



Project Implementation Report

(1 July 2022 – 30 June 2023)

Project Title:	Promoting organic waste-to-energy and other low carbon technologies in small, medium and micro enterprises (SMMEs) scale: Accelerating biogas market development in South Africa
GEF ID:	5704
UNIDO ID:	130310
GEF Replenishment Cycle:	GEF-5
Country(ies):	South Africa
Region:	AFR - Africa
GEF Focal Area:	Climate Change Mitigation (CCM)
Integrated Approach Pilot (IAP) Programs¹:	-
Stand-alone / Child Project:	Stand-alone
Implementing Department/Division:	ENE / CTI
Co-Implementing Agency:	
Executing Agency(ies):	Department of Forestry, Fisheries and Environment
Project Type:	Full-Sized Project (FSP)
Project Duration:	48 months
Extension(s):	3
GEF Project Financing:	USD 4,222,110
Agency Fee:	USD 401,100
Co-financing Amount:	USD 41,884.888
Date of CEO Endorsement/Approval:	1/14/2016
UNIDO Approval Date:	11/17/2015
Actual Implementation Start:	3/17/2016
Cumulative disbursement as of 30 June 2023:	<i>4,115,719.57</i>

¹ Only for **GEF-6 projects**, if applicable

Mid-term Review (MTR) Date:	1/7/2019
Original Project Completion Date:	3/17/2020
Project Completion Date as reported in FY22:	9/30/2023
Current SAP Completion Date:	9/30/2023
Expected Project Completion Date:	9/30/2023
Expected Terminal Evaluation (TE) Date:	9/15/2023
Expected Financial Closure Date:	9/30/2023
UNIDO Project Manager²:	Alois Mhlanga

I. Brief description of project and status overview

Project Objective
The project aims to transform the market for using organic waste from agriculture and agro-processing industries for energy production in SMMEs. It aims to achieve this through triggering investment in waste-to energy biogas projects in SMMEs, through technology demonstration, improving data and knowledge products, capacity building and by strengthening the policy and regulatory environment. Setting up the market environment that allows and catalyses the use and replication of such technologies will lead to significant GHG emission reductions and contribute towards South Africa's transformation towards low carbon development.

Baseline
The use of anaerobic digestion (AD) / biogas for treating agro-processing waste has a large potential in South Africa but its use is still very limited. More generally biological Waste to Energy (WtE) technologies in SA focus on methane gas extraction from landfills and water treatment facilities. Only a few municipalities in SA generate electricity from landfill gas processes with larger metropolitan municipalities including Johannesburg, Durban, Tshwane, eThekweni and Ekurhuleni being at different stages of planning, constructing and implementing these WtE projects. Most large AD projects installed to date are based at wastewater treatment works and/or use sewage and organic municipal solid waste (MSW). This includes two electricity generation projects in Johannesburg: one 1.1 MW project and one 750 kW project, and a number of projects in the Western Cape. Six WtE projects have registered with UNFCCC as CDM projects. This includes three landfill gas projects, one industrial wastewater project and two agro- processing projects. Since 2011 the National Energy Regulator of South Africa (NERSA) has registered 92 biogas plants most of which are household or community scale bio-gas operations in rural areas consisting of a fixed dome plant producing bio-gas to supply heating appliances in peri-urban and rural dwellings in KwaZulu-Natal, Limpopo and Gauteng. There are a few commercial biogas units installed at piggeries, an abattoir, dairy and beef-lot, breweries and juice processing. The majority of these would still be classified as small, at below 250 kW. The largest is the 4.2 MW Bio2Watt plant currently being commissioned in Gauteng using manure from a large beef feedlot.

² Person responsible for report content

Most of the projects use the gas for electricity and/or heat generation for their own use although some of the piggeries just flare the gas. Connection and sale to the grid is not currently possible under 1 MW so the majority of projects are unable to sell power. Generally, there are few - if any - other examples of co-digestion and no examples of a centralized plant taking waste from a number of different organizations/sources. This summary demonstrates that although there are some bio-gas units using agro-processing waste or animal waste/manure, the majority of these projects are very small (household or school size), with only a handful of medium (250kW- 1MW) to large-scale (more than 1MW) projects, despite the large potential. Compared to this potential, very few projects have been developed. In addition, in most projects the full potential of the bio-gas plant is not realized with only gas or heat being generated (not both), gas for transport not being investigated and the digestate not being valued.

Please refer to the explanatory note at the end of the document and select corresponding ratings for the current reporting period, i.e. FY23. Please also provide a short justification for the selected ratings for FY23.

In view of the GEF Secretariat's intent to start following the ability of projects to adopt the concept of adaptive management³, Agencies are expected to closely monitor changes that occur from year to year and demonstrate that they are not simply implementing plans but modifying them in response to developments and circumstances or understanding. In order to facilitate with this assessment, please introduce the ratings as reported in the previous reporting cycle, i.e. FY22, in the last column.

Overall Ratings ⁴	FY23	FY22
Global Environmental Objectives (GEOs) / Development Objectives (DOs) Rating	<i>Satisfactory (S)</i>	<i>Satisfactory (S)</i>
<i>All the relevant outputs of the Project have either been completed or are nearing completion and expected to yield results to meet the GEO and DO objectives. When complete the Project will have exceeded both the emissions reduction and energy production targets.</i>		
Implementation Progress (IP) Rating	<i>Moderately Satisfactory (MS)</i>	<i>Satisfactory (S)</i>
<i>While the restrictions have been eased, the effects of the COVID-19 Pandemic disrupted the implementation of the Project through delays that caused cost escalations and issues of warranty/guarantee that rendered one of the demonstration projects no longer possible to complete within the Project period. All projects implemented however provided invaluable knowledge that has been captured for future use.</i>		
<i>Two projects were cancelled during the reference period:</i>		
<ul style="list-style-type: none"> - <i>The Lukhanyiso Biogas Plant is a joint venture between a community and a private investor. The biogas plant was built in 2016 but could not be commissioned because of lack of feedstock and electricity connection to run the biogas to bio-CNG upgrading facility. The Project committed to support the commissioning process of the plant. However due to slow implementation of the remaining steps, it became apparent that the plant could not be commissioned within the time frame of the Project. The feasibility of reinstating the plant as it is built to reach commissioning stage to produce bioCNG was assessed by an independent valuator contracted by the community partner. Two alternatives were presented: 1) Elephant grass, chicken manure and pig manure used as feedstock, where only one (of the two) digester is used to produce biogas for electricity generation (CHP) as opposed to biogas</i> 		

