

Ex post evaluation Advanced Integrated Solid Waste Management, South Africa



Title	Advanced Integrated Solid Waste Management Project		
Sector and CRS code	Urban development and management (CRS code 43030)		
Project number	BMZ-No. 2006 66 073		
Commissioned by	BMZ		
Recipient/Project-executing agency	Department of Environment, Forestry & Fisheries (DEFF)		
Project volume/ Financing instrument	EUR 3.6 million/grant		
Project duration	2006-2016		
Year of report	2021	Year of random sample	2020

Objectives and project outline

At impact level, the goal of the FC measure was to contribute to climate protection and environmentally sound municipal development, as well as to improve the living conditions of the population in the assisted communities. The goal at outcome level was to improve waste management in the identified municipalities through the implementation of a sustainable and innovative integrated waste management system and the establishment of environmental monitoring units.

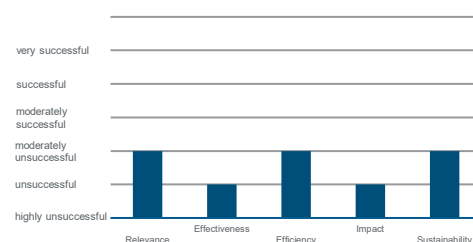
The open programme was structured in two components: Component a) a grant of originally EUR 6 million for the first phase (consultant services and pilot measures at the national level and in two communities) and EUR 9 million for a possible second phase (inclusion of further three communities) and Component b) a subsidised loan of EUR 24-29 million for detailed planning and implementation of a modern Integrated Waste Management System. However, after a long phase for feasibility studies in the open programme (2007-2013), only phase 1 of component a) had been partly financed (EUR 3.6 million for consulting measures). No investment measures had been implemented. Therefore, KfW and BMZ decided to stop the programme at the end of 2016.

Key findings

Justification: Due to the lack of political support, capacity and willingness of the waste management staff, insufficient financial resources for waste management in the municipalities as well as the adverse development of the framework conditions, the project objective of improving waste management in the programme cities through a sustainably operated waste management system could not be achieved. Nevertheless, the knowledge products developed under the programme were positively received by those responsible, which presumably contributed to the fact that climate protection has meanwhile gained significantly in importance in South African politics in general and also in the solid waste sector. Some measures were later implemented by DEFF and GIZ.

Remarkable: Had the individual programme measures started at a later point in time, the framework conditions would have been more favourable and possibly also the engagement of the respective stakeholders.

Overall rating:
moderately unsuccessful



Conclusions

- Reforms in the solid waste sector and corresponding awareness raising may take a considerable amount of time, posing a sizeable risk for project implementation. This should be considered during project preparation.
- If the programme were to be implemented a second time, we would recommend conducting the feasibility studies before appraisal.

Rating according to DAC criteria

Overall rating: 4

Sub-rating:

Relevance	4
Effectiveness	5
Efficiency	4
Impact	5
Sustainability	4

Breakdown of total costs

		Component a), Phase 1 (Planned)	Component a), Phase 1 (Actual)	Component a), Phase 2 (Planned)	Component a), Phase 2 (Actual)	Component b) (Planned)	Component b) (Actual)
Investment cost	EUR million	6.0	3.6	9.0	0.0	24.0-29.0	0.0
Own contribution	EUR million	0.0	0.0	0.0	0.0	0.0	0.0
Financing	EUR million	6.0	3.6	9.0	0.0	24.0-29.0	0.0
Of which BMZ funds	EUR million	6.0	3.6	9.0	0.0	(Green Climate Fund)	

General conditions and classification of the project

The open programme consisted of two components:

Component a) Phase 1 was foreseen for consulting activities on national and local level with pilot waste management measures in two communities (EUR 6 million). Phase 2 aimed at including further 3 communities into Component a) but had not been realised (EUR 9 Million). Also, the second component b) had not been realised (detailed planning and implementation of an Advanced Integrated Waste Management System with a subsidized loan of EUR 24-29 million).

