

# Terminal Evaluation Report

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## Climate-resilient Community-based Regeneration of Indigenous Forests in Zambia's Central Province

UNDP PIMS ID: 4712

GEF Project ID: 5435

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<b>Country:</b>	Zambia
<b>Region:</b>	Africa
<b>Focal Area:</b>	LDCF Climate Change Adaptation
<b>Implementing Agency:</b>	United Nations Development Programme
<b>Executing Agency</b>	Ministry of Lands & Natural Resources Forestry Department
<b>Implementing Partner</b>	Forestry Department
<b>Project Timeframe:</b>	July 2015 – December June 2020

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## Table of Contents

Abbreviations and Acronyms .....	iv
Executive Summary .....	1
<b>1. Introduction .....</b>	<b>15</b>
1.1. The project .....	15
1.2. Purpose of the evaluation and report structure .....	15
1.3. Scope and Methodology .....	15
<b>2. Project Description .....</b>	<b>16</b>
2.1. Development Context .....	16
2.2. Problems that the Project Sought to Address .....	18
2.2.1 Environmental Issues .....	18
2.2.2 Incremental Cost Advantage / Environmental Additionality by Design .....	20
2.3. Project Description and Strategy .....	21
2.4. Implementation Arrangements .....	21
2.5. Key Partners & Stakeholders .....	22
<b>3. Findings .....</b>	<b>22</b>
3.1. Project Strategy .....	22
3.2.3 Project Design, Objective & Approach .....	22
3.2.4 Design Assumptions & Risks .....	22
3.2.5 Results Framework Indicators & Targets .....	24
3.2.6 Gender Design .....	25
3.2. Project Implementation .....	25
3.2.1 IA and EA Coordination & Operational Management .....	25
3.2.2 Institutional Mechanisms .....	29
3.2.3 Local Partnership, Stakeholder Engagement & Gender .....	29
3.2.4 Finance & Co-finance .....	30
3.2.5 M&E Systems – Design & Implementation .....	31
3.2.6 Adaptive Management (Work planning, Reporting & Communications) .....	31
3.3. Project Results .....	33
3.3.1 Overall Result – Achievement of Objective and Outcome Indicators .....	33
3.3.2 Effectiveness – Achievement of Outcomes 1-3 .....	34
3.3.3 Training and Awareness .....	42
3.4. Efficiency, Relevance & Ownership .....	42
3.5. GEF Additionality .....	43
<b>4. Sustainability .....</b>	<b>44</b>
4.1. Financial Risks to Sustainability .....	44
4.2. Socio-economic Risks to Sustainability .....	44
4.3. Institutional & Governance Risks to Sustainability .....	45
4.3. Environmental Risks to Sustainability .....	45
<b>5. Impact &amp; Catalytic Effect .....</b>	<b>45</b>
5.1. Impact .....	45
5.2. Catalytic Effect .....	46
5.3. Theory of Change .....	47
<b>6. Main findings, Conclusions, Lessons &amp; Recommendations .....</b>	<b>47</b>
6.1. Main Findings .....	47
6.2. Conclusions .....	48
6.3. Lessons Learned .....	49
6.4. Recommendations .....	49
<b>7. Annexes .....</b>	<b>50</b>
Annex 1: Delivery of Project Objective and Outcomes against Performance Indicators .....	50
Annex 2: Delivery of Outputs .....	54
Annex 3: Co-financing Table .....	56
Annex 4: Planned Budget and Expenditures at End-term .....	57

<b>Annex 5: Further detail on plans, reports, meetings, training materials, etc</b> .....	58
<b>Annex 6: List of Persons Interviewed</b> .....	78
<b>Annex 7: List of Documents Reviewed</b> .....	79
<b>Annex 8: Stakeholder List</b> .....	80
<b>Annex 9: Rating Scales</b> .....	81
<b>Annex 10: Mission Itinerary</b> .....	84
<b>Annex 11: Maps</b> .....	86
<b>Annex 12: Indicative TE Evaluation Matrix</b> .....	88
<b>Annex 13: Signed UNDP Code of Conduct Agreement Form</b> .....	92
<b>Annex 14: Signed TE Final Report Clearance Form</b> .....	93
<b>Annex 15: Terms of Reference</b> .....	94

Annexed in a separate file: Tracking Tools

Annexed in separate file: Audit trail from received comments on draft TE report

**Exhibits:**

- Exhibit 1: Project Information Table
- Exhibit 2: Ratings Summary Table
- Exhibit 3: Ratings & Achievement Summary Table
- Exhibit 4: Recommendations Table

**Disclaimer**

The Terminal Evaluation (TE) findings and conclusions were discussed with UNDP, Project Implementation Unit (PIU) members, representatives of the Forestry Department (FD), local government partners and key stakeholders. There was a debriefing / stakeholder workshop held to present views and refine findings. The FD, PIU, and UNDP provided comment on the draft report before finalization. The views held within this report are those of the TE team.

**Acknowledgement**

The evaluation team would like to acknowledge all project partners who supported the development of this TE. In particular, the TE team leader would like to thank: members of the Forestry Department, Ignatius Makumba and Maureen Mwale; the PIU including Biston Mbewe, and the responsible UNDP staff.

## Abbreviations and Acronyms

AMAT	LDCF / SCCF Climate Change Adaptation Monitoring & Assessment Tool
ANR	Assisted Natural Regeneration forest area
ATLAS	UNDP tracking system
AWP	Annual Work Plan
A/F	Agro-forestry
C1, C2, C3	Component 1 etc
CBRIF	Community-based Regeneration of Indigenous Forests (i.e. 'the project')
CCA	Climate Change Adaptation
CCA	Community Conservation Area (Comaco's equivalent of an ANR)
CF MP	Community Forest Management Plan
Comaco	Community Markets for Conservation (a service provider engaged by UNDP)
DACO	District Agricultural Coordinator's Office
DCs	District Councils (Serenje & Chitambo)
DFO	District Forest Office
DIT	Project District Implementation Team
DoE	Department of Energy (Ministry of Energy) (Project partner)
EA	Executing Agency (MLNR)
FD	Forestry Department
GEF	Global Environment Facility
GoZ	Government of Zambia
HACT	UN Harmonised Approach to Cash Transfers (for financial agreement between UNDP & the IP)
IP	Project Implementing Partner (FD)
LDCF	Least Developed Countries Fund
M&E	Monitoring and Evaluation
MLNR	Ministry of Lands & Natural Resources
MoA	Ministry of Agriculture
MTR	UNDP Mid-term Review
NAPA	National Adaptation Programme of Action
NIM	UNDP National Implementation Modality
NTFP	Non-Timber Forest Product
PIF	GEF Project Identification Form
PIMS	UNDP Project Information Management System
PIR	UNDP Project Implementation Report
PIU	Project Implementation Unit
PM	Project Manager
PRF	Project Results Framework (~logframe / Strategic Results Framework)
Prodoc	Project document
PSC	Project Steering Committee
RP	Responsible Party (ies) (implementing on behalf of the IP)
SDG	UN Sustainable Development Goal
SMART	Specific, Measurable, Achievable, Relevant and Time-bound (Indicators)
TDAU	Technology Development & Advisory Unit (University of Zambia) (a service provider engaged by UNDP)
TE	UNDP Terminal Evaluation (of the project, and this report)
TRAC	UNDP (funds) Target Resource Assignment from the Core (UNDP Co-financing)
UNDAF	United Nations Development Assistance Framework
UNDP CO	United Nations Development Programme (GEF Implementing Agency (IA), member of PSC) Country Office
UNDSS	UN Department for Safety and Security
UNFCCC	United Nations Framework Convention on Climate Change
VAG	Village Action Group
Zengo	Zambia Energy & Environmental Organization (a service provider engaged by DoE)
ZEMA	Zambia Environmental Management Agency (Project partner)
<b>UNITS</b>	ha - hectare (100 m x 100 metres); m - meters or million; tonne – 1,000 kg; US\$ - US dollar; KMW 'Kwacha'– Zambia currency

## Executive Summary

The executive summary is a 12-page summary of the the Terminal Evaluation (TE) report.

Project Title:	Climate-resilient Community-based Regeneration of Indigenous Forests in Zambia's Central Province		
UNDP Project ID (PIMS #):	4712	PIF Approval	Oct 2013
GEF Project ID (PMIS #):	5435	CEO Endorsement	May 2015
Country	Zambia	Project Document Signature	July 2015
Region	Africa	Project manager hired	Nov 2015
Focal Area	CCA	Inception Workshop	Sept 2015
Strategic Programs	CCA-1, 2 & 3	Terminal Evaluation	Aug-Sept 2020
Trust Fund	LDCF	Closing Date	Dec 2020
Modality	NIM		
Executing Agency / Implementing Partner	MLNR (Forestry Department)		
Other Partners / Responsible Parties	Comaco, Department of Energy, ZEMA, TDAU (University of Zambia)		
Project Financing:	at CEO endorsement (USD)	at Terminal Evaluation (USD)*	
[1] GEF financing:	3,885,500	3,380,998	
[2] UNDP contribution:	100,000	100,000	
[3] Government:	11,420,000	11,420,000	
[4] Other partners:	17,610,090	12,040,000	
[5] Total co-financing [2 + 3+ 4]:	29,130,090	23,560,000	
<b>PROJECT TOTAL COSTS [1 + 5]</b>	<b>33,015,590</b>	<b>26,940,998</b>	

\*Actual expenditures and co-financing contributions through End Sept 2020

### Project Description

#### A. Problem statement

Miombo woodlands used to be productive and resilient ecosystems, which provided communities with livelihood support. However, poverty, inequality, lack of management, and unsustainable use have degraded them. This is compounded by climate change, with their regeneration potential being reduced. In particular, over-exploitation (land conversion and charcoal production – for the urban market) and the increased frequency of fire, have accelerated their degradation. Thus, the woodlands are now unable to effectively provide for livelihoods, or act as an adequate carbon sink against climate change. Restoration and livelihood initiatives 'don't adequately take into account this accelerating impact or climate adaptation needs. The Forestry Department's (FD) capacity to implement interventions is hindered by limited institutional and technical capacity.

#### B. Problem to Solution

The preferred solution was to: use a community-based approach to enhance the capacity of FD and communities to plan and implement interventions that increase the resilience of miombo woodlands. Barriers included: limited methods for sustainable management of miombo woodlands; limited finances; and policies that 'don't promote community-based forest management.

#### C. Project Description

The project was designed to:

1. Strengthen technical / institutional capacity of foresters and communities to implement Assisted Natural Regeneration (ANR) and Agro-forestry (A/F)
2. Establish fire management plans to maintain regeneration in these woodlands
3. Introduce efficient charcoal production and wood-saving technologies

#### D. Project Location

The project was located in the FD Lusaka, and in two districts in Central Province – Serenje and Chitambo, within which 30 Village Action Groups (VAGs) were formed around five Assisted Natural Regeneration Areas (ANRs)

#### E. Project Management

The UNDP-supported GEF/ LDCF-financed project was titled 'Climate-resilient community-based regeneration of indigenous Forests in Zambia's Central Province (PIMS 4712)'. The 5-year project was under National Implementation Modality (NIM) with the Ministry of Lands & Natural Resources (MLNR) as the Executing Entity, and the Forestry Department (FD) as their designated Implementing Partner (IP). The IP worked in collaboration with the local FD and associated stakeholders in Serenje and Chitambo districts. The IP appointed a Project Implementation Unit (PIU), which was led by a Project Manager (PM). UNDP and the FD / PIU were supported by a Project Steering Committee (PSC).

### Purpose and Methodology

The objective of the Terminal Evaluation (TE) was to gain an independent analysis of the achievement of the project at completion, as well as to assess its sustainability and impact. The report focuses on assessing outcomes and project management. The TE additionally considered accountability and transparency, and provides lessons-learned for future UNDP - GEF projects, in terms of design and implementation. The overall approach and methodology of the TE followed the guidelines outlined in the UNDP Guidance for Conducting Terminal Evaluations of UNDP-supported GEF-financed Projects (2012, and 2020). The TE was an evidence-based assessment and relied on feedback from persons who were involved in the design, implementation, and supervision of the project<sup>1</sup>. The TE determined if the project's building blocks (technical, financial, management, legal) were put in place and then, if together these were catalysed sufficiently to make the project successful.

### Evaluation Ratings Summary

GEF-UNDP projects of this type require the TE to evaluate implementation according to set parameters and ratings. The result of this, is presented in Exhibit 2 below. (see **Annex 9** for rating scale):

**Exhibit 2: TE Ratings Summary Table**

1. Monitoring & Evaluation	Rating	2. Implementing Agency (UNDP) & Executing Agency / Partner (MLNR / FD) Execution	Rating
<b>Overall quality of M&amp;E</b>	<b>U (2)</b>	<b>Overall quality of Implementation / Execution</b>	<b>MU (3)</b>
M&E Design at entry	U (2)	Quality of UNDP Implementation	MU (3)
M&E Implementation	U (2)	Quality of Execution – MLNR /FD	MU (3)
3. Assessment of Outcomes	Rating	4. Sustainability	Rating
<b>Overall Project Outcome</b>	<b>MS (4)</b>	<b>Overall Likelihood of Sustainability</b>	<b>MU (2)</b>
Overall Effectiveness of Results	MS (4)	Financial resources	MU (2)
- Objective	MS (4)	Socio-economic	ML (3)
- Outcome 1	MS (4)	Institutional framework & governance	ML (3)
- Outcome 2	MU (3)	Environmental	ML (3)
- Outcome 3	U (2)		
Efficiency (cost)	MU (3)		
Relevance	MU (3)		

NB: for Sustainability MU indicates Moderately Unlikely

**NB: Assessment of Overall Project Outcome includes Effectiveness of Results (Objective, Outcomes 1-3), Efficiency and Relevance**

Detailed ratings are tabulated below in **Exhibit 3**. A description of the grading scale is provided in **Annex 9**

<b>Exhibit 3: Achievement Summary with TE Grading</b>
Project: Promoting Climate-resilient Community Based Regeneration of Indigenous Forests in Zambia's Central Province UNDP PIMS ID: 4712; GEF Project ID: 5435
<b>Achievement Description &amp; TE Rating</b>
<b>Outcomes/ Results</b>
<b>Result - Overall Project Objective Achievement – Moderately Satisfactory</b>
<b>Project Objective</b> was 'Promote climate-resilient, community-based regeneration of indigenous forests in Zambia's Central Province, thereby securing ecosystem goods & services and enhancing the adaptive capacity of local communities'
The grading at the project objective level depends on both the achievement of Outcomes 1-3 according to 'framework

<sup>1</sup> Evidence and verification of the findings was based on respondent interviews (usually at least 2-3 sources), cross-referenced against project documentation, field observation and desk study scientific or other published reports.

logic', and on the objective level indicators. There were two indicators attached to the objective level which were both rated as: moderately satisfactory.

**Justification:** The project achieved most of its objectives but with modest relevance and significant shortcomings. The project isn't going to achieve its key environmental objective. The result was the establishment of five ANRs, to be managed by 30 VAGs, who had their capacity built to become more resilient to climate-change, had learnt and had adapted to new (farming and forestry) techniques. The stopping of the late-burn to the forest, was a key measure. The modest relevance refers to the relatively small pilot area in relation to the large Province and District-wide project design target area, and the consequent impact only really on the pilot area. The significant short-coming was in the project design expectation that licensing charcoal production could be achieved without a forest management plan. The environment objective that wasn't obtained was a 25% reduction in fire occurrence. i.e. one in four fires no longer started. The evidence was just not there.