³ Adaptive management in the context of an intentional approach to decision-making and adjustments in response to new available information, evidence gathered from monitoring, evaluation or research, and experience acquired from implementation, to ensure that the goals of the activity are being reached efficiently

⁴ Please refer to the explanatory note at the end of the document and assure that the indicated ratings correspond to the narrative of the report

<p>upgrading to bio-CNG for use as vehicle fuel. The electricity supplied to clients via a wheeling agreement with transmission infrastructure operator(s) as well as to power the plant, and the heat is used for heating the digester(s). In this scenario, the second digester is used to store digestate. 2) The capacity of the first plant is increased to use both digesters, thus increasing the feedstock volume as well as the amount of electricity generated. The upgrading plant equipment can furthermore be sold to recover as much capital as possible, to either repay some of the current debt owed or fund an alternative solution. None of the solutions could be implemented within the Project term and was viewed by the Project as not economically viable on the basis of high additional costs and no assured investment source(s).</p> <ul style="list-style-type: none"> - The last deliverable on Phase 2 of the contract with Renen (for Midlands Biogas Project) was cancelled as the technology used under Phase 1 proved not to be suitable for replication as it failed under local climatic conditions. The technology, Induced Blanket Reactor (IBR) had been proven to work well in the USA under enclosed (hangar) conditions. Renen adapted the technology to local conditions and constructed the digester on the open without adequate insulation for the local winter conditions, hence its failure. The Project contracted an independent evaluator who then completed the Phase 2 obligation that had been contracted to Renen and then the Project had to cancel that component with Renen. 		
Overall Risk Rating	Moderate Risk (M)	Moderate Risk (M)
<p>The risk rating for FY23 has improved due mainly to reduced/removed COVID-19 restrictions compared to FY22. The Evaluation of decommissioned demonstration projects provided insight into other unforeseen risks that can be faced by biogas projects, e.g., legal disputes between parties emanating from personal differences. The parties involved were the feedstock supplier/energy off-taker, and the biogas digester developer/operator/energy supplier, respectively. The dispute happened after the UNIDO contract had been completed.</p>		

II. Targeted results and progress to-date

Please describe the progress made in achieving the outputs against key performance indicator’s targets in the project’s **M&E Plan/Log-Frame at the time of CEO Endorsement/Approval**. Please expand the table as needed.

Please fill in the below table or make a reference to any supporting documents that may be submitted as annexes to this report.

Outputs by Project Component	KPIs/Indicators	Baseline	Target level	Progress in FY23
Component 1: Capacity building and technology support system established				
Outcome 1: Support systems and knowledge products				
Output 1.1: Detailed assessment and characterization of waste streams from agro-processing SMMEs conducted	<ul style="list-style-type: none"> - No. of waste streams characterised - National waste characterisation database developed 	<ul style="list-style-type: none"> - Limited South African waste streams characterised - No national waste characterisation database 	<ul style="list-style-type: none"> - 30 wastes characterized - Shortlist 7 waste-streams - Fully characterize 5 best performing waste-streams - Database developed and updated 	Characterization of waste-streams and mapping - complete
Output 1.2: Capacity of biogas support and low-carbon technologies support centre strengthened	<ul style="list-style-type: none"> - No. of full-time staff - Up to date website - Business plan for sustainability of industry association 	<ul style="list-style-type: none"> - No full-time members of staff and office - Out of date website 	<ul style="list-style-type: none"> - 1.5 full time staff members - Up to date website - Build capacity of industry association to be sustainable beyond the Project period 	Capacity building services rendered to Biogas Association equivalent to 1.5 full-time staff. Designate Programme Manager recruited and supported by Project up to end of Project as handover process
Output 1.3: Biogas guidelines and decision support tools for integrated biogas systems in agro-processing SMMEs are developed and disseminated	<ul style="list-style-type: none"> - Biogas guidelines developed - No. of downloads of document 	<ul style="list-style-type: none"> - No South African biogas guidelines - No downloads 	<ul style="list-style-type: none"> - 1 set of biogas guidelines developed - >600 copies of biogas guidelines distributed - >200 downloads 	Biogas Guidebook -complete and published Biogas Decision-Making Tool -complete and calibrated ready for uploading onto SABIA website Biogas Operators' Manual – final editing underway – 95% complete.
Output 1.4: Government Officials and technicians in biogas technology trained	<ul style="list-style-type: none"> - HH biogas training available and ready for submission for SETA accreditation 	<ul style="list-style-type: none"> - No SETA accredited HH biogas training 	<ul style="list-style-type: none"> - 2 HH biogas training courses available for SETA accreditation 	Biogas awareness consultations completed; Training materials drafted; SETA accreditation pending – 50% to completion.
	<ul style="list-style-type: none"> - No. of youth trained in HH biogas 	<ul style="list-style-type: none"> - 9 	<ul style="list-style-type: none"> - 50 	59 youths trained in theory and practical; and an additional 36 trained in theory only
	<ul style="list-style-type: none"> - % of female trainees 	<ul style="list-style-type: none"> - 10% 	<ul style="list-style-type: none"> - 30% 	Based on selection of trainees, 30% female achieved.
	<ul style="list-style-type: none"> - No. of household digesters built as part of training 	<ul style="list-style-type: none"> - 0 	<ul style="list-style-type: none"> - 30 	33 digesters were built
	<ul style="list-style-type: none"> - No. biogas technician courses ready for submission for SAQA accreditation 	<ul style="list-style-type: none"> - No SAQA accredited biogas course 	<ul style="list-style-type: none"> - 1 SAQA accredited course available at technical university level and satellites 	Development of a SAQA accredited course initiated through National Biogas Platform – pending approval of the course outline – 50% to completion.