Between 2006 and 2013, only feasibility studies for selecting the respective municipalities and pilot project components were executed within the frame of this open programme. The project itself started not earlier than 2014 with the signature of the Separate Agreement and the commencement of the consultants in the selected municipalities Rustenburg Local Municipality (RLM) and Impendle, Umgeni and Umshwati in uM-gungundlovu District Municipality (UMDM). The net implementation period was 2 years from 2014 until the stop of payment in 2016 due to the low engagement of the respective communities. At this time only component a) had been implemented partially (EUR 3.6 million for Consulting measures and the preparation of some pilot waste measures), but concrete investment measures had not been financed out of FC funds. Preparation time took seven years from 2006 till 2013, the project itself was only implemented between 2014-2016.

Only after final control of the programme, some pilot measures had been partially been implemented by the selected municipalities and GIZ (e.g. composting area, buy-back and recycling centre, see Background Information Tz.3.02). The present evaluation covers both components a) and b) of the whole programme, as the logframe was conceived for both and it was impossible at Ex-post evaluation to set up a completely new logframe just for component a, phase 1. For this reason, component a, phase 2 and component b are mentioned for informative reasons to make the programme more comprehensible but will not be rated.

Relevance

South Africa's greenhouse gas emissions are roughly comparable to Germany when considered on a per-capita basis. The country has signed the Kyoto Protocol and is theoretically pursuing a Zero-Waste-Strategy at the local level. Nevertheless, landfilling of waste is still very common. Landfill gas emissions are caused through biological degradation of organic garden and kitchen waste in the landfill body under anaerobic conditions, methane being one of the principal components (50-70%). Composting also produces CO₂ as greenhouse gas but avoids the generation of methane. Methane is considered as a 25-times more powerful greenhouse gas than CO₂, therefore composting significantly contributes to climate protection, compared with landfilling.

To combat climate change, the waste sector is supposed to aim at reducing methane production at landfills through the diversion of organic waste from landfilling, e.g., by separately collecting and treating such waste. Another large contribution is made through feeding recyclables back into the economic cycle - and thus avoiding the waste of raw materials and related emissions.

The core problem was basically correctly identified against the background of climate problems and the desired cleanliness during the 2010 FIFA World Cup. The project measures and selection criteria for the municipalities had been adequately chosen for the solution of the core problem. But in practice, the selection criteria for the municipalities had only been partially respected, since the selected Municipalities in UMDM were much too small for the establishment of an effective Waste Management system (see 'Effectiveness'). Furthermore, the sector was not developed enough for the establishment of Advanced Waste Management Techniques like Mechanical Biological Treatment (MBT), pre-selecting compost in advance and establishing an efficient recycling system. Altogether, the framework conditions were not developed enough to start such an ambitious project, thus there were weaknesses in the project concept, which led to the abortion of the project.

At impact level, the goal of the FC measure was to contribute to climate protection and environmentally sound municipal development, as well as to improve the living conditions of the population in the assisted communities. The goal at outcome level was to improve waste management in the identified municipalities through the implementation of a sustainable and innovative integrated waste management system and through the establishment of environmental monitoring units. Although the intended significant contribution to climate protection (90% reduction of CO₂) was overambitious at this early stage of the development in the waste sector, a slight contribution to the improvement of the living conditions of the population by avoiding and recycling waste seemed to be relevant, necessary and possible at the time of appraisal.

The impact chain of the programme was logical, even if the respective indicators were overambitious (cf. Part 2, chapter 2). Breaking the programme into two components a) and b) was reasonable: After the partial implementation of component a), it had been shown that the interest of the municipalities had not been high enough for a quick implementation, and therefore KfW and BMZ jointly decided to stop the programme at the end of 2016.

The programme corresponded to the goals and strategies of the South African government (e.g. National Waste Management Strategy, 2011) and to BMZ's Sector Strategy. Donor coordination had neither been foreseen nor effected during the implementation of the programme. Therefore, the Italian cooperation supported Msunduzi in UMDM (the most capable municipality) - and the German FC had to choose smaller, less capable municipalities for its intervention.

Summing up, we rate the relevance as unsatisfactory.