### **1/ Number of forestry staff and local groups participating in climate-resilient, community-based regeneration of indigenous forests [MS]**

There were 4,324 persons trained, of which 2,215 were men and 2,117 (49%) were women. They were trained during 144 days, which was equivalent to ~29 days / year, over the 5-year project duration. There were 2,735 members of VAGs who registered and participated in the project's agriculture activities.

### **2/ Households benefiting from climate-resilient, community-based regeneration of indigenous forests [MS]**

The number of beneficiaries was 25,884, of which 14,976 benefited from climate-smart agriculture, and 7,200 benefited from forest-based activities leading to increased production of honey, caterpillars, and mushrooms. (source project records).

The project provided a significant benefit to the participating households of the 30 VAGs. The total direct number of households registered to work on agriculture and forestry interventions from 2018, was 2,735. Of these, the project also supported livelihoods (household food, health and nutrition) with the protein-based provision of soya bean, 'K' beans and groundnut (40,680 kg in total) to 2,310 households, who after harvest, 'returned' 6,594 kg of seed to the VAGs for replication and upscaling. There were also ~500 direct beneficiaries of 'cash for work' boundary clearance.

## **Effectiveness - Outcome 1 Achievement - Moderately satisfactory**

### **Outcome 1: Technical & institutional capacity of forest staff / communities to implement climate-resilient A/F & ANR practices**

There were two indicators rated as: Moderately satisfactory and Satisfactory

#### **Justification:**

Most of the objectives for this outcome were achieved, but with a moderate shortcoming, which was based on a deficiency in the project design. It assumed that forest areas could be effectively managed for fuelwood and charcoal supply without a forest management plan. The project outcome also was not going to achieve its key environmental objective, until it changed course. During implementation, the capacity of forest staff to support local groups to improve forest management was considered to be less than optimal, by the GEF Implementing Agency. Thus, as a counter-measure, they brought in a service-provider who linked small-holder farming development with both forest protection and forest income generation. This shifted the balance away from subsistence agriculture with added forest 'slash and burn', and moved it towards sustainable livelihoods for the project villagers.

The project outcome achieved its environmental objective, but with minor shortcomings. ANR areas were established with VAGs to 'manage' them, however the legal status of the ANRs remained tenuous, as did legal link of the VAGs 'right to manage' the ANRs.

### **1/ Change in capacity of district forestry officers and VAG members for implementing ANR and A/F [MS]**

Capacity building included: sustainable forest management (protection and halting land conversion, illegal charcoal production, and slash & burn fuelwood collection), improved forest fire management (patrolling, prohibition of a late season burn, fire-break establishment), conservation agriculture, small livestock production, on-farm charcoal production (from crop residues), and improved cookstoves (to reduce fuelwood use and reduce kitchen woodsmoke.) In total, within the 30 VAGs, there were 154 user / producer groups established, and participating in community livelihood development allied to reducing pressure on the (designated ANR) forest areas. The communities planted on-farm, 20,000 *Glyricydia* seedlings, which is an agro-forestry (A/F) species which is easily coppiced for fuelwood.

#### **30 VAGs formally established**

Thirty Village Action Groups (VAGs) were registered with the Registrar of Societies. Each VAG has a 10-person committee and constitution. The VAGs were additionally organised into 'user / producer groups' depending on activity. User / producer groups included: beekeeping, mushroom, caterpillars, Munkoyo roots, timber, charcoal,

small livestock, fish farming, legumes crops, wild orchid, crafts and carpentry, homestead woodlots, and wild fruits.

The formal (legal) link between a VAG and an ANR was not clear. Despite the VAGs being legal entities, they are new institutional structures and require further FD support, in ANR area forest management, and in official designation post-project to become community forests (CFs).

#### Climate-resilient A/F & natural regeneration training for 2,000 VAG members and 20 district forestry staff

In 2018/19, the project changed direction somewhat in undertaking a significant number of livelihood activities, which were delivered by the service provider, Comaco. They were given a large direct contract by UNDP (~\$0.45m) to deliver income generating activities. Their work was very successful, but agriculture wasn't directly part of the project design, except if you considered the approach to be as an integrated forest 'conservation & development' model. i.e. 'villagers gain interest in forest management, as livelihoods are concurrently made more secure.' Without this contract, the VAGs would not really have benefited very much from the project.

#### **2/ Climate-resilient A/F and ANR practices implemented across 15,000 hectares [S]**

District	ANR	Area (ha)	Chiefdom
Chitambo	<b>Musangashi</b>	2,589	Chief Chitambo
Chitambo	<b>Musola</b>	4,100	Chief Muchinka
Chitambo	<b>Nakatambo</b>	3,318	Chief Muchinka
Serenje	<b>Teta</b>	444	Chief Kabamba
Serenje	<b>Mwenshi butetele</b>	5,153	Chief Kabamba
		<b>15,604</b>	

Five ANR zones were designated covering an area of 15,604 ha, and delineated on FD maps. Their boundaries were 'demarcated' on the ground by clearance lines (~10 m wide). They were provided by three chiefs for demonstration. In terms of the project timeline, the ANRs were agreed in 2016; the VAGs to manage them established in 2017; they were mapped and had their boundaries cleared in 2017. Shifting cultivation was effectively stopped. Illegal charcoal production was significantly reduced, although the villagers found it difficult to stop repeat offenders. However, district-wide, forested land is still being opened-up for agriculture, so forest areas outside the ANRs are not so secure.

At issue, is the fact that the legal status of the ANRs is now unclear, and there is with no formal agreement post-project. The ANRs are also missing boundary marker pillars and signboards, which was part of the Zambia Environmental Management Agency (ZEMA) contract. The reasons are unclear, including a delay in 2020 due to Covid-19, however, it could be because the land has no binding legal status as an ANR. The chiefs' (written) permission was for project duration only.

The project had an opportunity in 2018, to follow the new Community Forest (CF) regulations, and pilot one of the areas to become a CF. Although, this was an FD / project intention for some time, it was difficult to gauge the level of awareness-raising needed to make this advance. Whilst the project had staffing with financial resources to implement a pilot CF site, that opportunity is now more difficult to achieve.

#### **Effectiveness - Outcome 2 Achievement – Moderately Unsatisfactory**

##### **Outcome 2: Fire management plans in all Central Province districts and reduce fire frequency by 25% across the province, averaged over 4 years**

There were two indicators rated as: moderately satisfactory and moderately unsatisfactory

#### **Justification:**

The project achieved most of its objectives here, but with modest overall relevance, and environmentally isn't going to achieve its key objective. This is because, the project design required fire control plans for all Central Province districts, whereas the project only prepared plans to cover the 15,000 hectares of ANR land, and not even covering the two project districts. To put in context, Chitambo District annually sets fire to and burns ~300,000 ha of land, and Serenje District annually burns 226,479 ha, Whereas the project prepared plans to manage fire covering 15,000 ha, which is ~3% of the annually burnt area of these two districts.

In terms of the frequency of fire, it was unlikely that the project had influenced the stated reduction in fire occurrence to 16% less fires across the two districts, or at least the TE 'couldn't verify this. Thus, in this respect, the project had not achieved its main environmental target of a 25% reduction in fire frequency.

#### **1/ Change in capacity of district forest staff, VAGs & local authorities in fire management [MS]**

In 2017, the ANR boundaries were delineated (on maps) and demarcated (on the ground through boundary clearance), and fire-break avenues were created. Community fire management plans were prepared for each of the five ANRs. In 2018, the early-burning regime was agreed with local leaders (chiefs) and villagers. In 2018-19, there

was further maintenance of boundaries and fire-break lines.

The issue is now one of management and sustainability, bearing in mind the use of the tractors for fire-break work is unlikely without funds. This leaves all the fire control work to the VAGs themselves, without much support, even if the villagers continue patrol work.

#### Fire incidence dataset for Central Province to determine fire-risk of Miombo Woodlands

The TE found no evidence of the fire incidence database. There isn't either a regular bulletin on fire-risk warning, or a real-time fire-warning system set-up. This is despite meteorological office seasonal / periodic weather forecasts being available.

#### Fire management plans developed & operational based on fire incidence & local inputs

In 2017, Fire risk management plans were developed for each of the five ANRs. The plans have been operationalised by the communities who have formed fire management teams. The plans are partly a learning guide and partly a plan. As a learning guide, they are clear and informative. However, the plans are not strong enough on the institutional responsibilities, the local village agreement on where / how to control fire, and who will 'pay' for the labour to maintain the ANR boundary and internal fire breaks. It does include a fire monitoring schedule and a firebreak maintenance schedule. Thus, the plans are a good start.

#### Fire protection training (boundary and fire-break & early burning)

There were 65 participants trained for 10 days on fire control management planning. Unfortunately, the ANR boundaries are not visible to outsiders as ZEMA have not erected the boundary markers, nor signboards (which would include fire prohibition months).

### **2.2/ Frequency of fire across all districts in Central Province reduced by 25% [MU]**

The original ZEMA report was not available to determine the analytical methods used to obtain a figure of 16% reduction, which incidentally was for the project pilot sites only. The project impact district-wide, let alone province-wide was difficult to measure, but was not likely to be significant.

Fire awareness was undertaken for 604 participants over 6 days, although the extent of the training outside the two districts was not clear.

## **Effectiveness - Outcome 3 Achievement – Unsatisfactory**

### **Outcome 3: Energy-efficient charcoal production and fuelwood-saving technologies**

There was one indicator rated as: **Unsatisfactory**

#### **Justification:**

There was a major shortcoming in this outcome in terms of effectiveness, because the project design didn't include a method for the sustainable supply of fuelwood for charcoal production, which could then be licensed as 'sustainably-produced'. Thus, the outcome is not expected to achieve its environment objective.

#### **1/ Improved charcoal kilns and briquetting machines [U]**

There were no retort kilns supplied by the project, essentially because the project design failed to convey any sustainable forest management methodology for fuelwood generation within the miombo woodlands. Also, the 15,000 ha area was too small to service 120 retort kilns. The second issue was that the FD had little interest in providing licenses for charcoal production from these retort kilns, as the FD couldn't monitor if the wood was from sustainable sources or not, and if successful, the retort kilns could be replicated to other areas, where there was even less protection of the woodlands. So, for these reasons, the intervention was a non-starter.

However, the latest design of mobile twin-drum retort kiln should have been piloted for VAG community use, using their on-farm wood, and the woody material from the annual boundary clearance of the ANRs. This could easily be monitored and licensed. If the retort kilns were not going to be piloted, then their \$120,000 budget should have been re-directed to the 'crop residue to charcoal' briquetting sets with the development of a locally-made production process.

#### Charcoal producer groups formed to operate retort kilns; 120 charcoal retort kilns piloted; monitoring, tracking & licensing system for retort kilns

Twenty-five sustainable charcoal producer groups were formed with 25 members each. The groups were trained in energy-efficient technologies such as solar, LPG, improved clay cookstoves, briquetting and efficient kilns. There were no retort kilns supplied, as they were said to be inefficient and stationary. Whilst the Department of Energy (DoE) was responsible for fuel-efficient cooking systems, the FD was responsible for ensuring that the supply of

fuelwood was sustainable, which they couldn't guarantee. The charcoal producer groups only really benefited from the supply of 40 briquetting 'drum and press' sets. (see next Output).

#### 50 'crop residue to charcoal' briquetting machines / presses piloted

There were 40 such briquetting 'drum & press' sets provided (target was 50), by the Technology Development & Advisory Unit (TDAU, University of Zambia). They designed the airflow system for the oil drums (i.e. the combustion chamber for the pyrolysis), with smoke chimney to remove the toxic chemicals from the wood. The material used to make the charcoal was mainly crop residues (spent maize cobs). After combustion, the burnt mix was pulverised and mixed with a binding agent, and then put through a press to make the briquettes. There were two press designs demonstrated, one like a standard 'brick-making press' and the other a converted meat mincer (with the perforated disks modified to make a sausage-shape briquette).

The drum & press briquetting system was technically excellent. The residue to charcoal conversion rate was good and the quality of the briquettes high. A standard 50kg bag of charcoal sells for 25 ZMW (\$1.25), whereas a 50kg bag of these sustainable briquettes are being sold in local markets for 150 ZMW (\$6.5).

However, the briquette systems were only delivered at the end of the project in 2019-20, meaning that their training was limited, with no promotion, outreach or replication. The briquette 'sausage' mincer was an imported German and modified meat mincer, which meant it was expensive and not locally available. The project should have engaged TDAU much earlier, and requested more attention to the 'pressing' structure. For example, the TDAU workshop should have been utilised to design and develop for example, a double egg-carton shaped mould, which could be produced by a local blacksmith. Then the whole process, would be sustainable.

#### Improved Clay Cookstove

The 'without chimney' cookstove design should not have been promoted. Chimney-less stoves are a danger to women and children's health. The stove design used three pieces of iron to rest the pot on, but were also cracked in a number of cases. An iron tripod ring would have been better, such as those commonly used in clay stoves in Nepal and India. The TE estimated that for a Serenje VAG, that only 3 out of 20 households had stoves with chimneys, which was very poor compared with Chitambo VAGs (who received the training and demonstration). Thus again, the promotion, demonstration, and replication was very limited.

### **Efficiency, Relevance, Ownership, & Additionality**

#### **Efficiency Rating – Moderately Unsatisfactory**

According to the budget, planned expenditure on project management staffing was \$450,000 out of a GEF budget of \$3,885,000. This equated to nearly 9% of the total budget. Thus, the cost-efficiency of running this project over five years as opposed to four, could be questioned. UNDP provided 'Combined Delivery Reports' with their standard accounting codes, whereas the annual plans were prepared against the logframe and activities. This meant, that there was no accountability or transparency of what the GEF funds were actually spent on.

#### **Relevance Rating – Moderately Unsatisfactory**

The project was in line with LDCF Climate Change Adaptation (CCA) Objectives 1-3, and in line with SDG Target 1.1, 12.2 and 13.1. On a national level, there are a number of policies / plans that are relevant. The 7<sup>th</sup> National Development Plan (2017-21) calls for a multi-sectoral approach with its Vision 2030 as a planning tool which targets: food security & climate-resilient livelihoods; socio-economic development; integrated environmental management; and sustainable use of natural resources. The National Decentralisation Policy (2010) allows for decentralised decision-making down to district level. The National Agricultural Policy (2013) supports: Improved food & nutrition security; Sustainable management of natural resources; and Mainstreaming environment & climate change in the agriculture sector.

The Forests Act (2015) defines Community Forests (CFs), and the Forest CF Management Regulations (2018), provide the mechanism to create CFs. The Lands Act (1995) – provides for the leasehold certification of land holding (99 years), taking into account customary land laws / local chief consent. The forest and lands acts are relevant for the future sustainability of the indigenous forests.

