,047	5,508	3,768	1,209	No info.	DSMAS		
2016	2017	2018	2019	2020											
3,047	5,508	3,768	1,209	No info.											
	Indicator 2: Amount of final waste disposal per person is decreased.	<p>Status of the Achievement: Not Achieved</p> <p>(Ex-post Evaluation)</p> <ul style="list-style-type: none">Amount of final waste disposal per person did not decrease and remained as same from 0.59kg/day in 2017 to 0.59kg/day in 2020 due to development of the country which resulted in increase in population with more purchasing power and increased use of disposable materials. Another associated factor was the higher number of residents living in Matola city who usually disposed waste almost every day in Maputo city, on the way to work. <p>[Amount of final waste disposal]</p> <table><tr><td>Item</td><td>2016</td><td>2017</td><td>2018</td><td>2019</td><td>2020</td></tr><tr><td>Amount of final waste disposal (t/day)</td><td>1,201</td><td>1,245</td><td>1,259</td><td>1,273</td><td>1,284</td></tr></table>	Item	2016	2017	2018	2019	2020	Amount of final waste disposal (t/day)	1,201	1,245	1,259	1,273	1,284	DSMAS
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		Population in Maputo city ('000)	1,257	1,273	1,288	1,304	1,320												
		Amount of final waste disposal per person (kg/day)	0.59	0.59	0.59	0.59	0.59												
Indicator 3: Amount of collected recyclables is increased.	<p><u>Status of the Achievement: Achieved</u> (Ex-post Evaluation)</p> <ul style="list-style-type: none"> Amount of collected recyclables has increased from 12t/month in 2017 to 72t/month in 2020. <p>[Amount of collected recyclables]</p> <table> <tr> <th>2016</th> <th>2017</th> <th>2018</th> <th>2019</th> <th>2020</th> </tr> <tr> <td>10t/month</td> <td>12t/month</td> <td>25t/month</td> <td>47t/month</td> <td>72t/month</td> </tr> </table> <ul style="list-style-type: none"> The amount of collected recyclables increased as result of increased purchasing power of residents and use of disposables, as well as because of the residents' awareness on the economic value of waste (for livelihood). In addition, because of the limited number of industries or market for recyclable waste in Mozambique and high export cost, the recyclables did not significantly circulate in the society, being eventually accumulated in the city. The above recyclables are collected from microenterprises, small NGOs and individuals. 								2016	2017	2018	2019	2020	10t/month	12t/month	25t/month	47t/month	72t/month	DSMAS
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10t/month	12t/month	25t/month	47t/month	72t/month															
Indicator 4: Residents who understand the definition of 3R and engage 3R activities increases.	<p><u>Status of the Achievement: Not verified</u> (Ex-post Evaluation)</p> <ul style="list-style-type: none"> DSMAS did not have any data because of lack of specific survey or study. It was difficult to find the number of residents who understand the definition and participate in 3R as the CMM did not conduct any related study. 								DSMAS										
Indicator 5: Satisfaction of citizen for solid waste management is increased.	<p><u>Status of the Achievement: Not verified</u> (Ex-post Evaluation)</p> <ul style="list-style-type: none"> CMM did not have any data to measure satisfaction of citizens, although the satisfaction level had been assessed until 2015 based on the Report Card, which was an annual report that provides general information about the residents' satisfaction in all the services provided by the CMM. 								DSMAS										

3 Efficiency

The project period exceeded the plan (ratio against the plan: 110%) and the project cost significantly exceeded the plan (ratio against the plan: 155%). The reason of increasing the cost is that an international knowledge-sharing seminar on waste management for inviting members of African countries was held and it was not initially planned in the Project. Therefore, the project efficiency is low.

4 Sustainability

<Policy Aspect>

In order to promote sustainable solid waste management in the city, the CMM has been using the M/P, which was approved in 2018. The M/P provides all the necessary measures and actions to be taken within the sector, including the implementation of the Action Plan produced by the project. The institution has also the Regulation on Urban Solid Waste Management that promotes recycling activities in the city.

<Institutional/Organizational Aspect>

With the introduction of the new institutional structure, environmental management and supervision/inspection department has been newly established under Directorate of Environment and Waste Management (DMAS), and the CMM expects to improve the environmental activities in addition to the SWM services. However, since the number of staff working at DMAS is insufficient, most of the technicians have to respond for both departments (Environment and Urban SWM), which may compromise the performance.