Relevance rating: 4

Effectiveness

The achievement of the respective indicators is summarised as follows:

Indicator	Status Appraisal (2006)/ Target value	Ex post evaluation (2020)
(1) One year after commissioning, the technical equipment for the environmental monitoring units shall be used properly and the measurement results shall be recorded in such a way that they can be used accordingly for long-term monitoring.	n.r./ fulfilled	Not fulfilled Equipment in place, but not used properly, thus not useful for monitoring.
(2) Two years after commissioning of the innovative waste management system, • 95 % of the solid waste collected is sorted and pre-treated; • the amount of waste to be landfilled has been reduced by 40 % through proper separation and recycling and biological waste treatment; and • 95 % of municipal solid urban waste is collected in the whole area of the city.	0 %/ 95 % 0 %/ 40 % baseline: 60 % in RLM, no baseline in UMDM/ 95 %	Not fulfilled: ~5 % in RLM and 0 % in UMDM. - 5 % at RLM and 0 % at UMDM 50-60 % of municipal solid waste is collected in RLM and the three UMDM LM (no improvement).
(3) Three years after commissioning the innovative waste management system is put into operation, the operating costs of municipal waste management will be covered completely.	RLM 85 % coverage of operating cost, no baseline in UMDM	Not fulfilled (the cost recovery is unknown, but estimated between 35-40 %).

The indicators were overambitious and therefore not realistic. They referred to the implementation of the whole programme (component a) and b)). Due to the implementation of less than one tenth of the originally planned programme volume and the programme's discontinuation after 2016, these indicators can only be used to a limited extent to evaluate the whole programme's effectiveness.

Indicator 1: Technical equipment, weighbridges and weigh scales had been purchased by the DEFF expanded works programme (EPWP) for RLM Waterval landfill, Msunduzi LM and uMngeni LM Curry Post's landfill after finalisation of the FC programme in 2016. Weighbridges measure the mass of incoming and outgoing waste, contributing to a monitoring system which allows to specify the percentage of different forms of waste (e.g., recyclable and composted waste). Unfortunately, these weighbridges are not used properly. Accordingly, they cannot be used for long term monitoring.

Indicator 2: RLM's Waterval landfill became operational in December 2016, around 5 % of the waste is now sorted and pre-treated. The recycling bays, composting area and weighbridge are not operational and therefore not used. In uMgungundlovu District Municipality (UMDM), the uMngeni green waste transfer station is operational and used. The Impendle buy-back centre is not yet operational. The uMshwathi buy-back centre is operational but not being used. Detailed information about the different pilot project measures (which were not financed out of FC-funds, but by the respective municipalities and GIZ) are found in the Background information, Tz 3.02.

Indicator 3: The coverage of operating cost had been 85% for RLM and 75% for UMDM in 2018. We assume that the coverage rate decreased to about half in 2021: In RLM, the 11 waste collection vehicles

owned by the Municipality were broken down and waste collection from the city and households outsourced to private companies at much higher prices. In UMDM national government cuts occurred since 2018, which worsened the financial situation of the municipality. Cost and revenues out of Solid Waste Management and the corresponding cost coverage rates are not monitored by the municipalities RLM and UMDM and therefore could not be calculated during evaluation due to lack of data (see Chapter Efficiency). Generally, it is not possible to ring fence (allocate) finances at municipal level due to lacking monitoring.

The effectiveness of the programme was also hampered by the partial non-respect of the selection criteria upon appraisal:

- In Rustenburg Local Municipality (RLM), the selection criterion of >300,000 inhabitants were met, but the selected local municipalities (LM) of uMgungundlovu District Municipality (UMDM) were far too small for a cost-efficient waste management programme (Impendle LM, uMngeni LM, uMshwati LM).
- The benchmark laid down at appraisal for efficient waste management services (revenue of ZAR 50 /EUR 2.8 per year and inhabitant) was met by RLM but had not been fulfilled at the three small UMDM municipalities participating at the programme (Impendle LM, uMngeni LM, uMshwati LM).
- Furthermore, the criterion that the selected towns dispose of an Integrated Waste Management Plan (IWMP) was met by RLM (although insufficiently implemented). However, in 2013 there were no IWMP's in place in the three local municipalities selected for the AISWM programme (Impendle LM, uMngeni LM, uMshwati LM). Also, the necessary by-laws were lacking. Without by-laws in place, a municipality does not have the authority to require an Integrated Waste Management Plan (IWMP). In this case only the basic service of waste collection is required by the Constitution - and not an 'advanced waste management', such as planned within this programme (composting and diversion of waste from landfill, recycling etc).
- RLM and UMDM needed to improve waste management through collection, separation, composting and recycling. However, they did not have the personnel and financial capacity and were therefore not able to fulfil the waste management tasks efficiently.