In hindsight, the project design was relevant, but poorly presented, with a number of short-comings. Whilst it was a forestry project, needed forestry interventions were either missing or not appropriate in some cases. E.g. any requirement to prepare a forest management plan, or the fact that coppicing trees within a 'slash' culture, was never going to work, especially without a plan. There wasn't an intervention that linked improved forest protection, with improved fuelwood supply. This was only implied. The requirement to link a sustainable / certified supply of fuelwood with certified charcoal production was mentioned in the prodoc, but no mechanism explained. As a result, for example, there was no charcoal production licensed, and the improved retort kilns weren't implemented. Moreover, there was no legal link between the project's local institutional structures and the forests they were

responsible for. Furthermore, the budget included significant sums (\$335,000) for tree nurseries and seedlings, when 'planting' inside naturally regenerating forest areas was not a technically sound option.

### Ownership

The ownership at local 'VAG' level was noticeable, in particular the enthusiasm for user / producer groups. However, the ownership by line agencies from district to province to national level was poor. This was in part due to UNDP controlling the project and not allowing much responsibility to the FD to implement the project. This in turn was partly due to the FD lacking the skills needed in certain respects, especially it appeared, in managing and communicating requirements to the partners for Component 2, namely ZEMA for the fire control, and for Component 3, namely DoE for the improved fuelwood production and use technologies.

### Additionality

GEF 'additionality' considers the added value of the GEF funding, above what it would have been without the investment. A table was presented in Section 3.5.

## Implementation - Execution

### Project Implementation - Overall Rating: Moderately Unsatisfactory

Project Implementation was assessed for the GEF Implementing Agency (UNDP) and the project Implementing Partner (MLNR / FD) according to five categories. These were: coordination & operational matters; partnership arrangements & stakeholder engagement; finance & co-finance; M&E systems; and adaptive management (work planning, reporting & communications). The project was supported by a FD-led PIU who also acted as the secretariat to the PSC. The project started in July 2015 when the prodoc was signed.

Some of the actions by both UNDP and FD under the five management categories did not lead to efficient and effective project implementation. i.e. there were significant shortcomings.

### Coordination & Operational Management by the Implementing Agency (UNDP)

The rating is **Moderately Unsatisfactory**

Planning Workshop (Aug 2014) - The FD Director noted that the communities and traditional leaders were not present. The meeting advised to ensure that community fire management was properly designed and not rely on high tech models. The TE findings were exactly this, that there remained no link between village fire control systems and national level collection of fire incidence / production of fire risk maps or early-warning on fire-risk.

Social & Environmental Screening (Feb 2015) - Includes a risk table, with only one 'high risk', that of 'restricting forest resources access to marginalised households', however the purpose of the project was 'through forest regeneration, to secure more forest products for local villagers.' Although, if fuelwood collection, charcoal production and grazing restrictions were instigated, then yes, the poorer households would be impacted upon. Fortunately, the project somewhat re-directed itself to include 'farming development interventions' which reduced pressures all round on the forest, making the impact of the poor on the forest less of an issue.

Project Appraisal Meeting (March 2015) – Again, it was noted that there was only one provincial FD representative, and no representatives from the districts. The following points were noted: MLNR was listed for a 2<sup>nd</sup> phase of decentralization to the districts in 2016, thus the community empowerment approach was in-line with government policy; The project will work with the Ministry of Chiefs and Traditional Affairs (MoCTA) to ensure validity of (and strengthen the) VAGs; and that the Forest Act (2015) now recognizes community-based natural resources management.

### Financial control

Under a UN HACT Framework, from project start to end, the project was under NIM with a reimbursement method based on activity-only invoices, and with direct procurement and payments to service providers. There were no direct cash transfers (funds advanced on a quarterly basis), and indeed there was no project bank account to receive such funds. From the start, UNDP had assessed the project's financial risk as moderate (and implemented such a cash transfer modality).

Whilst, the HACT Framework describes this cash transfer modality as one having a minimal impact on implementation, in reality the impact of such a method was significant. The reason being was that the IP (FD and their PIU) had zero flexibility on running activities. The IP was basically implementing (albeit from an approved quarterly plan) the activities that UNDP decided to 'pick and choose.' This resulted in a certain loss of interest in FD project management with project ownership at District Forest Office (DFO) level being minimal.

In September 2016, the accountant Deloitte, on behalf of UNDP, conducted a financial risk assessment to determine Harmonized Cash Transfer (HACT) transfer modalities under NIM, for MLNR, and other partners. Only Comaco was

deemed low risk and therefore eligible to manage project funds. All the others were deemed 'moderate or high risk'. No further assessment was possible within UN rules, for another two years.

In the case of MLNR / FD, the 'moderate risk' was given because the Ministry of Finance does not audit MLNR accounts, nor are their accounts following MoF procedures or in the public domain. However, one could say that UNDP financial project procedures, to advance funds based on a quarterly plan, invoice and re-imburement should have been acceptable, especially with UNDP's experience in project management and M&E.

It was brought to the attention of the PSC two years into a 5-year project (in July 2017), and the project having gone through a design phase from July 2013 (i.e. 4 years to this date), that the IP was financially unfit to manage the project, and furthermore they couldn't be reassessed until September 2018, i.e. about 18 months before project closure.

#### **Coordination & Operational Management by the Executing Agency / Implementing Partner (MLNR / FD)**

The rating is **Moderately Unsatisfactory**

##### Project Steering Committee

There were eight PSC meetings held. A further PSC meeting is planned for the end of 2020. The six PSC meetings held up to the end of 2018 were standard project-based meetings, mostly comprising of members as outlined in the prodoc, with the added usual inclusion of the FD, the Ministry of National Development Planning (MNDP), and the PIU (PM and Assistant), as the secretariat to the PSC. From 2019 onwards, a new 'All climate-change projects' PSC was constituted by the MNDP (chair). These meetings in 2019 and 2020 were attended by multiple ministries, and only 'rubber stamped' the CBRIF Annual Work Plan Budgets (AWPBs) for 2019 and 2020.

The first PSC (April 2016) was convened 10 months after project start, and approved the AWPB 2016, nearly five months in to the planning year, which was too late. In fact, the AWPB 2016 had been signed off on by FD / UNDP in February 2016. The PSC (2016-18) considered a number of issues [with TE comment]:

- ANRs (which were on customary land) post-project needed to be registered community trusts. (2016) [i.e. PSC understood the need to formalize / legalize the land tenure of the ANRs]
- Re charcoal, the need to link FD and Dept. of Energy (DoE), as FD licenses production, whereas the DoE promotes efficient use. (2016) [The institutional link between FD and DoE should have been clear in the prodoc. At this point, it was already 1.5 years into the project with a lack of urgency for inter-government collaboration by the FD / PIU]
- PSC informed that the IP (MLNR / FD) was not sufficiently accredited to manage UN funds. (2017) [The HACT assessment was undertaken in September 2016, so it took the PSC one year to be informed of this decision, and now over two years into the project. This meant that the MLNR had no financial management control of the project, as it remained with UNDP]
- Councilors' concern on charcoal delivered to the Southern African Alloy Ferro Limited manganese smelting plant (Serenje), but Joint Visit report by FD / ZEMA not circulated (2017)
- Reported that the 30 VAGs would apply to become CF Management Committees to manage the ANRs. Noted that CF establishment would provide greater legal security of the ANRs. (2018) [A decision should / could have been made here in 2018 to switch from VAGs to CFs, under the law.]
- It was noted that Comaco would now take the lead for Component 1, especially 'grants for livelihood activities.' (2018) [Comaco was the only entity to 'pass' the UNDP financial assessment, and was a significant change in the project to bring in Comaco to implement C1. But also bearing in mind, they were a key co-financier, but now would be a key service provider, i.e. recipient of GEF funds]

##### Project Management (UNDP / FD / PIU / DIT)

From the start UNDP always controlled the funds, despite NIM. UNDP were not really flexible in their application of NIM procedures, which range from akin to Direct Implementation Modality (DIM) (applied in this case) to more standard NIM where the nationally UN accredited government partner is able to manage the funds. UNDP financial control (despite NIM) affected implementation, with funds not released based on quarterly plan, but on an activity basis. Some activities were not completed as funds weren't released. It took time to get activities going. There wasn't an FD / PIU project bank account. Furthermore, UNDP took certain decisions, without the FD / PIU knowledge. The UNDP justification for the tight financial control, was due to the HACT audit, however it affected the working relationship with its IP, namely the FD and their PIU.

The PIU / PM was based in Lusaka, with the District Implementation Team (DIT) in the districts. The DITs lacked finances to hold meetings, which were not often formally convened, which meant that the PIU appeared to work more directly with the two DFO Project Focal Points, and not inclusively with the DIT members. Added to which

activities during 2016-18 were mostly undertaken by the national FD with their partners, until the Comaco contract began in 2018-2019. The role of Provincial FD was on an *ad hoc* basis only, E.g. ANR boundary identification.

The quarterly / annual plan approval process (PSC to UNDP CO to UNDP Regional Office in Addis Ababa to PSC), was too slow / inefficient, making the release of funds, and therefore activities late. By 2019, it had become more of a Comaco operation, with direct communication by UNDP to Comaco, leaving out the DIT role. This again added to the lack of project inclusivity with the top-down management-style.

There were indications, that insufficient UNDP staff time was given to CBRIF, especially in terms of technical direction and oversight. With UNDP financially running the project, there was a need to at least concurrently understand the farming and forestry calendars.

Due to the impact of Covid, there was little or no project activity from Feb - Aug 2020. It appeared to resume with the TE in August 2020, and furthermore, the FD / PIU in August / Sept remained in the field after the TE mission, to implement CF awareness activities. By August 2020, certain key activities had not been completed, with handover approaches needed. There were issues with: tractor sustainability; boundary markers & signboards, a solar panel converter unit, and importantly ANR status post-project. A PSC was planned for December 2020, with operational closure expected by end of 2020 (delayed due to Covid), with hard (financial) closure by end June 2021.

#### Project Infrastructure & Equipment

The project provided: 2 4WD Landcruisers – located at FD, and Serenje DFO; 2 tractors (80HP), trailers, disc plough & harrow - at each district DFO; 4 motorbikes – at each DFO; 10 laptops – 8 FD, 1 Serenje DFO, 1 Chitambo DFO; and 7 desktops - 7 FD; and built Chitambo Community Resource Centre (~a new DFO). There were a number of issues with the equipment and infrastructure:

- The FD / DFOs had no funds post-project, for the running & maintenance of the Serenje- based 4WD, or the four motorbikes. Also, there was no share agreement for Chitambo's use of the 4WD.
- The tractor at Serenje only had three wheels, with a replacement being not released by UNDP since March 2020
- Chitambo DFO / Resource Centre, had had no electricity for the last 18 months, due to the solar panel charge box having broken.

The two tractors were only being used for two months a year for ANR boundary work. They are not generating income, and therefore are not being sustainably managed. The FD has no added funds for their insurance, servicing and maintenance. The FD (at district and province) lacks an approved bank account to manage these tractors. Any 'hire receipts' have to go direct to the Treasury, so there is no incentive for FD to use them for the VAGs. Obviously, the more they are used by the VAGs farmers, the more they will reduce labour, and raise income, resulting in less forest dependency and more time for forest protection.

Thus, the TE indicates an integrated approach with the agriculture and forest offices working together. The proposed Tractor Management Option: National / District FDs sign an MoU 'Lending Agreement' with the District Agriculture office(s), to rent out to VAG / ANR farmers on cost-recovery basis, with a return to FDs for 2 months / year, with running funds for boundary work. The key is that Serenje District Agriculture office, already has a 'waiver account' for machinery (tractors) & already manage tractors, so the process is known to be sustainable.

#### **Partnership arrangements & Stakeholder Engagement**

Within the District Council, there is a District Development Coordination Committee, with meetings held quarterly. The FD is one of the members. The Decentralization Policy (2004) was designed to devolve administration functions down to DCs, however to date, the resources and funds to undertake activities, have largely remained centrally controlled. Albeit, there are differences between line agencies, with for example FD remaining centralized, whereas the Agriculture Department is more devolved.

The District Agriculture Department has a number of units and positions relevant to farming and forestry. The Agriculture Department has a strong technical presence at district and village level. It is also supported by their provincial agriculture office, who undertake the annual maintenance on their nine tractors working in the two districts. By contrast, the provincial and district FD is poorly staffed with a limited number of extension technicians.

Community Markets for Conservation (Comaco Ltd) promotes activities aimed at preserving natural habitats to enhance biodiversity. The Comaco model provides guidance to small scale farmers on climate-smart agriculture and supports processing and marketing.

Zambia Environmental Management Agency (ZEMA) – Is responsible for EIA and associated activities. The project engaged them to undertake Component 2 (C2), including ANR boundary demarcation works, and the preparation of ANR fire management plans with training.

Technology Development & Advisory Unit (TDAU, University of Zambia) – TDAU operates as a semi-autonomous engineering research and development unit. TDAU was utilized by the project, with an effective intervention. They designed and supplied the ‘crop residue to charcoal’ briquetting ‘drum and press’ sets.

Zambia Energy & Environmental Organization (Zengo) - On behalf of DoE, Zengo trained a few communities in the construction of cook stoves.

#### Gender Analysis

Using the ‘Gender Results Effectiveness Scale (GRES)’, the TE scored the project as: ‘Gender Targeted’ (focused on achieving equity in numbers of women, men or disadvantaged groups); and ‘Gender Responsive’ (focused on the differing needs of women, by trying to provide an equitable benefit share, but did not address the root causes of inequality towards women).

#### **Finance and Financial Management**

##### UNDP Financial management and Finance

Annual audits were undertaken 2016-18, with an audit not required in 2019. They indicated some issues, [with TE comment]: Audit 2018 – stated: DoE did not undertake training of charcoal producer groups in use of improved kilns or in briquetting from crop residues, and that the delivery of retort kilns was not undertaken. [This indicated a problem with this activity. The AWPB 2018 followed the Overall Work Plan and Budget (OWPB), but it didn’t seem tailored to the actual capacity or willpower to implement. There appeared to be a UNDP / FD / PIU planning and supervision issue.] Audit 2017 – noted that ‘the gauge for project success was being based on the rate of fund utilization, rather than project delivery,’ when ‘project success should be measured by effectiveness (delivery of desired outputs) and efficiency (use of the funds to achieve this.)’ UNDP response was ‘delivery is linked to the financial input, thus as all projected funds were spent in 2017, all outputs were attained’ (paraphrased). [However, for example, the AWPB 2017, included 50 briquette presses and 120 retort kilns (@\$137,500 in the budget). The kilns were not procured, thus the UNDP statement was incorrect.]

##### Co-financing

It was difficult to identify the role / co-financing in six out of the eight co-financiers. Co-financing was already noted as an issue during the MTR. The MLNR co-contribution (\$11.4m) originally included a 2<sup>nd</sup> phase of the National Tree Planting Programme (NTPP), which didn’t materialize. Thus with this tree planting budget / associated staffing removed from their expected contribution, (together with the subsequent fall in FD budgets post-NTPP, as it didn’t do well), and with the devaluation of the ‘kwacha’ currency ZMW from ~6.5 to ~20 to the dollar 2014-20, it probably meant that the MLNR’s contribution was significantly less, and estimated by the TE, to be ~\$5m. Comaco’s involvement was supposed to be co-financing (\$11m), however, they were then sub-contracted to work specifically with the VAGs in the five new ANR areas. Thus whilst, Comaco’s contribution nationally may have been \$11m, their direct co-contribution in the two project districts was probably nearer \$2m. Thus, the GEF / LDCF contribution was \$3.9m; with an estimated GoZ contribution at \$5m and Comaco direct contribution at \$2m, would suggest a project spend of ~ \$11m, as opposed to the total \$33m projected.