<Technical Aspect>

The staff from DSMAS have sustained necessary skills and knowledge to promote/disseminate SWM, including the implementation of the M/P through their involvement in some trainings, daily work and during the revision/updating of the M/P, and other activities. Regarding the 3R activities, the CMM is planning to introduce 5R under the new JICA project and all the involved staff are being trained by the project. The manual on supporting teachers in some primary and secondary schools in collaboration with JICA volunteers for promotion of good practices about waste management and 3R manuals have been utilized.

<Financial Aspect>

The annual budget allocated to DSMAS to implement SWM related activities increased in 89.3% from 2016 to 2020, which helped the institution to expand and improve its services. However, it was not possible to secure budget to continue with some pilot projects formulated by the project.

[Budget for solid waste management and 3R including the implementation and updating of the M/P]

2016 (Actual)	2017 (Actual)	2018 (Actual)	2019 (Actual)	2020 (Actual)	2021 (Plan)
168,802,674.00 MZN*	221,557,497.00 MZN	221,557,496.00 MZN	269,504,585.00 MZN	319,595,015.00 MZN	294,156,510.00 MZN

*Mozambican metical

<Evaluation Result>

In light of the above, slight challenges have been observed in terms of the institutional/organizational and financial aspects of the

implementing agency. Therefore, the sustainability of the effectiveness through the project is fair.

5 Summary of the Evaluation

The project partially achieved the Project Purpose and the Overall Goal to improve urban environmental and living condition in Maputo City, through the improvement of capacity for SWM in the CMM. Regarding sustainability, although there had been slight challenges in allocating the sufficient number of staff and the annual budget in DSMAS, the necessary skills and knowledge to promote/disseminate SWM were sustained. As for efficiency, the project period exceeded the plan, and the project cost significantly exceeded the plan due to hold an international knowledge-sharing seminar on waste management for inviting members of African countries additionally.

Considering all of the above points, this project is evaluated to be unsatisfactory, mainly due to low efficiency.

III. Recommendations & Lessons Learned

Recommendations for Implementing Agency:

[Data collection and data base]

DMAS have been implemented several activities such as environmental education programs, including education and cleaning campaigns. However, most of the activities have not been recorded and the number of residents who attended such activities or program is unknown. This also includes lack of quantification of residents' satisfaction or claims for SWM and other relevant activities. Thus, as first step, a training for data collection, analysis and quantification of basic information about social surveys or behavioral change activities/programs in SWM is crucial. After its training, collected data should be recorded by DMAS for future studies or any planning activities.

[Commitment of the implementing agency to continue with the project activities after completion]

After the project completion, DMAS has made effort to continue improving the SWM in Maputo city. However, it was found that some pilot projects implemented by JICA project did not continue, not only because of limited budget, but also because the institution did not take the initiative to continue with such activities, within the limited budget, such as follow-up the status of pilot projects by visiting the sites where the pilot projects were implemented and promote discussions with the local beneficiaries to identify and analyze the barriers or strengths to the continuation of each relevant activity. After identifying and analyzing the barriers or strengths, DMAS should discuss internally how to implement some countermeasures by prioritizing them according the available budget.

[Improvement of coordination]

Under the decentralization of SWM activities, the municipal districts of Maputo city are autonomous but they can receive technical support from DMAS when required, including training. DMAS has also the responsibility to monitor and supervise the SWM in each municipal district of Maputo city. Thus, quarterly meetings are conducted every year between DMAS and municipal districts to report the situation of SWM in each municipal district. In case of any urgent matter, each municipal district can contact DMAS any time for support or assistance. However, a permanent communication, in short period, and regular site visits to each municipal district should be promoted by DMAS. Regarding the coordination with NGOs, normally, the communication occurs when a certain NGO needs the approval of an activity from CMM (usually about small-scale recycling activity or 3R programs). However, there is not any permanent or regular communication or meeting between DMAS and the NGOs working in the SWM sector. Thus, DMAS should promote at least biannual regular meetings with NGOs to discuss SWM in the city. In addition, DMAS should also register the NGOs working in the sector, as they may also contribute to the improvement of SWM in Maputo City.

Lessons Learned for JICA:

For this project, the designed indicators for the Overall Goal were not able to verify the expected positive impacts which were realized by the project effects because data for two of them was not available at the time of ex-post evaluation. In case where the project aimed at promoting the 3R activities in urban area to contribute to improving living conditions, the verifiable indicators for the Overall Goal should be more directly measurable ones, such as reduction of informal/illegal dumping sites.



Compressed plastic bottles for recycle



Collection of valuable and recyclable wastes as a pilot project