Although the LMs of UMDM did not fulfil the criteria laid down in the appraisal report, they were admitted to the programme, since the consultant had already been in place in UMDM at the beginning of implementation in 2014, and KfW had been under time pressure: Already seven years have passed from 2006 - 2013 for preparatory activities (feasibility studies for selecting the respective municipalities and pilot project components).

From today's perspective, the enabling environment is more positive in terms of preparedness of municipalities and regulations related to better waste management: Only in the past two years RLM and the three UMDM municipalities developed by-laws and Integrated Waste Management Plans (IWMP's), supported by the FC-programme. On national level, the National Waste Management Strategy (NWMS) for South Africa is currently amended with the goal to prevent waste: Where waste cannot be prevented, the aim is to reduce the total volume of waste disposed to landfill by 40 % within 5 years; by 55 % within 10 years; and at least 70 % within 15 years through reuse, recycling, and recovery and alternative waste treatment.

In addition, the environmental consciousness at the local level has changed. The outcome might have been better if the appraisal had been preceded by the feasibility studies. This would have saved the long preparatory period from 2006-2013 (only for feasibility studies) and given more focus on the effective implementation of the programme, starting with the FC-financed consultants in place (2014-2016).

As none of the indicators mentioned above were reached and the financed studies were mostly not put into use, we rate the effectiveness as clearly inadequate.

Effectiveness rating: 5

Efficiency

Due to the lack of available income and expenditure accounts of the municipalities, the data (waste delivered, fees collected, costs paid) could not be collected precisely, but only determined as a tendency.

RLM

In RLM, there are different waste collection rates for the higher, middle and lower household income areas. The high- and average income earning households generally pay the municipal bill (of which waste collection is included along with electricity and water). Indigent households and Ingonyama Trust areas, i.e. low-income earning households, obtain waste collection services free of charge (estimated 20 % of the population in RLM) - there is full cross-subsidisation. RLM's waste revenues are collected from households through the municipal utility bills, as well as gate fees paid by private companies at the Waterval landfill. This revenue does not cover maintenance costs. The cost for waste collection in the RLM has approximately tripled due to the outsourcing of waste collection to private companies, compared to waste collection by the RLM in 2006. Currently RLM is obtaining ca. ZAR 300,000 (EUR 16,950) per month for waste (from gate fee/disposal fee) and spending ZAR 900,000 (EUR 50,851) per month for the waste service providers, i.e., three times the amount earned. RLM outsourced the operation of the transport vehicles for triple the cost to a private company because none of the RLM vehicles were operational.

In addition, falling oil prices had influenced the allocation efficiency in RLM negatively: The fact that the cement factory could be operated with oil at lower costs than if energy had been generated with waste, is due to the fall in oil prices. That is why generating energy from waste became unprofitable. Furthermore, the lack of a carbon tax has an overall negative effect on the competitiveness of waste as a Refuse Derived Fuel.

UMDM

Revenue generated from waste collection services is not ring-fenced in the Local Municipalities (LM's), but it is also used for other municipal functions. In UMDM, 80-90 % of households in the urban areas pay the municipal bill, but only 30-50 % of households in the rural areas. The indigent areas receive waste collection services for free. According to the UMDM Integrated Development Plan, a total of 3,298 indigent people is registered, which constitutes about 40-50 % of the households in UMDM. Households which are registered to qualify for the indigent subsidy obtain free electricity and water allocation (50 kWh of energy and 6,000 litres of water per month). Furthermore, an informal household does not have to be on the indigent register to have waste collected for free, as this is a basic service provided by the government according to the Constitution.