#### **Adaptive management (work planning, reporting & communications)**

##### Work planning

The Project Inception Workshop was ~2.5 months after the project began. The project staff were yet to be recruited. The 2015 Q4 workplan was presented, with site selection scheduled for October, once the PM was expected to be on-board. ZEMA was to lead Component 2, but fire management needed to be anchored within the FD. The collaborating institution (DoE) for Component 3 was missing from the meeting, as was a workplan for C3.

The Overall Workplan & Budget was informative as to how CBRIF was expected to be implemented. Financially, Component 1 was focused on ‘cash for forest planting work’ and buying / producing tree seedlings; C2 was focused on fire control equipment and ‘cash for forest fire control work’; and C3 was focused on retort kilns.

AWPB 2015 was signed by FD / UNDP in November 2015, with only one month to run before it ended. A note under project management indicated to hire a firm to conduct a UN HACT assessment (suitability / accreditation to manage UN GEF funds). Reporting their results back to the PSC took over two years. The procurement of four tractors was budgeted at \$99,500 (however later two tractors with equipment were procured for ~\$102,000, suggesting that the original costing had not been carefully undertaken).

AWPB 2016 was signed in February 2016, and AWPB 2017 was signed in January 2017. AWPB 2018 was only signed in May 2018, i.e. five months into the 12-month plan. AWPB 2019 was signed in January 2019 and included ambitious activities (by DoE), including the retort kilns which ‘didn’t happen’. C3 also included only \$13,000 for TDAU to assess the crop residue kiln, which was all too late in the project. Added to Comaco’s input into the AWPB, it looked like it

was prepared by another party in comparison to the previous four AWPBs 2015-18. AWPB 2020 was unsigned / undated, and in another new format. The plans followed too closely the prodoc expected outputs, when certain activities were just not being undertaken, but with CDR reporting, and generalised information in PIRs, there wasn't sufficient M&E to expose this.

#### Reporting and Communications

PIU record-keeping was poor with no standardized filename system, even for key meeting notes such as for the PSC and Technical Committee (TC) meetings. Annual reports followed an output-based progress table format, including the budget allocated and % spend. Quarterly reports with a similar format appeared to only be intermittently produced. The Exit Strategy (Handover Report) was only four pages long, although it did discuss the conversion of the ANRs with their VAGs to become CFs and respective CFMCs.

Three Project Implementation Reviews (UNDP PIRs) were assessed covering July 2017 to June 2020. No critical risks were mentioned until Covid-19 – 'Planned activities for 2020 especially field work has not been done. The TE was delayed, and also project closure.' The project hired quite an array of consultants, although the impact of some / many was perhaps limited or peripheral to the actual results of the project.

Concerning communications, the TE noted a certain lack of cohesion in project management, which became more pronounced once Comaco were awarded the large livelihoods contract. In particular, the DIT became somewhat side-lined. This was compounded by UNDP monitoring not being a prominent activity.

### **Monitoring & Evaluation**

#### Overall quality of M&E – Unsatisfactory

##### M&E at Design – Unsatisfactory

The standard M&E framework for these UNDP-GEF projects, is report-based, with PIRs for example, which unlike most annual reports, run from July to June each year.

##### M&E Implementation – Unsatisfactory

The main issue with the M&E was a lack of any tracking (spreadsheet) system, indicating progress against outputs, indicators, or inputs (service contracts for example), thus monitoring project progress would have been difficult. However, there was a detailed M&E plan, but there was little evidence that it was followed.

### **Sustainability**

**Sustainability:** According to the four GEF risk categories (financial, socio-economic, institutional & governance and environmental), present status, and towards the future is assessed. **Overall Rating: Moderately Unlikely**, i.e. there is a significant risk that key outcomes will not carry on after project closure, although some outputs should carry on.

#### **Financial Sustainability is Moderately Unlikely**

The forestry sector remains significantly underfunded in comparison to other sectors. At issue, is the fact that the FD struggles to generate funds as its only sources are from licensing timber felling and charcoal production, both of which directly damage the environment and accelerate climate change.

In 2021, the project interventions need to become self-financing, however the FD, under their budget cycle 2021, are unable to include (as ceiling amounts are pre-set by the Treasury and state planning offices), for example the costs of running the project vehicles or the new DFO at Chitambo. Moreover, the funds for maintaining the ANRs and their VAGs, are not there, from the FD side. In spite of this, the project / FD have been promoting CF for the last 2-3 years, but the FD lack the funds to now instigate this, post-project.

#### **Socio-Economic Sustainability is Moderately likely**

At present, the villager development model, is based on a revolving fund of goods, and not cash. Thus, if you wanted to become a bean or goat farmer, then project inputs were provided, on the condition of a percentage of seed return post-harvest. However, such a model is limited to those with land, and / or an interest in the particular farming interventions. Vulnerable households (such as the poor, landless, young mothers with children with no time to labour, or seasonal labourers) can't easily access such interventions. Therefore, for in order to support diversification, it is recommended that village saving and lending schemes are introduced.

The villager conservation model, is also based on improved forest protection (e.g. stopping the late burn after August, stopping fuelwood collection, and stopping charcoal production) to increase non-timber forest products (NTFPs), for which there is a ready-market. The NTFPs (honey, Mopane caterpillars, mushrooms) provided added income, making the value of maintaining the forest higher than from otherwise making charcoal for example. Added to this, with increased managed protection, the timber / wood volume is becoming more available (thus can be sustainably managed in the future). Also, added biomass supports carbon sequestration, and provides options for carbon credits, which has been demonstrated in Eastern Province, and is a model Comaco are hoping to replicate in the project area. Furthermore, if put together, a standard 'conservation and development' model can be seen – conserving the forest

in return for receiving revolving farming development inputs. Whilst the farming inputs were not originally part of the project design, their provision and success in generating on-farm income, has made the protection of the forests sustainable.

#### **Institutional & Governance Sustainability is Moderately likely**

The main institutional structure created by the project was the VAG. The main objective of the 30 VAGs was to govern the five ANRs. For sustainability, the VAGs need to be formally linked to the ANRs, which are located on customary land. The mechanism through which this can now happen is community forestry (CF).

In terms of institutional governance, FD lags behind under the decentralisation policy. Much more should be made of the capacity of the provincial FD to support local forest management. Indeed, the one major input of the Kabwe office, was the identification and mapping of the five ANR boundaries. But in order to support CF in the future (e.g. boundary mapping, CF management plan with inventory, monitoring system etc), they need to be at least fully staffed (which they are not), and provided the resources to work in the field.

#### **Environmental Sustainability is Moderately likely**

Comaco have Community Conservation Areas (CCAs) in the two districts (~37,000 ha), with group agreements on farming support in return for improved management of the forest CCAs. These are equivalent to the ANRs. The clear option at present is that Comaco adopt the five project ANR areas, which they are willing to do. If and when, these areas are converted to CF, then this would improve their sustainable management and official status.

Post-project, the fire maintenance activities need to continue, however these are not really sustainable without further funds. For the maintenance of boundaries and fire breaks, the VAGs either need to provide 'community labour days' or generate a tax from the NTFPs being sold from these forests, for the purpose of paying for the clearance of boundary lines, and fire control monitoring.

#### **Impact**

Impact: According to the three GEF 2012 categories (Significant, Minimal or Negligible), present status and towards the future. The overall rating for impact would be Minimal.

#### **Reduction in stress on ecological systems**

The area covered by the project 156 km<sup>2</sup> (15,560 ha) is very small in comparison to the land area in Serenje (23,351 km<sup>2</sup>) and Chitambo (5,252 km<sup>2</sup>) districts, much of which is forested, but significantly degraded and under on-going pressure.

The overall rating for impact would be 'Minimal'. SFM remains fairly weak. However, the most important point is that the area covered by the project 156 km<sup>2</sup> (15,560 ha) is very small in comparison to the land area in Serenje (23,351 km<sup>2</sup>) and Chitambo (5,252 km<sup>2</sup>) districts, much of which is forested. Furthermore, of the forested land, the two districts annually burn an area covering over 5,250 km<sup>2</sup> (525,000 ha), thus the project area equated with ~3% of this.

#### **Regulatory & policy change**

The ANR land given by the chiefs, was for the project duration, and so now lacks an effective legal status, despite endorsement by the FD (as the ANRs were located on customary land, and not in State forest land.) To solve this issue, the VAGs need to become CF management groups. Under the Forest Act (2015), a CF management committee (board) can manage a CF area, and its standing resources for the long-term purpose of forestry. The Forest Act (2015) legalised CFs, with a registered group, constitution, and CF management plan (CFMP), which the FD endorses, and is brought into law under ministerial Statutory Instrument. The details were set out within the CF Regulations (2018).

However, under the Lands Act (1995), the MLNR's Land Administration Department can issue a 99-year land leasehold certificate, which would ensure 'sustainable use for forestry purposes' and empower a community to stop land appropriation for other uses. Thus, a registered VAG would be afforded greater legal status, if once they have completed the basic CF steps, they then applied for a CF leasehold certificate (up to 99 years). This would effectively advance the CF from customary or state land, to become tenured.

Why make CFs and legalise through tenure certification? The CFs (as demonstrated by the project ANRs) can: generate income (NTFPs, carbon credits); address the imbalance toward agriculture land conversion; and mitigate against climate change (less GHGs via carbon capture). At present, the ANRs remain at risk, unless they secure such tenure.

#### **Catalytic Effect**

##### Theory of Change

A 'theory of change' pathway was prepared and is presented in the main report

##### Scaling-up and Replication

The project's best example of scaling-up or replication was the 'revolving fund' model for agriculture and livestock inputs. The replication (collection) of *Gliricidia* seed for further distribution, was of benefit to the farmers in fuelwood

production (as it readily coppices), in soil-fixing of nitrogen as it is a leguminous tree, and indirectly in taking 'pressure off the forest,' and in labour-saving in reducing the need for fuelwood collection.

#### Demonstration

The creation of participatory fire management plans for the forest areas was opportune, especially when measured against the traditional biannual burning of the forest, which was degrading it.

#### New techniques / approaches

Whilst CF wasn't part of the project design, (because it didn't exist prior to 2015), it became the main approach and future direction for the ANRs and their VAGs. Hopefully within the next 5-10 years, the development of CFs with CFMPs, should eventually allow for the sustainable extraction of wood resources, which will counter-balance the unsustainable supply / demand of charcoal. In this context, mobile twin-drum retort kilns may be managed on a VAG level for 'licensed' charcoal production. The 'crop residue to charcoal' briquetting 'drum and press' system was successful, but needs promotion, and a press than can be locally made by blacksmiths.

## Conclusions

The project tried hard, but it was hampered somewhat by a poor design, that didn't understand forestry or natural resources management in an institutional context. Tree planting was planned, when tree planting wasn't a suitable action to regenerate the miombo woodlands. Then tree coppicing was proposed when tree coppicing wasn't a suitable action in the face of a 'slash and burn' culture within degraded woodlands. Then charcoal production was proposed, when it needed to be stopped, at least until the woodlands had regenerated, and thereafter needed to be licenced as sustainable. Moreover, all these measures, were foreseen without preparing a forest management plan, which of course would be needed to measure a sustainable supply of wood for charcoal. 'Assisted natural regeneration' was offered as the solution, but without substance, except 'agro-forestry', which again indicated a design not understanding forestry. Whilst the design concept and intentions may have been acceptable, the project itself needed a 5-year real-time plan to get to the stage, where the forest ecosystem was fully functioning and tree growth was across age-classes, ready to be sustainably managed for fuelwood and charcoal. However, the project design was lacking in this, despite its lengthy descriptions of the miombo woodlands and figures on rotational harvesting for charcoal taking 18 years, under a 5-year project.

The project set-up institutional structures to manage designated forest areas, but within the legal system, it was unable to consolidate this advance on local NRM. Although from 2018, it could have done, through piloting an ANR to become a CF, under the CF regulations of that year. This would have provided the legal link between the institutional structures (the VAGs) and the forests (ANRs). This would have been an extra task and an advance on the project design. Indeed, the project in the same year, did make a major change in the project design, in becoming smallholder farming development-oriented, i.e. becoming a 'conservation and development project', thus providing the economic link between farmer and forest. This was very successful. However, with CF, the project missed an opportunity there, and despite 'talking about CF', such an actual move towards piloting it, would have provided much kudos to the FD.

## Lessons Learned

- If the village forest conservation and village development approaches are put together, a standard 'conservation and development' model can be seen – conserving the forest in return for receiving revolving farming inputs. Whilst the farming inputs, were not originally part of the project design, their provision and success in generating on-farm income, has made the protection of the forests sustainable.
- If you wish to license charcoal production, then you need a forest management plan with volume inventory and monitoring system to demonstrate a sustainable 'annual allowable cut', bearing in mind NTFP, carbon and other ecosystem / livelihood values.
- Community Forestry has arrived in legislative terms. Whilst, the VAGs and ANRs exist, there is a perfect opportunity to make the advance to CF for these project demonstrations.
- Skilled foresters are needed for CF establishment and for preparing CF management plans with forest inventories and allowable cuts for sustainable charcoal production. This means that provincial forest offices need to be appropriately staffed with trained foresters, and resourced to be able to go to the field.
- The fire management plans provided a template and system for local fire control, including prohibition and enforcement against late-burning of the forest (which was damaging the forest), but without signboards,

boundary-markers, and boundary fire-breaks maintained, the plans may not be effective<sup>2</sup>.

- The 'crop residue to charcoal' briquetting process needs promotion as does the on-farm production of *Gliricidia* trees, which can be coppiced for fuelwood.
- Community radio farming programmes had an impact not only on best-practice CCA techniques (e.g. climate-smart agriculture), but they also provided a forum for concurrently promoting forest conservation and generating a sustainable income from it.