	- No. short (1 week) biogas courses developed	- No short biogas courses	- 3 short biogas courses developed	A comprehensive course titled "Biogas Energy Technician Course" with 13 theoretical and practical modules consisting of 30% and 70%, respectively
	- No. of biogas training sessions for Government Officials	- No training on biogas for Government Officials	- 2 training sessions on biogas for Government officials – one in Limpopo Province and one at national level	The 2 training courses completed
	- No. of trained Government Officials	- No trained Government Officials	- >20 trained staff	35 government officials trained at national level
	- % of female trained Government Officials	- No biogas trained female Government Officials	- 30%	Over 30% females trained
	- No. of digestate use training sessions	- None	- 5	Training materials ready for submission for SETA accreditation
	- No. of trained personnel in digestate use	- None	- 100	Not yet achieved.
	- % of female trainees	- None	- 30%	
Output 1.5: Targeted training workshops (10) for market players (project developers, enterprise executives, farmers and operators, current users of waste) on integrated biogas systems conducted	- No. of training workshops for market players at SA national level	- None	- Ten (10) workshops spread geographically in SA and focused on specific groups	10 training sessions done
	- No. of market players trained	- None	- 200	189 market players were trained
	- % of female trainees	- None	- 30%	Over 30% achieved so far.
Output 1.6: Two regional training workshops conducted to train experts from SADC counties on biogas technologies in SMMEs	- No. of regional biogas workshops	- No regional workshops	- 1 regional training workshop	One regional training workshop completed
Component 2: Biogas market development and regulatory				
Outcome 2: Market environment for biogas strengthened and regulatory framework for grid-connected small to medium scale waste-to-energy projects developed				
Output 2.1: 1 Quality standards for integrated biogas plants in SMMEs developed, adopted and widely disseminated	- No. of quality standards for biogas	- No SA standards for biogas projects	- Two S.A standards for biogas projects submitted to SABS for approval	Standards complete and submitted to SABS for approval
	- Integration of the standards within PER R719	- Biogas not integrated in PER R719	- Framework for integration of the standards within PER R719 developed for implementation after approval of standards	The framework is complete awaiting standards approval

	- Training materials for the standards ready for SETA submission for approval	- No certified training materials	- Training materials for two standards ready for SETA submission for alignment	95% to completion dependent on standards approval.
	- Training modules designed and tested on ToT and peer reviewed	- No training modules for standards	- Training modules of the two standards designed and practically tested on ToT course and peer reviewed	95% to completion dependent on standards approval
Output 2.2: Guidelines and regulations (environmental, technical and legal) on the valorisation of digestate developed and adopted	- Characterisation of digestate from different biogas feedstocks	- No characterisation of digestate	- Characterisation of digestate from 7 shortlisted biogas feedstocks - Selection of 5 best performing digestate types for further tests for efficacy	Policy briefs on disposal of digestate – complete Study of potential market of digestate – complete Decision-making tool for digestate use – complete Composition of digestate lab tests – complete Efficacy of digestate from selected feedstocks – 90% complete
	- Testing of digestate use on crops and record results	- No data available of testing digestate on crops	- Testing of 5 (best performing) out of the 7 shortlisted digestate types carried out over two agricultural seasons and data recorded	Ongoing and dependent on seasons – 40% to completion.
	- Guidelines on use of digestate	- No guidelines on use of digestate	- Guidelines issued on the use of digestate	Ongoing – 25% to completion.
	- Inclusion of digestate in the Draft Norms and Standards for the manufacture and applicability of organic compost	- Not included	- Inclusion of digestate in the Draft Norms and Standards for the manufacture and applicability of organic compost	Awaiting completion of other relevant work.
Component 3: Technology demonstration				
Outcome 3: Technical feasibility and commercial viability of waste-to-energy technologies demonstrated				
Output 3.1: Detailed feasibility studies of selected demonstration projects are conducted	- No. of demonstration biogas projects selected based on bankable feasibility studies	- 0	- At least 5	This was included as prerequisite for qualification as demonstration project on call 1 and 2.
Output 3.2: Five (5) integrated biogas demonstration projects implemented to achieve at least 3MW installed capacity	- Number of biogas projects implemented with support from GEF	- No biogas projects implemented	- 5 projects implemented with direct support from GEF and co-financing from elsewhere	13 projects identified – 5 contracted; 2 complete and commissioned; one under construction- 85% complete; 2 cancelled (one due to delays and the other changed ownership)