There is a flat rate for waste collection on the municipal bills in uMngeni LM (~ZAR 70 per month and household (EUR 4,00)), Impendle LM (ZAR 64 per month and household (~EUR 3,50)) and uMshwathi LM (ZAR 139 per month and household (~EUR 7,50)). This is relatively low and therefore affordable for the urban private households in the upper- and middle-income areas. There is no gate fee charged at the uMngeni LM Curry's Post and Impendle LM landfills, and there is no revenue from waste disposal either. The municipalities assume that there would be an increase in illegal waste dumping if gate fees were to be charged. Cost coverage is thus even worse than in RLM.

Low cost coverage is standard in the solid waste sector. If adequate subsidies or cross-subsidies are in place, this is acceptable. However, in the present case, the cross subsidies are not enough to cover the costs. Production efficiency is thus considered as clearly inadequate.

The programme started in 2006 as an open programme. Between 2006 and 2013, only feasibility studies were executed. The project itself started not earlier than 2014 with the signature of the Separate Agreement and the commencement of the consultants in RLM and UMDM. The net implementation period was two years from 2014 until the stop of payment in 2016. With EUR 3.6 million of up to a planned EUR 44 million, less than 10 % of the total planned costs were spent - only for consultancy cost. Possible pilot measures had been prepared, but no investment measures had been financed out of FC funds. Nevertheless, the government programme EPWP and GIZ financed further programme measures, which shall be put into operation soon. However, at present the impact of the programme is limited, so the actual allocation efficiency is considered unsatisfactory.

Given the fact that only consultant cost had been financed under the FC-Programme and an unsatisfactory outcome and impact had been reached, we consider both, the production efficiency (the relation between input and outcome) and allocation efficiency (the relation between input and impact) as unsatisfactory.

Efficiency rating: 4

Impact

Indicator	Status PPB/ Target value	Ex post evaluation 2020
(1) Reduction of greenhouse gas emissions from waste treatment	Baseline indicator was lacking/ 90 % (one year after commissioning)	According to our knowledge, nearly no greenhouse gas emissions are reduced at the RLM Waterval, uMngeni LM or Impendle LM landfills, because most mixed waste still goes to the landfill. However, Waterval and uMngeni LM landfills have composting areas and green waste skips respectively for garden waste, composting about ~5 % to ~1 % of green waste respectively. -> indicator not fulfilled
(2) Absence of illegal dumping	Baseline indicator was lacking/ 100 % (two years after commissioning)	Illegally dumped waste could be observed in RLM and UMDM during the evaluation mission. In 2015, ~30 % of domestic waste generated in South Africa was illegally dumped compared to slightly higher figures in 2006. Actual figures are not available in RLM and UMDM. -> indicator not fulfilled
(3) Improvement of the living conditions of those people who live or work on or near the respective landfill	Baseline indicator was lacking	Personal Protective Equipment (PPE) has been provided to the registered waste pickers to maintain health and safety on the landfill site, and drinking water is provided in a water tank to the waste pickers. Under the programme, RLM installed a database to control the number of waste pickers on the landfill, therefore the number of waste pickers decreased, and the individual income of the waste pickers became more stable. At the uMngeni LM Curry's Post and Impendle LM landfills the pickers saved money earned from recyclables and sent it back to their families. -> indicator partially fulfilled

The impact indicators had been set up for both programme components a) and b). Their achievement can only be considered partially, given the fact that less than one tenth of the planned programme volume was spent (EUR 3,6 million out of possible EUR 44 million).

RLM

Greenhouse gas emissions are not measured at the closed Townlands landfill nor at the operational Waterval landfill. The construction of the Waterval landfill financed by RLM had a positive environmental effect, as the landfill was built to well-engineered modern design standards. This avoids adverse impact on human health and the protection of air, surface water and ground pollution. Nevertheless, still most waste goes to landfill, also organic waste (only few composting). Therefore, the reduction potential of greenhouse gases seems to be far from the intended 90% in the impact indicator, furthermore the respective baseline was lacking.