## Recommendations

### Exhibit 4: Key Recommendations Table [with responsible entity]

1. The National FD sign an MoU 'Lending Agreement' with the District Agriculture Coordinators Office(s), to provide the two tractors to them. This so that the DACOs can rent out the tractors to VAG / ANR farmers on cost-recovery basis, and with sufficient profit for maintenance, insurance and for forest boundary work for two months a year. [National FD, the two DFOs in Serenje and Chitambo with the two DACO offices, with UNDP to draft the MoU and act as a witness] (by March 2021)
2. National FD – enter in their 2021 plan and budget – 'to pilot two Community Forests (CFs) in Serenje and Chitambo' [National FD]; and UNDP to assess if the GEF Small Grants Program can supply some funds towards this [UNDP] (according to the budget cycle)
3. Provincial FD to receive the project Toyota Prado 4WD (or equivalent), so that they can support CF in Serenje and Chitambo, especially in the survey and inventory work for CFMPs [National FD] (within one month of financial closure of the project)
4. UNDP and MLNR / FD jointly write to the three project chiefs to request support that the ANRs can become CFs in the future [UNDP with MLNR / FD] (by end of project)
5. The ANR boundary pillars and signboards need to be erected, with a VAG maintenance agreement [ZEMA with FD / UNDP to supervise] (by June 2021)
6. The 'crop residue to charcoal' briquetting 'drum and press set' needs: a press that can be locally-made designed for it, or locally-sourced at a reasonable cost; a promotion leaflet with website supplier listed; be adopted by DoE as an improved energy-efficient technology [TDAU / DoE, with support from UNDP] (by end of 2021)
7. All equipment and infrastructure needs servicing before handover, including the tractors, and the solar power inverter at Chitambo DFO. [FD / UNDP] (by financial closure of the project)
8. Post-project, for the maintenance of boundaries and fire breaks, the VAGs either need to provide 'community labour days' or generate a tax from the NTFPs being sold from these forests, for the purpose of paying for the clearance of boundary lines, and fire control monitoring. [FD / DIT to advise the VAGs] (by June 2021)

Full report:

<sup>2</sup> The IP has since indicated that the procurement of boundary markers and signboards has begun

# 1. INTRODUCTION

## 1.1. The project

The UNDP-supported GEF (LDCF)-financed project was titled 'Promoting Climate-resilient Community Based Regeneration of Indigenous Forests in Zambia's Central Province (PIMS 4712). The project was implemented in and around five Assisted Natural Regeneration Areas (ANRs) in two districts – Serenje and Chitambo in Central Province. The project was approved by the Ministry of Finance & National Planning in July 2015, and was due to end in June 2020. The 5-year project was under National Implementation Modality (NIM) with the Ministry of Lands & Natural Resources (MLNR) as the Executing Agency, and their Forestry Department (FD) as the designated Implementing Partner (IP). The project's main other partners / responsible parties were: Zambia Environmental Management Agency (ZEMA) implementing Component 2; and the Department of Energy (DoE, Ministry of Energy) implementing Component 3. Other service providers included a social enterprise company – Community Markets for Conservation (Comaco), and the Technology Development & Advisory Unit (TDAU) of the University of Zambia. A Project Implementation Unit (PIU) was established and located within the FD. The FD's PIU and UNDP were supported by a Project Steering Committee (PSC).

## 1.2. Purpose of the evaluation and report structure

### Purpose & Structure

This is an independent analysis of the project, known as the Terminal Evaluation (TE). The objective of the TE was to evaluate the achievement of the project at completion, as well as to assess its sustainability and impact. The report focuses on assessing outcomes and project management. The TE additionally considered accountability and transparency, and provided lessons-learned for future UNDP-GEF projects, in terms of design and implementation. This report is in six sections - introduction, description, findings, sustainability, impact and conclusions / recommendations. The UNDP-GEF rating scales are described in section 1.5. The findings (section 3) are additionally divided into strategy and design, implementation and management, and results.

## 1.3. Scope and Methodology

### Approach

The approach and methodology of the evaluation followed UNDP-GEF guidelines<sup>3</sup>. The TE was an evidence-based assessment, which relied on cross-referencing four sources of information - stakeholder interviews, field observation, project documentation (**Annex 7**), and a brief review of relevant literature. The international consultant was the team leader and responsible for quality assurance, consolidation of the findings, and preparation of the TE report. The field mission took place from 7<sup>th</sup> August – 3<sup>rd</sup> September 2020, according to the itinerary compiled in **Annex 10**<sup>4</sup>. The agreed upon agenda included a UNDP briefing on 18<sup>th</sup> August and a stakeholder workshop on 1<sup>st</sup> September. There was a particular security (health & safety) issue which affected the TE, which was the presence of the corona virus, Covid-19. Special precautions were undertaken, in following all Government of Zambia health requirements. A 4WD vehicle was provided for the field travel, with the TE accompanied by the FD and the PIU PM, among other staff.

### Methods

The TE determined if the project's building blocks (technical, financial, management, legal) were put in place and then, if together these were catalysed sufficiently to make the project successful. The TE method was to utilise a 'multi-level mixed evaluation', which is useful when evaluating delivery of a new service or approach, being piloted by state institutions. The method is suitable for finding insights which are sensitive and informative. The rating scales are provided in **Annex 9**. Pro-forma questions on key themes such as those provided by the UNDP-GEF guideline were updated by the TE (**Annex 14**).

The overall approach and methodology of the evaluation followed the guidelines outlined in the UNDP Guidance for Conducting Terminal Evaluations of UNDP-supported, GEF-financed Projects. The TE was an evidence-based assessment, which relied on cross-referencing four sources of information - stakeholder interviews, field

<sup>3</sup> Guidance for conducting Terminal Evaluations of UNDP-supported GEF-financed projects (UNDP 2012, 2020); and Guidelines for GEF Agencies in Conducting Terminal Evaluation for Full-sized Projects (GEF 2017)

<sup>4</sup> The extended period was due to 2 weeks Covid-19 regulation quarantine on arrival

observation, project documentation (**Annex 7**), and a brief review of relevant literature<sup>5</sup>. The international consultant was the team leader and was responsible for overall quality assurance and consolidation of the findings of the evaluation and provide the TE report.

### Main partners and Stakeholder feedback

The TE team used a triangulation approach combining observations, informal discussions with the implementing agencies (government, agency, NGOs) and beneficiaries. The TE team interacted with the PIU Project Manager, the UNDP Country Office as well as with project-associated staff in the FD, local government staff in Central Province and the two project districts, and the Village Action Groups (VAGs). The TE visited the project areas to work with local administrators, technical staff and beneficiaries. Gaining a representative view from local stakeholders was limited by time, and Covid-19<sup>6</sup>. Additional telephone / email interviews with the stakeholders were arranged as necessary. **Annex 6** provides a list of people that the TE met and **Annex 10** is the mission schedule. Focus group discussions, and key informant interviews at village level were undertaken. Women were included in those invited to join the discussions. The TE ensured that they had equal opportunity to speak.

### Ethics

The review was conducted in accordance with the UN Ethical Guidelines for Evaluators, and the reviewers signed the Evaluation Consultant Code of Conduct Agreement form (**Annex 15**). In particular, the TE team ensures the anonymity and confidentiality of individuals who were interviewed and surveyed. In respect to the UN Declaration of Human Rights, results are presented in a manner that clearly respects stakeholders' dignity and self-worth.

## 2. PROJECT DESCRIPTION

### 2.1. Development Context

#### GEF-5 Least Developed Countries Fund (LDCF) / SCCF Focal Area – Climate Change Adaptation (CCA)

- CCA-1: Reduce vulnerability of people, livelihoods, physical assets and natural systems to the effects of climate change, including variability, at local, national, and global level [source PIF; prodoc]
- CCA-2: Strengthen institutional and technical capacities for effective CCA [source prodoc]
- CCA-3: Promote transfer and adoption of adaptation technology (LDCF) [source PIF]
- Specific contributions to these objectives are described below:
  - Component 1 (C1) will reduce sensitivities to climate change through the implementation of agro-forestry (A/F) practices and assisted natural regeneration (ANR) of forests. This is aligned with LDCF Objective CCA-1. In addition, C1 will strengthen adaptive capacity through the establishment of VAGs. These will enable community ownership of the project interventions. Furthermore, these VAGs will be responsible for overseeing the implementation of community-based natural resource management. This is aligned with LDCF Objective CCA-2.
  - Component 2 will strengthen adaptive capacity of communities through implementing training & awareness focused on fire management and monitoring. This is aligned with LDCF Objective CCA-2, Outcome 2.4 'Strengthened adaptive capacity to reduce risks to climate-induced economic losses.'
  - Component 3 will support energy efficient charcoal production and wood saving technologies. This is aligned with LDCF Objective CCA-1, Outcome 1.3 'Climate-resilient technologies / practices adopted & scaled-up'. C3 will also support training activities, which will strengthen the capabilities of foresters & communities. This is aligned with LDCF Objective CCA-2, Outcome 2.4 'Institutional / technical capacities strengthened to prioritise, implement, and monitor adaptation strategies'.

#### Sector-wide linkage with the International Community

- UNFCCC ratified by Zambia (1992). As an Annex 1 party, Zambia developed a National Adaptation Programme of Action (NAPA, 2007) and was eligible for LDC funds to implement priorities identified in their NAPA.
- Nationally Determined Contribution (NDC, 2015) – Under 19<sup>th</sup> / 20<sup>th</sup> Sessions of UNFCCC – CO<sub>2</sub> emission reduction is dependent on US\$35 billion from donors (with \$15b from Zambia) by 2030
- Forest reference emissions 2016 – submission to UNFCCC

<sup>5</sup> Evidence and verification of the findings will be based on respondent interviews (usually at least 2-3 sources), and cross-referenced against project documentation, field observation and desk study, scientific or other published reports.

<sup>6</sup> UN House was closed during the mission, with UNDP staff unable to meet or go to the field. A number of other stakeholders were also unable to meet the TE. This meant a number of meetings needed to be switched to communication by Zoom for example. This was with mixed success.

- Zambia has ratified UNCBD and UNCCD (both 1992)
- The project contributes towards the UN 2030 Sustainable Development Goals (SDGs. 2016)<sup>7</sup> and their targets in particular<sup>8</sup>: Goal 1, SDG target 1.1 (eradicate extreme poverty); Goal 12, SDG target 12.2 (achieve the sustainable management & efficient use of natural resources); and Goal 13 (urgent action to combat climate change and its impacts) including its targets 13.1 (strengthen resilience & adaptive capacity to climate-related hazards & natural disasters) and 13.2 (integrate climate change measures into national policies, strategies and planning).
- UN Development Assistance Framework (UNDAF, 2011-15) - Outcome 4 – Climate change, Environment and Disaster Risk Reduction and Response
- UNDP Country Programme Document for Zambia (2016-21)
- UNDP Country Program Action Plan (CPAP, 2011-15) - Focus Area 2 (Sustainable Environment & Climate Change), Output 2: Vulnerable communities better equipped when faced with climate change; Output 3: More effective interventions for the environment and ecosystem
- UN 2030 Reducing Emissions from Deforestation & Forest Degradation (REDD, 2015) - identifies the drivers of deforestation & forest degradation. The project is aligned with: Objective - 1: national / local forests are managed and contribute with ecosystem services; 2: high value forests in open areas are managed; and 4: good agricultural practices that mitigate carbon emissions adopted.

### Project linkage to National Planning

- National Adaptation Programme of Action (NAPA, 2007) - Identifies climate adaptation interventions with 10 priority projects, which target small-hold farmers, the poor, women & children. The project responds to NAPA priorities 2, 4, 5 & 6: alternative sources of livelihoods for communities living around wildlife areas; critical habitat management; natural regeneration of indigenous forests; adaptation of land-use practices in light of climate change.
- National Climate Change Response Strategy (NCCRS, 2010) - facilitates a coordinated response to climate change. The objective is to climate-proof vulnerable economic sectors, such as the forestry sector.
- 7<sup>th</sup> National Development Plan (7<sup>th</sup> NDP, 2017-21), 158pp - NDP moves towards an integrated multi-sectoral planning approach under the theme 'Accelerating development efforts towards the Vision 2030'. The NDP goal is to create a diversified / resilient economy and socio-economic change driven by agriculture. The plan responds to Smart Zambia Agenda 2064, which is in support of UN 2030 Agenda for Sustainable Development & African Union Agenda 2063.
- Vision 2030 is a planning tool which targets: improved food security & climate-resilient livelihoods; socio-economic development & the promotion of integrated environmental management; and sustainable use of natural resources.
- Gender Policy (2000) recognizes the gender disparity, where women remain a disadvantaged / more vulnerable group
- National Decentralisation Policy (NDP, 2010): decentralising decision-making / resources; a district-level system of bottom up planning / budgeting; and promoting accountability in the management of resources.
- National Environment Policy (NEP, 2005) identifies ministries involved in environmental affairs; highlights shortfalls in their policies: ineffectual mechanisms for community-based NRM; weak inter-sectoral links; and inadequate national guidelines for integration of international environmental conventions
- National Biodiversity Strategy Action Plan (NBSAP, 2015-25) - The project ANRs were located close to protected areas, in particular the Kasanka National Park
- National Agricultural Policy (NAP, 2013) supports a competitive agricultural sector with Objectives: 9: To improve food and nutrition security; 10: To promote the sustainable management and use of natural resources; 11: To mainstream environment and climate change in the agriculture sector.
- Sustainable Energy for All - Goal is to provide reliable, affordable and environmentally sound energy for sustained social and economic development. To enhance power supply
- Lands Act (1995) – provides for the leasehold certification of land holding (99 years), taking into account customary land laws / local Chief consent.
- National Forestry Policy (NFP, 2014) - a framework for sustainable forest management to: contribute to mitigation & adaptation to climate change; and improve livelihoods of communities through participatory forest management
- Forests Act (2015) – Defines Community Forests (CFs)
- Forests (CF Management) Regulations (2018) [Statutory Instrument 11 of 2018, Forests Act 2015] - A CF means a forest controlled, used / managed under an agreement between a CF management group and the FD. CF can be applied on land that falls under customary authority as well as in State forest, and Open areas, Game Management Areas and any

<sup>7</sup> Report of the Inter-Agency & Expert Group on SDG Indicators (E/CN.3/2016/2/Rev.1), Annex IV, Final list of proposed SDG indicators <https://sustainabledevelopment.un.org/content/documents/11803Official-List-of-Proposed-SDG-Indicators.pdf>

<sup>8</sup> Originally the project was expected to contribute towards attainment of MDG 1 (eradicating extreme hunger & poverty), & MDG 7 (achieving environmental sustainability). MDG 1 corresponds with SDG target 1.1, and MDG 7 corresponds with SDG target 12.2

other type of forest at the discretion of the Director of Forestry.

- Community Forestry – National Guidelines (Draft May 2018) – pp41 – supported by Ministry of Foreign Affairs, Finland
- Environmental Management Act (2011)

### Linkage to donor-projects

- Zambia - China - Cooperation on Renewable Energy Technologies Transfer Project – rural electricity
- AfDB - Strengthening Climate Resilience in the Kafue Sub-Basin
- GCF - Strengthening Climate Resilience of Agricultural Livelihoods in Agro-Ecological Regions I and II
- UNDP - Nationally Determined Contribution (NDC) Support Programme
- GEF-5 - Strengthening Management Effectiveness and Generating Multiple Environmental Benefits within / around the Greater Kafue National Park & West Lunga National Park (2014 -19)
- World Bank - 9.8 Strengthening Climate Resilience in the Barotse Sub-basin
- Zambia Integrated Forest Landscape Project (ZIFLP)
- UNFCCC 3<sup>rd</sup> National Communication – ZEMA

## **2.2. Problems that the Project Sought to Address**

### **2.2.1 Environmental Issues**

#### Problem statement<sup>9</sup>

Miombo woodlands used to be productive and resilient ecosystems, which provided communities with livelihood support. However, poverty, inequality, lack of management, and unsustainable use have degraded them. This is compounded by climate change, with their regeneration potential being reduced. In particular, over-exploitation (land conversion and charcoal production – for the urban market) and the increased frequency of fire, have accelerated their degradation. Thus, the woodlands are now unable to effectively provide for livelihoods, or act as an adequate carbon sink against climate change.