	- Number of systems providing bio-CNG	- No bio-CNG projects	- 2 bio-CNG projects developed	2 CNG projects contracted – 1 dropped out; the other cancelled due to delays
	- Installed capacity of new organic waste to energy projects (MW)	- 0 installed	- Installed capacity of 3 MW (eq)	9.55MW contracted so far.
	- Annual energy generated (MWh)	- 0 MWh	- 22,500MWh (eq)	This is on course but can only be measured after commissioning of the build projects.
	- Tonnes of bio-CNG produced	- 0 tonnes/day	- 4 tonnes per day	Can only be measured after commissioning.
Output 3.3: Demonstration projects monitored, evaluated and showcased.	- Performance Monitoring and analysis of installed	- No dissemination material on biogas for SMMEs	- 5 performance monitoring evaluation reports	This is up-to-date for the contracted projects, i.e., 2 completed and 1 under construction; 2 cancelled.
	- Case studies on each GEF	- No case studies	- 5 case studies	Evaluation of the 2 completed and commissioned biogas plants – complete Assessment of the delayed biogas plant – complete
Output 3.4: Best practice manual developed and widely disseminated	- Best practice manual developed	- No best practice manual	- 1 best practice manual	Best Practice Manual – 95% complete
Component 4: Scaling-up				
Outcome 4: Investment in waste-to-energy promoted				
Output 4.1: Investment strategy for integrated biogas developed and disseminated	- Investment strategy developed	- No investment strategy developed	- Biogas investment strategy developed	Complete
Output 4.2: Technical Assistance provided to realize at least 4 more investment projects (at least 6 MW)	- No. of bankable feasibility studies	- No bankable feasibility studies	- 4 bankable feasibility studies	Assessments complete
	- Standardised long-term feedstock supply agreement available	- Informal/non-standardised feedstock supply agreements	- Standardised long-term feedstock supply agreement developed	Combined into the Biogas Investment Decision-Making Tool and Waste-Streams Characterisation outcome
	- No of new scale -up biogas projects implemented	- No scale-up projects implemented	- At least 4 projects installed and commissioned	Bio2Watt Phase 2 (4MW) Riverside Piggeries (320kW) Cape Dairy (9.6MW) Spif Chicken (463kW)
	- Amount of MW installed	- 0 MW installed	- At least 6MW installed	Exceeds the 6MW target (14.38MW)

Output 4.3: Portfolio of at least 25 investment projects compiled and disseminated	- Portfolio investment projects compiled and financiers and developers	- No portfolio of potential biogas projects	- Portfolio of at least 25 investment projects compiled and available to financiers and developers	21 projects assessed – 84% of target.
Output 4.4: Technical support to design financial support.	- Financial support for biogas identified	- No dedicated funding for biogas	- Dedicated financial support for biogas identified	Incorporated into the Investment Strategy - complete.
	- Quantity (USD) of funding identified	- No dedicated funds for biogas	- USD 100m of funding identified	More than USD100m identified
Output 4.5: National biogas investment forum organized regularly	- No. of national biogas forums	- No national biogas investment fora	- 2 national biogas investment forums organised	2 National Biogas Investment forums completed

III. Project Risk Management

1. Please indicate the overall project-level risks and the related risk management measures: (i) as identified in the CEO Endorsement document, and (ii) progress to-date. Please expand the table as needed.

Describe in tabular form the risks observed and priority mitigation activities undertaken during the reporting period in line with the project document. Note that risks, risk level and mitigations measures should be consistent with the ones identified in the CEO Endorsement/Approval document. Please also consider the project's ability to adopt the adaptive management approach in remediating any of the risks that had been sub-optimally rated (H, S) in the previous reporting cycle.

	(i) Risks at CEO stage	(i) Risk level FY 22	(i) Risk level FY 23	(i) Mitigation measures	(ii) Progress to-date	New defined risk ⁵
1	Lack of government commitment to support the project	Low Risk (L)	L	The project objectives and activities remain in line with national policies and objectives. The PSC Meetings were held via online platforms and that improved the regularity of the meeting	All government departments are committed in providing support in the implementation of the Project.	<input type="checkbox"/>

⁵ New risk added in reporting period. Check only if applicable.

				and attendance by both in country and UNIDO-HQ members		
2	Lack of interest from SMMEs to take up WtE projects	Medium Risk (M)	M	Continued research into fundamental factors for success of WtE projects. Sharing of information from lived experiences within the Project Implementation recent history. Formation of peer support groups for similar biogas technologies	More researched support data has become available to project developers and prospective investors	<input type="checkbox"/>
3	Lack of interest from project developers / technology providers	Low Risk (L)	L	Throughout the project, there has been regular and continued contact with project developers which should led to their continued interest and participation.	Evaluation of decommissioned projects has brought vital knowledge of the causes of failure. The Biogas Investment Strategy was completed and financial instruments were identified especially DFIs that have dedicated facilities for biogas	<input type="checkbox"/>
4	Unsuccessful demonstration at selected sites due to, inter alia: Lack of capacity to operate and maintain biogas SMMEs go bankrupt Fluctuation in	Medium (M)	M	Continued support for new sites and matching the local conditions with suitable technologies to avoid premature failure of demonstration projects	Better integration of data support design assumptions; an conversely avoiding wild assumptions	<input type="checkbox"/>

	waste availability and prices					
5	Lack of management and coordination capacity	Medium (M)	M	Strengthening and expansion of management and coordination capability through activities undertaken in Component 1. PMU at the National level set up and monitored under a defined M&E plan. Clear indicators for tracking outcomes and outputs with a focus on implementation milestones (targets), baseline values and project results and impacts.	SABIA's business plan and operational strategy were completed and implementation started; Characterization of waste-streams got underway and results started to flow; The Biogas Guidebook was distributed to users via hardcopy and online; Biogas Investment Decision-Making Tool was calibrated with local South African data	<input type="checkbox"/>
6	Delays caused by COVID-19 restrictions	High (H)	L	COVID-19 restrictions were lifted	Operations have gone back to pre-COVID-19 conditions	<input type="checkbox"/>
7	Pipeline projects not developed enough for bankability assessment	High (H)	L	Offer technical assistance to those pipeline project with prospects for success and re-assess; redirect those with prospects to specific funders identified under component 4 output 4.3 and follow the recommendations of the Biogas Investment Strategy	The Biogas Investment Strategy was drafted and finalized at Investment Forum workshop	<input type="checkbox"/>
8	Failure to raise the required co-financing	Medium (M)	M	Project developers encouraged to employ off-balance sheet financing by the project owners; Project	A more comprehensive list of funders and their terms has been provided along with the Investment Strategy	<input type="checkbox"/>

				also exploring dedicated financing for biogas		
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2. If the project received a **sub-optimal risk rating (H, S)** in the previous reporting period, please state the **actions taken** since then to mitigate the relevant risks and improve the related risk rating. Please also elaborate on reasons that may have impeded any of the sub-optimal risk ratings from improving in the current reporting cycle; please indicate actions planned for the next reporting cycle to remediate this.