The programme did not have a component of integrating the informal waste collectors into the formal waste collection system in 2006. However, due to knowledge obtained through the development of the Knowledge Products (KP), RLM has formalised the control of waste-pickers by registering them on their database 2017-2019. This registration avoids an overcrowded landfill and low revenue by the individual pickers. There are 267 pickers on the Waterval landfill and 138 pickers operating on the streets. There are

approximately 50 % men and 50 % women registered as pickers. Pickers who are registered on the database have access to recyclables and water is provided in onsite tanks.

UMDM

Methane gas emissions are not measured at the uMngeni LM Curry's Post or Impendle LM landfills. Since all mixed waste goes to the landfills, the reduction potential for greenhouse gases seems to be far from the intended 90%, also the baseline indicator was lacking.

UMDM wanted to formalise the pickers, however, this option did not work. The pickers did not want their names on a database as there are many illegal pickers. uMngeni LM's Curry Post landfill has approximately 150 pickers in total, thereof most female pickers. Impendle LM landfill site has three female and one male picker, but no utility services (e.g. shelter, water or electricity). Merely access to recyclable waste is facilitated to the four pickers.

Generally, methane reduction, illegal dumping and the impact of any improvement in the living conditions of pickers are not tracked in RLM or UMDM. However, there have been obvious improvements for pickers in terms of the provision of PPE, water supply, and the register of waste pickers. Furthermore, amendments to by-laws regarding the regulation of waste pickers had been signed. The development of the KP under the programme, which focused on waste pickers, provided a deeper understanding for this vulnerable group.

In the long term, a positive contribution towards climate protection may be realised through composting at the green waste transfer station in uMngeni LM; as well as future recycling of cardboard and plastic at the buy-back centres in Impendle LM and uMshwathi LM (planned under the FC-programme, with the infrastructure funded by the EPWP).

The planned waste management measures can lay the foundation for a reliable, orderly and environmentally friendly collection and disposal of waste throughout RLM and the selected LMs of UMDM in the future. Pre-treatment of waste reduce polluting emissions to water and air and contribute to a better use of resources by sorting out valuable materials that can be recycled. This is especially important in view of the prevalence of heavy industries in many South African cities (e.g. RLM).

Summarising, we consider the objective at impact level, to contribute to climate protection and environmentally sound municipal development, as well as to improve the living conditions of the assisted communities as only to a small part achieved., i.e. only one indicator partially out of three indicators (living conditions in the vicinity of the landfill).

Impact rating: 4

Sustainability

Generally, the Knowledge Products (KP) established by the FC-financed consultants raised awareness and contributed to a better understanding of advanced waste management, including composting and recycling. They had been made available on national and local level. The studies financed by FC were partly used by the municipalities with varying financial sources. The situation in RLM and UMDM is as follows:

RLM

After the FC intervention, the organisation of the waste unit and the financial situation improved slightly in RLM for a short period, but then the financial situation worsened again recently. The Green Climate Fund in cooperation with German TC supports the advanced waste technology in RLM and Msunduzi LM in UMDM. This has also been possible as a result of the work undertaken through this programme financed out of FC-funds. Currently the following programme measures are ongoing or completed in RLM financed by own funds:

Waterval landfill: The construction of the Waterval landfill was financed by RLM and commissioned in 2016. It is built according to modern Class B liner design standard and operated according to the Waste Management Licence. Although groundwater is not monitored, dust is monitored. Mphele engineers and programme management have been operating the landfill on behalf of RLM since October 2019. The composting taking place at the Waterval landfill temporarily ceased due to a fire in July 2020. The

municipality is working with German TC on the diversion of food and garden waste from Waterval landfill, and the diversion of recyclables by a private company. Recycling has been formalised through recycling from six residential estates. It stopped due to COVID-19 and is expected to resume soon. The recycling of waste by pickers on the Waterval landfill is formalised through the RLM database. Pre-sorting is useful to the pickers as waste is often their only form of income generation.

None of the 11 collection vehicles owned by RLM are operational as they have broken down and require repairing. RLM expects that by the end of 2021, the collection of waste will no longer be outsourced to private companies, which is costly for RLM. Best practice waste management solutions (such as recycling and waste treatment) are still unable to move forward because of the current difficult financial situation of the municipality, being heavily indebted.