#### Land conversion, degradation, tenure and management

The most common land change practices harming the woodlands and their regeneration potential are: land conversion to agriculture; expansion of settlements and associated infrastructure; shifting cultivation; illegal tree logging; charcoal production for commercial, state (schools, hospitals), and domestic use with inefficient cookstoves; and late burning / uncontrolled fires in the dry season.

A typical practice involves clearing forest for shifting cultivation and then abandoning the area a few years later as unproductive, thus leaving the land exposed to rain and sun; the soil structure and nutrients are then eroded away and it becomes very difficult for the forest to regenerate. Most charcoal production occurs on public land (i.e. customary, as opposed to state or private) where there is little incentive to conserve forest, replant trees or practice low-impact rotational harvesting techniques. Instead, most trees are felled at ground level, thereby limiting the capacity for woodland to regenerate.

The FD is not capable of providing day-to-day protection and management of the National Forest Estate, let alone forested areas outside. In terms of forest encroachment, almost all the Protected Forest Areas in the province have been encroached. Out of 25 Local Forests, only five have not been encroached.

#### Fire

Miombo woodlands are a 'fire-climax' ecosystem which is adapted to periodic cycles of fire, as a result of the accumulation of plant litter below the open woodland canopy. However, as a result of deliberate and more frequent burning, which is exacerbated by climate change, the woodlands are now subject to fires of higher intensity. The increased frequency and intensity of fires reduces the ecosystem functioning, including for corresponding carbon sequestration. Soil fertility is reduced by the loss of nutrients as a result of repeated burning of biomass, and erosion. The persistent removal of vegetation results in the increased oxidation of soil organic matter, and thus damages soil structure, and moisture-retention, leading to (wind and water) erosion. Fire can also change the composition of woodland, promoting fire-resistant species (e.g. with thick corky bark) at the

<sup>9</sup> The problems in this section 2.2 are partly a re-presentation of the prodoc / PIF issues (where they are fully referenced), but the section has been substantially re-written and edited with addition.

expense of fire-susceptible species.

Research on miombo vegetation has indicated that continued annual / biannual fires result in increased mortality of young and mature trees, reduced recruitment and establishment of tree seedlings, and a shift towards short-lived fire-tolerant grass and shrub species. Model predictions suggest that sustained annual fires will result in a conversion of miombo woodland to a treeless landscape with a net reduction in ecosystem biomass, as well as increased vulnerability to climate change.

In addition, early-season fires (which are less intense and less extensive than late-season fires) due to the higher moisture in the vegetation and less accumulated litter, burn at lower temperatures, and have a more neutral impact on miombo tree growths. In the long term, the increased incidence of late dry season fires, will change the landscape to one of low density of shrub / trees, with limited natural resource or climate value.

Communities burn vegetation more frequently now compared with traditional practices, thereby destroying seed banks. In addition, communities have shifted the times of the year during which they burn from early (March–June) to late (October) in the dry season. Such repeated burning of miombo in the late dry season<sup>10</sup> leads to a reduction in woody plants. Consequently, the regeneration potential of these woodlands is being reduced.

### Charcoal

During the 1990s, regulations relating to charcoal production, including fuelwood collection, weakened, as did traditional modes of governance. As a result, forest ecosystems have been over-exploited. Importantly, fuelwood supplies energy for ~90% of households and provides income for a significant portion of rural communities. In particular, charcoal provides ~70% of Zambia's energy requirements. However, a licence is not required for charcoal production, only its transport. Because Zambia is urbanizing at a rate of 3-4% per year, the demand for charcoal is increasing in the absence of cost-effective alternatives. Historically, charcoal production was restricted to the dry season (Aug–Nov), however, its production during the rainy season (Dec–Feb) is becoming more frequent. Importantly, ~62% of the charcoal that is transported into Lusaka is sourced from Central Province. It is estimated that, by 2030, the national deforestation rate attributable to charcoal production will be 51,866 ha per year.

Charcoal production is a particularly damaging activity due to the destructive method of harvesting the entire tree, as well as the carbonization process which involves the controlled burning of piled logs in an improvised 'earth kiln'. These earth kilns are inefficient, seldom achieving a wood-to-charcoal conversion efficiency of more than 20%. They also cause extensive localized soil damage due to their intense heat.

### Population and Food Security

From 2000-10, the population of Central Province increased by over 250,000, (~20% increase). Central Province is the country's major food / crop producer (maize, potato, tobacco, cotton), including a high number of commercial farming blocks. Despite improvement in household vegetable production, unsustainable shifting cultivation is practiced on customary land. As a result, it is one of the provinces with the greatest area of deforestation from farmland expansion. It is a common practice to grow vegetables along river banks. With the population increase, more people than ever are doing this, which is increasing soil erosion and sedimentation. Several perennial rivers have either become seasonal (drying up around Aug–Sept) or have dried up, which is illustrative of the localized impact of degradation combined with climate change.

### Climate Change

Climate change projections outlined in Zambia's National Adaptation Programme of Action on Climate Change (NAPA, 2007), and the 1<sup>st</sup> and 2<sup>nd</sup> National Communications (2002, 2004) to the UNFCCC show an increase in: temperature; and rainfall variability, with regards to seasonality and intensity. Analysis of temperature trends over the last 30 years supports the trend of warming, and indicates that summer temperatures have been increasing at a rate of ~0.6°C per decade. Similarly, baseline data shows that rainfall in the southern African region has been decreasing over the last 25 years.

Climate projections reported by the IPCC AR4 indicated that Africa is very likely to warm by 3-4°C during this century, which is predicted to be greater than the global mean temperature increase. Assessments for Zambia suggest that projected temperatures (between 2010-70) will likely increase relative to baseline temperatures (between 1970 and 2000) by ~2°C (HADCM3 Global Circulation Model).

Currently, Zambia experiences an annual evapotranspiration (1,394–1,892 mm) that exceeds average rainfall

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<sup>10</sup> Weather is also hotter mid-Aug – mid-October – making the fires more intense / damaging

(~684 mm between 1970 and 2000) resulting in a precipitation deficit of up to 1,100 mm each year. Climate change is likely to exacerbate this with negative consequences for agriculture, biodiversity and water resources. IPCC projections indicate that rainfall in the southern African region may decline by ~15% by 2050 due to climate change. Within Zambia, a reduction in rainfall is envisaged for the hot, dry season (from Sept to Oct) and an increase expected in the rainy season especially (from Dec - Feb). Moreover, rainfall impact during wet seasons is predicted to increase, which is likely to cause more frequent and severe flooding events. Added to this, the higher wet season rain intensity, is likely to be offset by warming and loss of water via evapotranspiration.

The main effects of these climate projections are longer droughts, localized floods and a shorter growing season. Currently, this climate variability has adverse effects on food and water security and quality, energy and sustainable livelihoods. These effects are predicted to become more severe in time.

Carbon loss

Carbon sequestration depends on biomass and its net primary production, which for the miombo woodlands is ~9 - 16 tonnes / ha / year. It is estimated that the annual loss of carbon from late season fires (which is a significant issue) is 1.32 t/ha in miombo forest. In Kafue National Park (in the centre of the greater Miombo Ecosystem) an average of 1.25 million hectares burns annually. Thus, late season fires ‘cost’ Kafue NP 839,209 tons CO<sub>2</sub> per annum. Integrated fire management is therefore essential for forest conservation, ANR and as a part of any sustainable CCA strategy.

**2.2.2 Incremental Cost Advantage / Environmental Additionality by Design**

The purpose here is to indicate why a particular environmentally sound option was chosen, against a ‘without project’ baseline.

Baseline (without project)	Alternative (with increment)	TE Comment
Slash & burn shifting cultivation will continue. Forests will not regenerate and thus not add value to livelihoods. Vulnerability to climate change will increase. Conflict among forest users will increase	ANR is a low-cost, community-based regeneration method. Overharvesting of key species will be reduced via management of wood stocks by VAGs. Fuelwood collection zones & coppicing guidelines will be established  A/F is a cost-effective alternative to high-input cropping practices, that can degrade the soil.	Slash collection of fuelwood was reduced through protection of woodland, and the on-farm planting of A/F species <i>Gliricidia</i> which can be coppiced for fuelwood.
Continued late (/ dry season) burning will further degrade the forest, exacerbated by climate change, leading to a damaged old growth trees without vegetative reproduction or natural seedling regeneration. Ecosystem services lost (soil & water erosion, higher evapo-transpiration, less groundwater recharge, less GHG carbon storage)  Forest regulations are not applied in managing indigenous forests	Integrated fire management (using GIS) with local fire management (VAGs district forest staff, DCs) will allow controlled burning to maximise regeneration potential.  Firebreaks will be established around ANR sites, with awareness.  Target to reduce fire incidence by 25% annually  The regulations include forest management, fire monitoring.	The designated end of the seasonal burning was brought forward to the end of August, in order to stop the hotter and more damaging later month fires.  Fire was not controlled as a result of the Forest Act, but rather via community action with the support of local chiefs.
Charcoal producers (with low incomes) will continue to deforest. Inefficient fuelwood / charcoal cooking and fuelwood collection practices  The conversion efficiency of earth kilns – wood to charcoal is ~15% only. The tubers and seed bank around earth kilns are also	Rotational coppicing and improved kilns will halt deforestation on 15,000 ha <sup>11</sup> . The number of charcoal producers will be limited under this method, however with improved kilns the volume of charcoal per unit of wood will double. Retort kilns increase efficiency wood conversion rate to 35-40%. In addition, briquetting from crop residues will reduce pressure on the woodlands. Targets: 1/ Sustainable charcoal schemes in 20 VAGs with:	Coppicing within the woodlands was not a suitable technique.  Improved kilns were not applied, as indeed they were seen as a way to destroy more forest, and couldn't be licensed without FD forest management (which wasn't part of the project design / couldn't be achieved by the FD)  Briquetting was successful, but

<sup>11</sup> The method will limit the volume of charcoal produced per year within a rotational cycle of 18 years to 830,000 sacks of charcoal (assuming a rotational cycle of 18 years for 1 ha charcoal production on 15,000 ha and the need for 0.01 ha forest for one sack of charcoal).

destroyed. Options for briquetting from crop residues are not known	charcoal producer groups formed; 120 charcoal retort kilns; monitoring, & licensing system 2/ 50 briquetting presses in 20 VAGs	only achieved on a small scale.
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## 2.3. Project Description and Strategy

### Project Description

Miombo woodlands are being degraded as a result of unsustainable land management and exploitation of natural resources. This degradation is exacerbated by the effects of climate change. As such, this reduces the capacity of these woodlands to support vulnerable communities. Restoration and livelihood initiatives don't adequately take into account this accelerating impact or climate adaptation needs. The FD capacity to implement interventions is hindered by limited institutional and technical capacity. The preferred solution was to: use a community-based approach to enhance the capacity of FD and communities to implement interventions that increase the resilience of miombo woodlands. Barriers included limited methods for sustainable management of the woodlands, limited finances; and policies that don't promote community-based forest management. Due to these factors, the project was designed to:

1. Strengthen technical / institutional capacity of foresters and communities to implement assisted natural regeneration (ANR) and agro-forestry (A/F)
2. Establish fire management plans to maintain regeneration in these woodlands
3. Introduce efficient charcoal production and wood-saving technologies

### Project Location & Map

The project was located in the Ministry of Lands & Natural Resources (MLNR) Forestry Department (FD) in Lusaka, and in two districts in Central Province – Serenje and Chitambo, within which 30 Village Action Groups (VAGs) were formed, around five Assisted Natural Regeneration Areas (ANRs). See map in **Annex 11**, which shows agro-ecological zones for Central Province, and indicates Serenje District (from within which, the Chitambo District constituency was created in 2015).

### Project Timing & Milestones

The project timing was from July 2015 until June 2020, although extended until December 2020, due to Covid-19 health restrictions from March 2020. The project document does not mention milestones or benchmarks per se, but rather provides indicator targets against baselines.

### Comparative Advantage

UNDP was selected / expected to have a comparative advantage of capacity building, provision of technical support in the design and implementation of the project. UNDP also had an advantage working with government especially in strengthening institutional, policy and legislative mechanisms, in undertaking risk assessments, in mainstreaming forestry into development planning and harnessing best practices across the thematic areas, such as climate change and disaster risk reduction.

## 2.4. Implementation Arrangements

### Project Management Structure

The 5-year UNDP-GEF project was under National Implementation Modality (NIM), with the MLNR as the Executing Entity, and the FD as their designated Implementing Partner (IP). The IP worked in collaboration with the local FD and associated stakeholders in the Central Province districts of Serenje and Chitambo. The project was steered by a Project Steering Committee (PSC)<sup>12</sup>. The FD appointed a project Focal Point and the project established a Project Implementation Unit (PIU) with a Project Manager, and an Assistant. To note, despite NIM, there was no project bank account established, nor any advance based on quarterly plans. Thus, the project was UNDP-managed on an activity-only basis.

<sup>12</sup> Chaired by the MLNR / DF. PSC members (prodco) originally included UNDP, MLNR (chair, responsible for approving activities); UNDP; District Councils' representatives; MoA; MoE; Ministry of Chiefs & Traditional Affairs (MoCTA); ZEMA, Zambia Climate Change Network (ZCCN).

## 2.5 Key Partners & Stakeholders

A description of stakeholders – those who are responsible for implementation of the project and those associated with the project – is provided as **Annex 8**.

## 3. FINDINGS

### 3.1. Project Strategy

#### 3.2.3 Project Design, Objective & Approach

The project objective is: 'To promote climate-resilient, community-based regeneration of indigenous forests in Zambia's Central Province, thereby securing ecosystem goods & services and enhancing the adaptive capacity of local communities.' The project was designed with three Component Outcomes:

1. Strengthened technical & institutional capacity of foresters and communities in central province, to implement climate resilient A/F & ANR practices
2. Fire monitoring & management protection plans and measures to maintain desired regeneration targets and reduce fire frequency by 25% annually across the province, within a four-year average
3. Energy-efficient charcoal production & wood-saving technologies to replace inefficient systems, helping offset pressure on the forest as the climate changes

The 12 outputs were:

<b>Component 1 - Community-based, climate-adaptive agro-forestry (A/F) &amp; assisted natural regeneration (ANR)</b>
1/ Participatory resource mapping & zoning (identification of areas for A/F & ANR) in six districts of Central Province
2/ 30 Village Action Groups (VAGs) formalized & constituted in Serenje district, with resource rights and delineation of legally-recognized VAG boundaries and use zones
3/ All VAG boundaries & use zones registered under Zambia Integrated Land Management & Information System
4/ Training of 20 district forestry officers and 2,000 VAG members on site-specific climate-resilient A/F and ANR
5/ Fuelwood collection zones established in all VAGs and coppicing practices promoted
6/ Climate-resilient A/F and ANR practices piloted in 15,000 ha in Serenje district
<b>Component 2: Integrated climate-resilient fire management</b>
1/ Geospatial fire occurrence dataset developed for Central Province based on satellite data / GIS mapping to determine burn severity classifications and climate change vulnerability of miombo woodlands
2/ Fire management plans developed & operational for Serenje district based on fire occurrence and local inputs
3/ District forestry staff, VAG members & local authorities trained on appropriate fire protection practices (boundary and firebreak management, early burning)
4/ Awareness-raising across all districts about the benefits of adopting fire management to strengthen the adaptive capacity of miombo forests to climate change
<b>Component 3: Increased uptake of biomass energy technologies</b>
1/ Development of sustainable charcoal technologies & schemes in 20 VAGs with (i) charcoal producer groups trained to operate kilns; (ii) 120 charcoal retort kiln piloted to replace earth kilns; (iii) monitoring, tracking & licensing system established for retort kiln charcoal
2/ 50 'crop residue to charcoal' briquetting machines piloted across 20 VAGs

#### 2.2.4 Design Assumptions & Risks

Four risk tables were assessed, those from the PIF, prodoc, results framework, and the Atlas Risk Register. Selected risks / mitigation measures with TE comment are presented.