Risk 6 (Delays caused by COVID-19 restrictions) saw a risk decrease from H to L year-on-year, as operations have gone back to pre-Covid-19 conditions.

Risk 7 (Pipeline projects not developed enough for bankability assessment) saw a risk decrease from H to L year-on-year, as the Biogas Investment Strategy was drafted and finalized at the Investment Forum workshop.

3. Please indicate any implication of the **COVID-19** pandemic on the progress of the project.

University of Venda- affected by the pandemic are deliverables from 4 to 8. About 40% of the deliverable 4 activities were affected by lockdown. After having completed training, both theoretical and practical, in Vhembe District, the other four districts were called to one site for theoretical training and the practical had to be suspended due to the lockdown.

ARC - due to the Covid 19 pandemic that has delayed the procurement of equipment for the AD lab, there may be a further delay in the delivery due to the ban in international flights as the equipment has to be ordered by the RSA supplier from the manufacturer in Sweden. The ARC contract was terminated.

Lukhanyiso Project - The initial constraints with the commencing of the projects were capacity issues at ESCOM South Africa which delayed the erection of our cow housing, the source (raw material) for the Biogas project. The cow housing will not be finished by November which is the cumulative consequences of delay in power supply and Covid-19 lockdown.

4. Please clarify if the project is facing delays and is expected to request an **extension**.

The project was extended until September 2023.

5. Please provide the **main findings and recommendations of completed MTR**, and elaborate on any actions taken towards the recommendations included in the report.

- Consideration should be given to the revision of the design to incorporate a Long-Term Agreement (LTA) with a Service Provider with extensive policy and implementation capacity and capability in the biogas or renewable energy sector in order to assist with the acceleration of the achievement of results and ensure quality of outputs.
 - It was not possible to revive the LTA Service Provider on the basis of previous procurement process, new terms of reference were issued for Output 4.1 & 4.4 Biogas Investment Strategy formulation and Technical Support for design of dedicated financial mechanisms
- The M&E systems require constant updating with information and there is a need for adoption of a documents repository that is continually updated in this regard.
 - A tracking tool was adopted as was to be regularly updated to keep the progress of Project activities visible on a dashboard;
 - The Counterpart also enforced a regular Quarterly Report system
- Address pending matters with SABIA on the model to capacitate the Association, i.e., the termination of the SABIA Administrator/Consultant contract has left a vacuum with regards to implementation of the website and other administrative activities.
 - SABIA was further supported to be sustainable beyond the Project phase through reformulation of their business plan and convening a round table of funders.

1. Government and/or Counterpart Organizations

- The DSBD should play a role in particular with regards to ensuring the SMME attributes of the Project are implemented, in particular through SEDA and SMME policy instruments.
 - DSBD was compelled to attend PSC Meetings and they did attend some
 - The Project also initiated prefeasibility and feasibility studies targeted at entry level opportunities in rural and peri-urban areas to identify prospects for biogas in these situations
- **The dtic** should assume a role in ensuring that various funding instruments such as the Infrastructure Incentive Scheme and the Black Industrialist Scheme programmes are brought to bear, including the Support Programme for Industrial Innovation (SPII) and the Technology and Human Resources for Industry Programme (THRIP).
 - Some of the Scaling up initiatives were directed to DTIC for possible support under the mentioned facilities
 - The initiatives were left to the project owners to submit to DTIC and some efforts are underway in that regards, e.g., digestate processing plant

- The Counterpart Departments (DFFE and DMRE) must consider providing additional administrative support to the PMU as part of in-kind contribution. This could be done by secondment of capable administrative staff by the Departments to the PMU.
 - No secondment of staff was possible from either Departments
2. Donor
- It is recommended that the project is extended by a further 12 months to enable achievement of results
 - The Project was extended by more than 12 months as there were also the effects of COVID-19

IV. Environmental and Social Safeguards (ESS)

1. As part of the requirements for **projects from GEF-6 onwards**, and based on the screening as per the UNIDO Environmental and Social Safeguards Policies and Procedures (ESSPP), which category is the project?

- Category A project
- Category B project
- Category C project

(By selecting Category C, I confirm that the E&S risks of the project have not escalated to Category A or B).

Notes on new risks:

- *If new risks have been identified during implementation due to changes in, i.e. project design or context, these should also be listed in (ii) below.*
- *If these new/additional risks are related to Operational Safeguards # 2, 3, 5, 6, or 8, please consult with UNIDO GEF Coordination to discuss next steps.*
- *Please refer to the UNIDO Environmental and Social Safeguards Policies and Procedures (ESSPP) on how to report on E&S issues.*

Please expand the table as needed.

	E&S risk	Mitigation measures undertaken during the reporting period	Monitoring methods and procedures used in the reporting period
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(i) Risks identified in ESMP at time of CEO Endorsement			
(ii) New risks identified during project implementation (if not applicable, please insert 'NA' in each box)			

V. Stakeholder Engagement

1. Using the previous reporting period as a basis, please provide information on **progress, challenges and outcomes** regarding engagement of stakeholders in the project (based on the Stakeholder Engagement Plan or equivalent document submitted at CEO Endorsement/Approval).

The trend observed in previous PIRs that there was general better delivery from private sector contracted entities than from public sector entities was observed also observed in the PIR23 period. There was a mixed performance between contracted academic enterprise and embedded entities with the academic institution being the differentiating factor. Stellenbosch University delivered timeously while UNISA Enterprise did not. On the other hand, Enterprise UP delivered timeously while UNIVEN did not. The overarching observation for all work that involved use of students was that there was a greater need for the students' supervisors to be more involved in quality control of the work and to review the reports done by their students more thoroughly.