UMDM

Weigh pads, weighbridges and infrastructure for the green waste transfer station and buy-back centres in uMngeni LM, Impendle LM and uMshwathi LM were initiated, but not financed through the FC programme. They had been financed by the DEFF's own programme EPWP. Furthermore, tenders on green waste (an initiative from the programme) are underway in uMngeni LM. Mushroom compost, egg waste, chicken litter and garden waste are collected at the green waste transfer station at the Curry's Post landfill in uMngeni LM.

Training (initiated and funded out of FC funds) has helped through the KPs developed under the programme. However, further training and assistance will be needed in the three LMs to compost green waste and recycle material. Recycling has increased, but remains mainly in the informal sector, which is not yet integrated into the formal sector.

Unfortunately, uMngeni LM, Impendle LM and uMshwathi LM are in a difficult financial situation: waste finances are not ringfenced from the municipal bills. Insufficient funds dedicated to good waste management hamper the sustainability of the individual projects. A business plan is needed to keep the recycling scheme at the municipality operational from a business perspective. Therefore, the environmental and social benefits of recycling schemes should be promoted in the communities.

The programme has partially contributed to the change in awareness that is beginning to take place in South Africa. It cannot be ruled out that this will contribute to climate protection in the future, even if this is not yet the case: The KPs provided awareness-raising and helped to give guidance to the municipalities for a better understanding of advanced waste management such as recycling and composting. Less waste in landfills can result in the future in reducing methane production and less leachate in groundwater. Nevertheless, the sustainability of the programme is not sufficient at the time of this evaluation, and it is doubtful whether it could be in the future: The planned measures are not yet in place and the two municipalities RLM and UMDM still lack both sufficiently trained personnel and sufficient financial resources to operate and maintain such an Advanced Solid Waste Management Project. Therefore, we rate the sustainability in total as unsatisfactory.

Sustainability rating: 4

Notes on the methods used to evaluate project success (project rating)

Projects are evaluated on a six-point scale, the criteria being **relevance, effectiveness, efficiency** and **overarching developmental impact**. The ratings are also used to arrive at a **final assessment** of a project's overall developmental efficacy. The scale is as follows:

Level 1	Very good result that clearly exceeds expectations
Level 2	Good result, fully in line with expectations and without any significant shortcomings
Level 3	Satisfactory result – project falls short of expectations but the positive results dominate
Level 4	Unsatisfactory result – significantly below expectations, with negative results dominating despite discernible positive results
Level 5	Clearly inadequate result – despite some positive partial results, the negative results clearly dominate
Level 6	The project has no impact or the situation has actually deteriorated

Rating levels 1-3 denote a positive assessment or successful project while rating levels 4-6 denote a negative assessment.

Sustainability is evaluated according to the following four-point scale:

Sustainability level 1 (very good sustainability): The developmental efficacy of the project (positive to date) is very likely to continue undiminished or even increase.

Sustainability level 2 (good sustainability): The developmental efficacy of the project (positive to date) is very likely to decline only minimally but remain positive overall. (This is what can normally be expected).

Sustainability level 3 (satisfactory sustainability): The developmental efficacy of the project (positive to date) is very likely to decline significantly but remain positive overall. This rating is also assigned if the sustainability of a project is considered inadequate up to the time of the ex post evaluation but is very likely to evolve positively so that the project will ultimately achieve positive developmental efficacy.

Sustainability level 4 (inadequate sustainability): The developmental efficacy of the project is inadequate up to the time of the ex post evaluation and is very unlikely to improve. This rating is also assigned if the sustainability that has been positively evaluated to date is very likely to deteriorate severely and no longer meet the level 3 criteria.

The **overall rating** on the six-point scale is compiled from a weighting of all five individual criteria as appropriate to the project in question. Rating levels 1-3 of the overall rating denote a "successful" project while rating levels 4-6 denote an "unsuccessful" project. It should be noted that a project can generally be considered developmentally "successful" only if the achievement of the project objective ("effectiveness"), the impact on the overall objective ("overarching developmental impact") and the sustainability are rated at least "satisfactory" (level 3).