#### Prodoc / PIF Risk Tables

Risk (H, M, L)	Mitigation Measure	TE Comment
Limited sectoral (Forest, Agri, Energy) co-ordination	Environmental Management Bill requires all sectors to develop an environmental strategy	There was very limited coordination and national level between FD / DoE / MoA, although the project did work better with ZEMA. The project worked well with DoA at district level

Customary law application, may affect ANR formation (M). Under customary law, chiefs may allocate land to individuals	Work with DCs / DFOs to ensure that the ANRs are in conformity with local / customary law	The target area for ANRs / CF was comparatively low. If CFs are to expand, then the consent of chiefs will become more acute, especially if CFs are designated by Statutory Instrument & / or put forward for land leasehold certification.
No institutional / legal framework for use of forest on customary lands (prodoc, text para 91)	Interventions in Local / National Forest Reserves. Community-based plans with benefit-sharing will be developed	The project did not work in State forest. Whilst, there was no direct method for DFO (mandate / resources) support to communities in forests on customary land, the chiefs 'provided' ANR land for the project duration. Since 2018, there has been a CF legal structure in place, but subject to the Land Law, which recognizes customary land and the consent of chief being needed.
Miombo woodland soils are inherently infertile, which makes their use / management difficult. Thus A/F may not be cost-effective (L, M)	The woodlands regenerate relatively rapidly <sup>13</sup> . Thus, benefits will be realised during the project. ANR is a cost-effective restoration approach and provides income-generation Studies indicated A/F for smallholders is beneficial	The project design constantly mixed up ANR with A/F. A/F within miombo woodlands would have been technically difficult, as any coppicing within the ANRs would have been similar to the 'slash' part of 'slash & burn.' Also, within the ANRs, natural regeneration from seed (or vegetatively) was required, to bring up the younger age-class trees (destroyed by fire and slash fuelwood collection).
Monitoring of ANRs to determine management impact will be difficult (M)	Integrated Land Use Assessment (ILUA I) generated national forest data, with ILUA II to provide a district data. Monitoring of forest stock is also under REDD+	No monitoring done, and would have been difficult to do. Anecdotally, the forests improved. From national to province to district to 15,000 ha is a major scale difference in each case. Only local monitoring would have been useful, but was not part of project design.
Tree plantations may be more attractive than ANR (M)	Some enrichment planting may be OK, but ANR is a better option due to woodlands being degraded <sup>14</sup>	Any plantation was unlikely to be successful, due to the areas being burnt each year.
Weather patterns affect success of ANR and A/F interventions (M)	Use resilient spps ( <i>Faidherbia albida</i> , <i>Moringa oleifera</i> , <i>Sesbania sesban</i> , <i>Cajanus cajan</i> , <i>Gliricidia sepium</i> )	The only species selected – <i>Gliricidia</i> is non-native, and managed on-farm.
Fire management may meet institutional inflexibility at national and local level (L, M)	Work with DCs to make aware the positive trade-offs between forestry, and other land uses	Fire management control was introduced and being practiced at the local project level, although limited in scale and post-project, it may well be less stringently applied without support.
GIS fire management tools do not support community needs (M)	ZEMA to explain to local stakeholder - GIS for practical fire management	The ANR fire control maps have firebreak boundaries delineated, but nothing to do with GIS. No evidence of post-project fire control support for the communities.
The type of kilns proposed could prove to be unsuitable (H, M)	A PPG assessment of the suitability of kiln types will be done and if retort kilns are not deemed suitable than they will be replaced with mobile Casamance kilns	Twin drum retort kilns could have been piloted <sup>15</sup> , but the FD were not interested in licensing (encouraging) charcoal production (even if efficient and from sustainable sources – which was the point).
Particular households will get kilns at the expense of more poor households (M)	Retort kilns will benefit community members more so than individual traditional kilns	The poor often don't have the capital assets (labour, money etc.) to run such new businesses. There were no retort kilns supplied, and only 40 briquetting presses to 40 households, with limited benefit-sharing agreements.
Financing for the uptake of technologies post-project will need to be assessed	A financing strategy will be developed E.g. for briquetting machines	Wasn't achieved, despite the briquetting methods being sustainable

<sup>13</sup> In coppice woodland, the mean annual increment of biomass ranges from 1.2–3.4 tonnes per ha per year, which is about 4-7% of the above-ground biomass. (source prodoc, GEF site downloaded signed version)

<sup>14</sup> Plantations incur high establishment, maintenance, and environmental costs, and are problematic as community-based schemes

<sup>15</sup> [https://energypedia.info/wiki/Charcoal\\_Production](https://energypedia.info/wiki/Charcoal_Production) (shows all kinds of kilns from earth to retort)

**Results Framework Risks & Assumptions that proved to be correct / incorrect:**

Assumption / Risk	TE Comment
<b>Objective</b>	
- Encroachment threatens miombo woodlands, thereby undermining project interventions	- Encroachment didn't appear to be an issue (anecdotal evidence only), although the areas covered by the ANRs were relatively small, and therefore manageable. No satellite / external monitoring in place
<b>Outcome 1</b>	
- Trainings not delivered effectively	- The trainings were mostly limited to the VAG / ANR areas, not district or province-wide.
<b>Outcome 2</b>	
- National fire information packaged / disseminated to communities - Updated fire management plans applied	- The fire control plans included standard fire control practices. - The plans contained forest cleaning measures to reduce impact of fires. - Limited to the 5 ANRs only
<b>Outcome 3</b>	
- Local communities take ownership of improved kilns and briquetting machines	- The uptake was of limited coverage under C3 – Energy-saving (only 40 briquette presses, 20 cook-stoves, 0 retort kilns). The retort kiln budget could have been used for the presses. The presses were only delivered in 2020 at the end of the project, with limited number of sets and limited training or promotion.

**UNDP Atlas Risk & Management Response**

Although better placed under the Implementation Section, these risks identified during implementation and the corresponding management responses equally fit here together with the other risk tables.

Risk	Management Response	TE Comment
The community might revert to unsustainable land use practices when the project comes to an end (2018)	The new forest policy supports CF. The project will conduct sensitization on CF and support the community to register the ANRs as CFs	This is the best option.
Community commitment to participate may be affected by the long period of time for the project to yield tangible results (2015)	The introduction of livelihood options from the start, will garner community support	The livelihood activities only really arrived in 2018-19.

**2.2.5 Results Framework Indicators & Targets**

Within the results framework, at the objective level, there were two indicators. At Outcome 1-3 levels, there were two, two and one indicators respectively, including incorporating the GEF (LDCF / SCCF) Adaptation Monitoring and Assessment Tool (AMAT) scorecard's criteria. (See **Annex 1**). There were only seven indicators in total, covering the 12 outputs, thus they mirrored the outputs, but on a higher logframe level. In a number of cases, the indicators were not so 'SMART' (Specific, Measurable, Attributable, Realistic / Relative, Timebound). The main problem was that they were not 'realistic' in terms of what the project actually intended to do. The table below provides a few examples:

Indicators or targets	Issue
<b>Objective level</b>	
- The indicators focused on the number of beneficiaries	They were not disaggregated by gender.
<b>Outcome 1</b>	
- The indicators focused on FD staff and VAG capacity built, and on the establishment of 15,000 ha of ANRs.	However, it was assumed that planting A/F species would be the main management practice within the ANRs, which indicated that the project designer, didn't understand sustainable forest management (SFM) in the miombo woodlands context.
<b>Outcome 2</b>	
- The indicators related to capacity to manage fire and a reduced incidence of fire across the whole of Central Province	The project only ever worked in two districts in Central Province, thus this was either a design flaw, or a conscious decision to narrow the geographic coverage of the project.
<b>Outcome 3</b>	
- 120 charcoal retort kilns	Whilst the FD agreed to the project design, when it came to promoting

	sustainable charcoal production, they 'backed down' i.e. increased woodland productivity with licensed charcoal production was not undertaken.
- 50 'crop residue to charcoal' briquetting machines	Low number of machines, if to have any impact. 20% women was the target. Why was this agreed under UNDP gender equality guidelines?

### 2.2.6 Gender Design

The prodoc mentioned the word gender 22 times, but was vague concerning actual benefits to women. The National Adaptation Programme of Action (NAPA, 2007) on climate change included a gender policy. A national gender policy (2000), advocated women be incorporated into decision-making, including during implementation of the project. The project design also stipulated gender-sensitive approaches (targeting vulnerable groups and women) and gender-disaggregated indicators. UNDP's comparative advantage in supporting a human rights-based approach with an emphasis on gender equality in development programming, was described. Zambia Women's Alliance were included as a key stakeholder concerning women's inclusion in activities. Gender was mentioned tangentially with respect to VAG formation, and was indicated as a cross-cutting concern.

The Social & Environmental Screening (SES) concerning women's empowerment, reiterated most of the above points. The SES concerning managing risk – Principle 2 – Gender Equality & Women's Empowerment – was not 'ticked.' i.e. the following four questions were all marked as 'no' – (i) adverse effect on women; (ii) discriminate against women regarding project participation or access to benefits; (iii) concerns of women during stakeholder engagement; and (iv) limit women's ability to use, develop and protect natural resources. The results framework target for Outcome 3 stated that 20% of the beneficiaries should be women, which is not exactly equality, with no stipulation for the other Outcomes. There was no mention of gender dis-aggregated data in the M&E framework, although it is presented in the AMAT.

## 3.2. Project Implementation

### 3.2.1 IA and EA Coordination & Operational Management

UNDP were the GEF Implementing Agency (IA). The Ministry of Finance (on behalf of Government of Zambia (GoZ) together with the MLNR signed the prodoc in June and July 2015. MLNR were the Executing Agency (EA), with FD as their designated Implementing Partner (IP). The project was supported by a MLNR / FD-led PIU who also acted as the secretariat to the PSC.

#### Coordination & Operational Management by Implementing Agency (UNDP)

##### Local Project Appraisal Committee (LPAC) Meeting 1 (Oct 2013)

An LPAC meeting was held in October 2013. The management arrangement was described as MLNR / FD to execute Components 1 and 2, with the Department of Energy to execute Component 3. Collaborating partners included: MoCTA / Chiefs; Ministry of Local Government & Housing (MLGH) / District Councils (DCs); CSO and research institutes. The LPAC recommended for project endorsement after inclusion of the following: Under Component 3 (C3) – 'Increased biomass production, and its sale in the supply-chain' – stating a need to understand the high demand for charcoal. To note, this was partially addressed during implementation, with a study (the Efficient Kiln Report), but thereafter, there was no uptake, bearing in mind, this wasn't really part of the project design, and only \$0.3m in the budget for C3.

##### Social & Environmental Screening (Feb 2015, pp8)

Includes a risk table, with only one 'high risk', that of 'restricting forest resources access to marginalised households.' However, the purpose of the project was 'through forest regeneration, to secure more forest products for local villagers.' Although, if fuelwood collection, charcoal production and grazing restrictions were instigated, then yes, the poorer households would be impacted upon. Fortunately, the project somewhat re-directed itself to include 'farming interventions' which reduced pressures all round on the forest, making the impact of the poor on the forest less of an issue.<sup>16</sup>

##### Planning Workshop (pp7, Aug 2014, 33 participants)

The FD Director noted that the communities and traditional leaders were not present. The meeting advised the design consultants that VAGs may be less appropriate than existing 'village resource management committees.'

<sup>16</sup> TE view, unsubstantiated

Also, that nationally / locally, 'conservation farming' doesn't promote A/F, and that A/F approaches for the project needed to be defined. The TE would suggest that they never were, further than the planting of one coppicing fuelwood species on-farm. It was suggested that the Kasisi Agriculture Training Centre should be included in the project as it had strong practical AF practice and information. It wasn't.

In Zambia, fire monitoring using GIS includes a number of methods and various mapping data<sup>17</sup>. The meeting advised to ensure that community fire management was properly designed and not rely on high tech models. The ZEMA representative indicated that the ZEMA fire monitoring system supported district fire management. The TE findings were exactly this, that there remained no link between village fire control systems and national level collection of fire incidence / production of fire risk maps or early-warning on fire-risk.

Technology Development Advisory Unit (TDAU, University of Zambia UNZA) had published studies relevant to the project's initiative on charcoal and improved technologies. TDAU was utilized by the project, with an effective intervention, but the number of machines were too little / too late, to have the impact they should have.

A validation workshop was held in October 2014.

#### LPAC Meeting 2 (March 2015)

For the March 2015 meeting, the purpose was the final review of the prodoc. Again, it was noted that there was only one provincial FD representative, and no representatives from the districts. The following points were noted: MLNR was listed for a 2<sup>nd</sup> phase of decentralization to the districts in 2016, thus the community empowerment approach was in-line with government policy<sup>18</sup>; The project will work with MoCTA to ensure validity of VAGs; and that the Forest Act (2015) now recognizes community-based natural resources management.

#### Management

There were indications that insufficient UNDP staff time was given to the 'Community-based Regeneration of Indigenous Forests project (CBRIF), especially in terms of technical direction and oversight. With UNDP financially running the project, there was a need to at least concurrently understand the farming and forestry calendars.

#### **Coordination & Operational Management by the Executing Agency / Implementing Partner (MLNR / FD)**

##### Project Steering Committee

The PSC membership (prodoc) was: MLNR (chair, responsible for approving activities); UNDP; District Councils' representatives; MoA; Ministry of Energy<sup>19</sup>; Ministry of Chiefs & Traditional Affairs (MoCTA); ZEMA, Zambia Climate Change Network (ZCCN); others. There were eight PSC meetings held (2016 x 3, 2017 x 1, 2018 x 2, 2019 x 1, and 2020 x 1). A further PSC meeting is planned for the end of 2020. The attendance and detail on minutes of the PSC meetings (with TE comment) is presented in **Annex 5**.

The six PSC meetings held up to the end of 2018 were standard project-based meetings, mostly comprising of members as outlined in the prodoc, with the added usual inclusion of the FD, the Ministry of National Development Planning (MNDP), and the PIU (PM and Assistant), as the secretariat to the PSC. From 2019 onwards, a new 'All climate-change projects' PSC was constituted by the MNDP (chair)<sup>20</sup>. These meetings in 2019 and 2020 were attended by multiple ministries (12-15), and only 'rubber stamped' the CBRIF AWPBs for 2019 and 2020.