Private sector consultants tend to stick strictly to the TORs and are generally less explorative in their solutions. Their reports tend to be less extensive on literature review and intensive on proven solutions.

2. Please provide any feedback submitted by national counterparts, GEF OFP, co-financiers, and other partners/stakeholders of the project (e.g. private sector, CSOs, NGOs, etc.).

The prefeasibility and feasibility studies undertaken were highly appreciated by the stakeholders. All the final reports were shared with the respective stakeholders who expressed appreciation for the outcomes and intention to pursue investment in biogas projects.

3. Please provide any **relevant stakeholder consultation** documents.

- 10th Project Steering Committee Agenda
- 10th Project Steering Committee minutes
- 10th Project Steering Committee action list
- 11th Project Steering Committee Agenda
- 11th Project Steering Committee minutes
- 11th Project Steering Committee action list

VI. Gender Mainstreaming

1. Using the previous reporting period as a basis, please report on the **progress achieved on implementing gender-responsive measures and using gender-sensitive indicators**, as documented at CEO Endorsement/Approval (in the project results framework, gender action plan or equivalent),.

All the work done during PIR23 had over 30% participation of women. This was enforced at procurement level through ensuring that there the bidders met the 30% threshold. Equally the 30% women threshold was enforced on selection of workshop participants for the training of Government Officials.

VII. Knowledge Management

1. Using the previous reporting period as a basis, please elaborate on any **knowledge management activities / products**, as documented at CEO Endorsement / Approval.

In FY23, the project's promotional video was finalized and disseminated through UNIDO's channels. A number of publications were finalized and published on open data, namely the best practice manual, the biogas guidebook, the digestate decision-making tool, the investment strategy, evaluations and feasibility studies from various projects as listed below.

2. Please list any **relevant knowledge management mechanisms / tools** that the project has generated.

UNIVEN 6th Report

Biogas Decision Making Tool

GreenCape Final Investment Strategy

Equilibrium Report on Feasibility Studies

Biogas Guidebook

National Biogas Training Workshop_Govt officials & Public Institutions

Resilient Circular Evaluation of Demonstration Projects Report

Policy brief with recommendations for development of draft legislation on classification and disposal of digestate including determination of its economic value and guidelines for its trade

Digestate Decision-making Tool

University of Pretoria - Feasibility Studies

Biogas Best Practice Manual

https://www.youtube.com/watch?v=Y_TR6C_HDPw

VIII. Implementation progress

1. Using the previous reporting period as a basis, please provide information on **progress, challenges and outcomes achieved/observed** with regards to project implementation.

- Logical Waste is building a digester at the North-West University. The first deliverable was submitted.
- Likhanyiso contract cancelled after submission of evaluation report presenting different options.
- Limpopo Diaries, the first report was approved and payment released
- Demo projects evaluation revealed that none of the two projects (Cavalier and Midlands) can be revived/rehabilitated
- Assignment on Waste-Streams Characterization & Mapping by UNISA is currently being finalized upon submission of feedback on the reports by UNIDO

- Digestate Field Trials by UNISA are close to completion
- Hackaton on micro-digesters as solutions to waste management challenges is being held in mid-July 2023.
- Best practice manual on biogas was finalized
- Investment strategy was finalized by Greencape
- Project evaluation has started in July 2023 and field visits are schedule for end of August 2023.

2. Please briefly elaborate on any **minor amendments**⁶ to the approved project that may have been introduced during the implementation period or indicate as not applicable (NA).

Please tick each category for which a change has occurred and provide a description of the change in the related textbox. You may attach supporting documentation, as appropriate.

<input checked="" type="checkbox"/>	Results Framework	<i>The Results Framework was updated after the MTR to align with the recommendations as well as to accommodate the delays caused by COVID-19</i>
<input checked="" type="checkbox"/>	Components and Cost	<i>Evaluation of the 2 completed and commissioned demonstration projects was added as an activity</i>
<input type="checkbox"/>	Institutional and Implementation Arrangements	
<input type="checkbox"/>	Financial Management	
<input checked="" type="checkbox"/>	Implementation Schedule	<i>The project was extended until 30 September 2023.</i>
<input type="checkbox"/>	Executing Entity	
<input type="checkbox"/>	Executing Entity Category	
<input checked="" type="checkbox"/>	Minor Project Objective Change	<i>The Standardised long-term feedstock supply agreement template was integrated into the Biogas Investment Decision-Making Tool and</i>

⁶ As described in Annex 9 of the *GEF Project and Program Cycle Policy Guidelines*, **minor amendments** are changes to the project design or implementation that do not have significant impact on the project objectives or scope, or an increase of the GEF project financing up to 5%.

		<i>the outcome of Waste-Streams Characterisation work</i>
<input checked="" type="checkbox"/>	Safeguards	<i>Valuation of the projects under construction was conducted to cater for the period the construction works were disrupted by the COVID-19 Pandemic restrictions as well as the lapsing of warranties/guarantees</i>
<input checked="" type="checkbox"/>	Risk Analysis	<i>Two additional risks were discovered and mitigation was recommended and is under implementation.</i>
<input type="checkbox"/>	Increase of GEF Project Financing Up to 5%	
<input checked="" type="checkbox"/>	Co-Financing	<i>With cancelation of Lukhanyiso Bio-CNG Demonstration Project, there is a reduction of approximately USD4m in co-financing</i>
<input type="checkbox"/>	Location of Project Activities	
<input checked="" type="checkbox"/>	Others	<i>A training and research biogas unit was included for NWU</i>

3. Please provide progress related to the **financial implementation** of the project.

Please see attached 5704_Cumulative Budget

IX. Work Plan and Budget

1. Please provide **an updated project work plan and budget** for the remaining duration of the project, as per last approved project extension. Please expand/modify the table as needed.

Please fill in the below table or make a reference to a file, in case it is submitted as an annex to the report.

Outputs by Project Component	Year 1				Year 2				Year 3				Year 4				Year 5				Year 6				Year 7				GEF Grant Budget Available (US\$)		
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4			
Component 1 – Capacity building																															
Outcome 1: Capacity of market players enabled and strengthened, and technology support system established																															
Output 1.1: Detailed assessment and characterization of waste streams from agro-processing SMMEs conducted	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	10,484.67
Output 1.2: Capacity of biogas support and low-carbon technologies support centre strengthened	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
Output 1.3: Biogas guidelines and decision support tools for integrated biogas systems in agro-processing SMMEs are developed and disseminated	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
Output 1.4: Professionals and technicians in biogas technology trained	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
Output 1.5: Targeted training workshops (10) for market players (project developers, enterprise executives, farmers and operators, current users of waste) on integrated biogas systems conducted	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
Output 1.6: Two regional training workshops conducted to train experts from SADC counties on	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	

Component 4 – Scaling Up																											
Outcome 4: Investment in waste-to-energy promoted																											
Output 4.1: Investment strategy for integrated biogas developed and disseminated	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	2,703.07
Output 4.2: Technical Assistance provided to realise at least 4 more investment projects (at least 6 MW)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
Output 4.3: Portfolio of at least 25 investment projects compiled and disseminated	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
Output 4.4: Technical support to design financial support...	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
Output 4.5: National biogas investment forum organised regularly	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	

X. Synergies

1. **Synergies** achieved:

Several academic and research institutions with ongoing programmes were supported, e.g., Enterprise UP, UNISA Enterprise, Stellenbosch University. These institutions intend to continue the research topics beyond the Project phase subject to resource availability.

A lasting relationship with project developers was initiated, e.g., Resilient Circular, Logical Waste, JG Afrika, Equilibrium, etc.

Project owners/investors depended on the Project’s advice for some of their critical decisions, e.g., Limpopo Dairies, Lukhanyiso, Bio2Watt, Riverside Piggeries, Spif Chicken, etc.

A strong relationship with development financial institutions was created, e.g., Development Bank of Southern Africa (DBSA), Public Investment Corporation (PIC)

3. **Stories to be shared** (Optional)

NA

XI. GEO LOCATION INFORMATION

The Location Name, Latitude and Longitude are required fields insofar as an Agency chooses to enter a project location under the set format. The Geo Name ID is required in instances where the location is not exact, such as in the case of a city, as opposed to the exact site of a physical infrastructure. The Location & Activity Description fields are optional. Project longitude and latitude must follow the Decimal Degrees WGS84 format and Agencies are encouraged to use at least four decimal points for greater accuracy. Users may add as many locations as appropriate.

Web mapping applications such as [OpenStreetMap](#) or [GeoNames](#) use this format. Consider using a conversion tool as needed, such as: <https://coordinates-converter.com>

Please see the Geocoding User Guide by clicking [here](#)

Location Name	Latitude	Longitude	Geo Name ID	Location and Activity Description
Limpopo Dairies Biogas Project	S 23° 2' 37"	E 29° 54' 11"	981827	Limpopo Dairy in Louis Trichardt, South Africa, was established in 1979 and comprises of a farm with fodder production, feed production factory, cow and goat milking parlours, dairy factories, distribution Centre, logistics Centre as well as its own effluent plant.
Riverside Piggeries Biogas Plant Expansion	S 25° 40' 55"	E 28° 10' 29"	964134	Riverside Piggeries is a family owned and run business situated in Pretoria North, Gauteng Province of South Africa. The farm has an abattoir to slaughter and process their own pigs and from external farms
Bakubung Community WtE Project	S 25° 22' 52"	E 27° 4' 38'	11593523	The community stakeholders including Sun City, Bakubung Platinum Mine and Moses Kotane Local Municipality had high volumes of organic waste to support to support SMME waste to energy projects.
Baviaanspoort Prison WtE Project	S 25° 40' 24"	E 28° 21' 22"	1020752	Baviaanspoort Correctional Services Facility (CSF) is one of the DCS's eight correctional facilities in Gauteng Province. It is located

				in Baviaanspoort, Pretoria North, under the management of the Department of Correctional Services (DCS).
Diepsloot Community Market (DCM) WtE Project	S 25° 55' 59"	E 28° 0' 43"	8764562	The Diepsloot Community Market (DCM) is developing a service offering to supply residential size biogas solutions for residential estates. This offering is proposed in collaboration with Agama Biogas, a local supplier of professional, prefabricated biogas digesters. The biogas installations provide a waste management solution to provide clean energy from waste with near zero greenhouse (GHG) emissions associated with it.
Ma-Afrika Energy Group	S 33° 27' 38"	E 18° 43' 37"	3364346	Ma-Afrika Energy Group is a start-up from Malmesbury, Western Cape that aims to install and operate waste-to-energy projects around South Africa.
Umnothoganix Agri-Estate WtE Project	S 24° 53' 0"	E 28° 17' 0"	941966	Umnothoganix Agri-Estate is a 43-ha site located in Radium, Bela Bela Local Municipality, Limpopo Province. It is an agricultural estate (agri-estate) that combines residential developments with agrarian activities, more specifically regenerative agriculture.
Barseba Community WtE Project	S 25°40'03"	E 27°14'31"	958724	The Barseba Community with coordinates is situated in the Rustenburg Local Municipality, under the Bojanala District, in the North West Province about 128km from Johannesburg.
Dipaleseng Community WtE Project	S 26° 39' 47"	E 28° 35' 24"	1021396	Dipaleseng Local Municipality Community based in Balfour, Mpumalanga Province
Ga Ramela Community WtE Project	S 23° 31' 30'	E 28° 52' 45"	1002874	Ga Ramela has an access to over 600 hectares village land
Sebokeng Township WtE Project	S 26° 33' 32"	E 27° 50' 38"	956785	Sebokeng Community is an urban area located in a township under the Gauteng Province.
Siyabuswa Community WtE Project	S 25° 6' 47"	E 29° 2' 40"	955313	Siyabuswa is a town in the countryside of the South African province of Mpumalanga. The town is about 190km from Johannesburg
Bio2Watt Hybrid WtE & PV Energy Project	S 25° 55' 6"	E 28° 11' 55"	8030233	Bio2Watt appointed Meadows Energy to perform a techno-economic analysis to calculate LCOE for generation fleet of a Biogas facility in Gauteng province.
SPIF Chicken Biogas-to-Energy	S 24° 31' 0"	E 28° 43' 0"	972206	The chicken farm and abattoir which is also extending into pig farming is located in Mookgophong
Baobab Fruits WtE Project	S 22° 52' 12"	E 30° 55' 11"	11398150	Baobab Fruits banana farming operations in Makuleke, Limpopo Province, South Africa. Farming operations include banana plantations on approximately 240ha of agricultural land leased from the Makuleke Community, as well as a packaging facility.

Zeekoegat WWT & CHP Plant	S 25° 37' 31"	E 28° 22' 12"	965325	Combined Heat and Power (CHP) plant located at Zeekoegat Wastewater Treatment Works (ZWTW).
Tshwane Food & Energy Centre Biogas Project	S 25° 39' 35"	E 28° 26' 36"	8347355	Tshwane Food and Energy Centre, this greenfield development for a biogas electricity plant providing power for all residents located at the City of Tshwane.
Biogas Integration into Aquaponic Heating/Cooling Systems	S 25° 26' 9"	E 27° 44' 21"	8347530	Aquaponic farming operations generate organic waste which has the potential to be used as feedstock for the development of a biogas Plant.
Rabbit Farm Waste-To-Energy Project				Rabbit farming is a relatively small industry in South Africa with an estimated 700 active farmers of which only around 150 breeds with more than 250.
Regenize Residential Recycling	S 33° 55' 18"	E 18° 29' 25"	3364369	Regenize is a residential recycling service based in Cape Town that provides a freemium recycling collection service in the lower-income communities by integrating the informal waste sector.
Youth Bridge Trust	S 26° 11' 53"	E 28° 1' 19"	8063420	Youth Bridge Trust (YBT) is a non-profit organisation, who wants to empower youth in Africa to fulfil their full potential in the future of work, by shifting Africa to a prosperous future. The YBT provides a niche educational base for not in employment, education or training (NEET) youth and women to enable them to achieve one of the 3Es (Employment, Enrolment into further Education or Entrepreneurship).

EXPLANATORY NOTE

1. **Timing & duration:** Each report covers a twelve-month period, i.e. 1 July 2022 – 30 June 2023.
2. **Responsibility:** The responsibility for preparing the report lies with the project manager in consultation with the Division Chief and Director.
3. **Evaluation:** For the report to be used effectively as a tool for annual self-evaluation, project counterparts need to be fully involved. The (main) counterpart can provide any additional information considered essential, including a simple rating of project progress.
4. **Results-based management:** The annual project/programme progress reports are required by the RBM programme component focal points to obtain information on outcomes observed.

Global Environmental Objectives (GEOs) / Development Objectives (DOs) ratings	
Highly Satisfactory (HS)	Project is expected to achieve or exceed <u>all</u> its major global environmental objectives, and yield substantial global environmental benefits, without major shortcomings. The project can be presented as “good practice”.
Satisfactory (S)	Project is expected to <u>achieve most</u> of its <u>major</u> global environmental objectives, and yields satisfactory global environmental benefits, with only minor shortcomings.
Moderately Satisfactory (MS)	Project is expected to <u>achieve most</u> of its major <u>relevant</u> objectives but with either significant shortcomings or modes overall relevance. Project is expected not to achieve some of its major global environmental objectives or yield some of the expected global environmental benefits.
Moderately Unsatisfactory (MU)	Project is expected to achieve <u>some</u> of its major global environmental objectives with major shortcomings or is expected to <u>achieve only some</u> of its major global environmental objectives.
Unsatisfactory (U)	Project is expected <u>not</u> to achieve <u>most</u> of its major global environmental objectives or to yield any satisfactory global environmental benefits.
Highly Unsatisfactory (HU)	The project has failed to achieve, and is not expected to achieve, <u>any</u> of its major global environmental objectives with no worthwhile benefits.

Implementation Progress (IP)	
Highly Satisfactory (HS)	Implementation of <u>all</u> components is in substantial compliance with the original/formally revised implementation plan for the project. The project can be presented as “good practice”.
Satisfactory (S)	Implementation of <u>most</u> components is in substantial compliance with the original/formally revised plan except for only few that are subject to remedial action.
Moderately Satisfactory (MS)	Implementation of <u>some</u> components is in substantial compliance with the original/formally revised plan with some components requiring remedial action.
Moderately Unsatisfactory (MU)	Implementation of <u>some</u> components is <u>not</u> in substantial compliance with the original/formally revised plan with most components requiring remedial action.
Unsatisfactory (U)	Implementation of <u>most</u> components in <u>not</u> in substantial compliance with the original/formally revised plan.
Highly Unsatisfactory (HU)	Implementation of <u>none</u> of the components is in substantial compliance with the original/formally revised plan.

Risk ratings	
Risk ratings will assess the overall risk of factors internal or external to the project which may affect implementation or prospects for achieving project objectives. Risk of projects should be rated on the following scale:	
High Risk (H)	There is a probability of greater than 75% that assumptions may fail to hold or materialize, and/or the project may face high risks.
Substantial Risk (S)	There is a probability of between 51% and 75% that assumptions may fail to hold or materialize, and/or the project may face substantial risks.
Moderate Risk (M)	There is a probability of between 26% and 50% that assumptions may fail to hold or materialize, and/or the project may face only moderate risk.
Low Risk (L)	There is a probability of up to 25% that assumptions may fail to hold or materialize, and/or the project may face only low risks.