The first PSC (April 2016) was convened 10 months after project start, and approved the AWPB 2016, nearly five months in to the planning year, which was too late. In fact, the AWPB 2016 had been signed off on by FD / UNDP in February 2016<sup>21</sup>.

The PSC (2016-18) considered a number of issues [with TE comment]:

##### 2016

- ANRs (which were on customary land) post-project needed to be registered community trusts. [i.e. PSC understood the need to formalize / legalize the land tenure of the ANRs]
- Re charcoal, the need to link FD and DoE, as FD licenses production, whereas the DoE promotes efficient use. [The

<sup>17</sup> AMESD project, SADC-Thema – Agri-environment monitoring, MESA services, GEONETCast / EUMETCast & AFIS receiving stations

<sup>18</sup> Although at odds with UNDP centralized financial control approach

<sup>19</sup> Formerly Ministry of Mines, Energy & Water Development (MMEWD)

<sup>20</sup> MNDP noted also the new MLNR's Department of Climate Change & Natural Resources (as established by the National Policy on Climate Change (2016)

<sup>21</sup>The AWPB 2015, was signed off on by FD / UNDP in November 2015. Thus. it was difficult to see what activities could have implemented over the five months from July - Nov 2015.

institutional link between FD and DoE should have been clear in the prodoc. At this point, it was already 1.5 years into the project with a lack of urgency for inter-government collaboration by the FD / PIU]

#### 2017

- PSC informed that the IP (MLNR / FD) was not sufficiently accredited to manage UN funds. [The HACT assessment was undertaken in September 2016, so it took the PSC one year to be informed of this decision, and now over two years into the project. This meant that the MLNR had no financial management control of the project, as it remained with UNDP]
- UNDP recruited 4 out of 6 consultants. [Why had it taken two years to recruit, when the consultants need to shape the project approaches]
- Tractor servicing mentioned. [However, there was no formal agreement on their management or use, such as for VAG farmers and 'their' future CF / ANRs]
- PSC recommended that the PIU be moved from Lusaka to Kabwe (Provincial capital town) or Serenje District [PIU never moved]
- DFO equipment security issues. [Was still not solved by time of TE in August 2020, except for one 4WD vehicle being kept at Serenje police station]
- Councilors' concern on charcoal delivered to the Southern African Alloy Ferro Limited manganese smelting plant (Serenje), but Joint Visit report by FD / ZEMA not circulated

#### 2018

- Reported that the 30 VAGs would apply to become CF Management Committees to manage the ANRs. Noted that CF establishment would provide greater legal security of the ANRs. [A decision should / could have been made here in 2018 to switch from VAGs to CFs, under the law. The FD was still promoting the idea / raising awareness at the time of the TE]
- 30 VAGs now established and registered, with 43 user / producer groups; Boundaries of the 5 ANRs cleared - Teta, Musola, Musangashi, Nakatambo and Mweshe Butelele. [So, the two key aspects of the project achieved (ANRs and VAGs), almost 3 years into the 5-year project]
- It was noted that Comaco would now take the lead for Component 1, especially 'grants for livelihood activities.' [Comaco was the only entity to 'pass' the UNDP financial assessment, and was a significant change in CBRIF to bring in Comaco to implement C1. But also bearing in mind, they were a key co-financier, but now would be a key service provider i.e. recipient of GEF funds]
- Reported that 5 Fire Management Plans prepared with fire control zones in the 5 ANRs mapped. Fire patrol during Aug-Oct, according to the Fire Management Plans. Also, that a Fire Occurrence Database was established at FD. [No evidence of the latter provided to TE]
- Land use maps for the 9 districts in Central Province had been prepared [no evidence provided to TE]
- DoE cookstove training (319 participants) – 22 stoves made as demonstrations; tinsmiths trained to make chimneys
- 10 briquetting machines piloted

The Technical Committee meetings with TE comment are in **Annex 5**.

#### Project Management (UNDP - FD - PIU - District Implementation Team (DIT))

From the start, UNDP always controlled the funds, and despite NIM<sup>22</sup>, there wasn't a project bank account. UNDP financial control affected implementation, with funds not released based on quarterly plan, but on an activity basis. This meant that some activities were not completed due to no fund release or equipment / materials being late. It took time to get activities going. Furthermore, UNDP took certain decisions, without the FD / PIU knowledge.

The PIU / PM was based in Lusaka, with the District Implementation Team (DIT)<sup>23</sup> in the districts. The PIU appeared to work directly with the National FD Focal Point and their two designated District FD Focal Points (who were part of the DIT). Activities were mainly undertaken by the FD with their local government partners, until the UNDP Comaco contract. The DIT lacked finances to hold stakeholder review & planning meetings, which were not often formally convened<sup>24</sup>. The role of the Provincial FD was on an *ad hoc* basis only. E.g. ANR boundary identification.

The quarterly / annual plan approval process (FD / PIU to UNDP CO to UNDP Regional Office in Addis Ababa to

<sup>22</sup> UNDP were not really flexible in their application of NIM procedures, which range from akin to DIM (applied in this case) to more standard NIM where the nationally UN accredited government partner is able to manage the funds.

<sup>23</sup> DIT – DFO x 2, District Project FPs x 2 (from Forest offices), Chief Officer x 1, DACO x 2, District planning x 2, Camp Agri Officers x 5 (for the 5 areas), district livestock x 5.

<sup>24</sup> There were not many minutes of meeting for the TE to assess / evaluate.

PSC), was too slow / inefficient, making the release of funds, and therefore activities late.

By 2018/19, it had become a Comaco operation – with the project communication / implementation procedures changed to UNDP management, with the FD / DIT being somewhat left out of implementation or even a monitoring role. Communication and reporting lines somewhat broke down at this point, with Comaco monitoring reports not widely shared, and mis-trust crept in. Indeed, oversight of the UNDP - Comaco contract was not clear, as monitoring was not included in the MoU, and it was not down to the FD / DIT.

From March 2020, UNDP staff were unable to visit the field and UN House was closed in August 2020, for six weeks due to staff Covid cases. Due to the impact of Covid, there was little or no project activity from Feb - Aug 2020. It appeared to resume with the TE in August 2020, and furthermore, the FD / PIU remained in the field after the TE mission, to implement CF awareness activities.

As a result, certain key activities have not completed and handover approaches are needed. This applies to: tractor sustainability; boundary markers & signboards, the solar panel converter unit, and ANR status post project. A PSC was planned for December 2020, with operational closure expected by end of 2020 (delayed due to Covid), with hard (financial) closure by end June 2021.

### Project Infrastructure & Equipment

The project provided equipment and infrastructure, and in particular:

- 2 Landcruisers (J70 and J90 Prado) – located at FD, and Serenje DFO
- 2 tractors (YTO-x804 – 80HP), trailers, disc plough & harrow - at each district DFO
- 4 motorbikes – at each DFO
- 10 laptops – 7 FD Lusaka, 1 FD Kabwe, 1 Serenje DFO, 1 Chitambo DFO
- 7 desktops - 4 FD Lusaka, 2 Chitambo, 1 Serenje
- 10 tents & 20 camp beds (Serenje & Chitambo DFO)
- Chitambo Community Resource Centre (~a new DFO), with solar equipment

At the time of the TE, there were a number of issues with the equipment and infrastructure:

- The FD / DFOs had no funds post-project, for the running & maintenance of the Serenje- based 4WD, or the four motorbikes. Also, there was no share agreement for Chitambo's use of the district-based 4WD.
- The tractor at Serenje only had three wheels, with a replacement tyre being not released by UNDP since March 2020
- The two motorbikes at Chitambo, were being left outside, and susceptible to theft (despite, this being a known problem for some time)
- Chitambo DFO / Resource Centre, had had no electricity for the last 18 months, due to the solar panel charge box having broken. The consequence was that the project staff were unable to function effectively. i.e. they couldn't use the project computer(s).

### Tractors

The two tractors are only being used for two months a year for ANR boundary work. They are not generating income, and therefore are not being sustainably managed. The FD has no added funds for their insurance, servicing and maintenance. They are going to miss another opportunity to be used for the farmers in August - October for agriculture land preparation, and then crop planting. The FD (at district and province) lacks an approved bank account to manage these tractors. Any 'hire receipts' have to go direct to the Treasury (under the Control 99 Account), so there is no incentive for FD to use them for the VAGs<sup>25</sup>. Obviously, the more they are used by the VAG farmers, the more they will reduce labour, and raise income, resulting in less forest dependency and more time for forest protection. Thus, the TE has indicated an integrated approach with the agriculture and forest offices working together. The 1<sup>st</sup> option is preferred:

### Tractor – Management Options

<sup>25</sup> From a forestry viewpoint, the tractors are needed April – June for boundary clearance, and possibly for nursery work / tree planting (Sept), although the FD hasn't undertaken any tree planting for a number of years, and certainly not in village or customary land. [The miombo woodlands naturally regenerate, thus not even gap planting is needed. However, there are now no funds to undertake this work, so it is unlikely to happen, unless the tractors are used to create their own income-stream. The FD / DFOs in the districts need to be innovative to 'get the tractors working on a sustainable financial model', but neither they nor the project / UNDP has shown any interest to do this so far.

Option	Pros / Cons	Added Information
National / District FDs sign an MoU 'Lending Agreement' with the District Agri office(s), to rent out to VAG / ANR farmers on cost-recovery basis - [Best Option]	The key is that Serenje District Agri office, already has a 'waiver account' for machinery (tractors) & already manage tractors [Sustainable!]	On the condition that VAGs protect the ANRs, and the Agri office return tractors to the FD for 2 mths / yr, with sufficient funds for boundary work
FD sign an MoU with the Provincial Agriculture office / Provincial FD to manage	Kabwe Town is too far away	PACO already manage tractors. To manage from Province level, takes away any local politics in their use
MoU with District Council Secretaries	Use may become political	Chitambo DC was keen to manage the tractor in their district
FD Director to request Treasury for a waiver account for tractors at district level	Why not done so already? Will it happen / be approved – and even then, do the DFOs have skills / interest to sustainably manage tractors with and for the farmers, in return for forest protection?	Note that, the FD PIU was only able to find one qualified driver from the province, so this assumes also that the District FDs can find 2 drivers and manage effectively. This would be a 'tall order'
Lease to Comaco	They may prefer just to buy their own	Financially, they passed the UNDP test, for safe management of funds

### 3.2.2 Institutional Mechanisms

Project-level partnership arrangements are briefly described in the previous section, whereas this section considers state institutional mechanisms and capacity, which are the backbone for delivering new policies and services. The section thereafter considers local partnerships.

#### Local Government, Agriculture & Forestry Departments

The Decentralization Policy (2010) was designed to devolve administration functions down to DCs, however to date, the resources and funds to undertake activities, have largely remained centrally controlled. Albeit, there are differences between line agencies, with for example FD remaining centralized, whereas Agriculture is more devolved. At District Council (DC) level, there is a District Development Coordination Committee (includes the DFO), with meetings held quarterly.

The District Agriculture Department includes: an agri-business unit; a development marketing officer; a farm management officer; a cooperatives development officer; and 'Camp officers' for extension, livestock and crops. Each ward has 2-3 agri-extension (Camp) officers, with a mandate to establish demonstration plots and Farmer Field Schools<sup>26</sup>. Thus, the Agriculture Department has a strong technical presence at district and village level. By contrast, the District FD is poorly staffed with a limited number of extension technicians.

At provincial level, the Provincial Agriculture Coordination Office (PACO) has a technical services branch with three sections – Farm power & mechanization (undertake machine maintenance); Irrigation & land husbandry; and Marketing<sup>27</sup>.

### 3.2.3 Local Partnership, Stakeholder Engagement & Gender

Community Markets for Conservation (Comaco Ltd) a.k.a. 'It's Wild' – Comaco promotes activities aimed at preserving important natural ecosystems and biodiversity. The Comaco model provides guidance to smallhold farmers on climate-smart agriculture and acts as a market-buyer for produce. Comaco targets poor, food-insecure families - the people who are most likely to hunt wildlife or destroy forests for charcoal to earn their living. Comaco were engaged to deliver agriculture and forestry livelihood interventions under C1.

Zambia Environmental Management Agency (ZEMA) – Is responsible for EIA and associated activities. The project engaged them to undertake C2, including ANR boundary demarcation works, and the preparation of ANR fire management plans with training.

#### Technology Development & Advisory Unit (TDAU, University of Zambia)

<sup>26</sup> The Agriculture office subscribes to Meteorological office weather forecasts - daily, monthly, quarterly (3-month review – 3-month forward) – to link farming actions to early-warning and climate change adaptation.

<sup>27</sup> The provincial agriculture office noted that they have nine tractors operating in the two project districts, and have 586 Camp officers in the province, of which 16 are in Chitambo.

TDAU operates as a semi-autonomous engineering research and development unit. TDAU was established in 1975 to provide a link between the expertise of the university and the needs of society. TDAU offers both commercial consultancy and engineering solutions to clients. They provide: Engineering innovations; design and prototyping; product manufacturing; feasibility studies; and trainings and demonstrations. TDAU designed and supplied the 'crop residue to charcoal' briquetting 'drum and press' sets, under C3.

Zambia Energy & Environmental Organization (Zengo) - Support local capacity building in energy-efficient technologies using locally available materials. On behalf of the DoE, communities were trained in the construction of improved cook stoves and encouraged to take up construction of the cook stoves as a business so as to promote sustainability within the community, under an added output to C3.

The list of key stakeholders is described in **Annex 8**.

### Gender Analysis

Using the 'Gender Results Effectiveness Scale (GRES)<sup>28</sup>', the TE scored the project as:

- 'Gender Targeted' (focused on achieving equity in numbers of women, men or disadvantaged groups); and
- 'Gender Responsive' (focused on the differing needs of women, by trying to provide an equitable benefit-share, but did not address the root causes of inequality towards women)

The AWPB 2020 noted that the project was GEN-1, however the PIR (2019-20) indicated that the ATLAS Gender Marker was GEN-2 (gender equality is a significant objective). The LDCF CCA Tracking Tool indicated five policies that incorporated gender: Forest policy, Agriculture policy, Climate change policy, Community Forest Regulations, and 7<sup>th</sup> NDP.

### Gender notes from the PIRs

- A gender analysis was not conducted by the project
- VAGs committee representation – 46% women (from 10 committee members x 30 VAGs)
- ANR Boundary clearance 'cash for work' – 33% women (335 from 1,010)
- The project target is to benefit 40% of women (TE not sure when this actually changed)
- Livelihoods / training activities – 41% were women 1,500 from 3,696 beneficiaries) (2017-19)

The gender balance during training events was 49% women's participation. (see section 3.3.3 Training)

### 3.2.4 Finance & Co-finance

#### Procurement

The project asset list (Jan 2019), as per new values was listed at US\$318,131. Only one item stood out as uncompetitively priced, that of a standard Canon SLR camera at over \$7,000.

#### UNDP Financial management and Finance

The breakdown of planned and actual expenditures by year is provided in **Annex 4**. The spending pattern follows a normal 'bell-shaped' curve for project implementation financial expectations. Annual audits were undertaken 2016-18, which indicated some issues. (see **Annex 5**). In 2019, the project didn't qualify for an audit.

Under a UN HACT Framework<sup>29</sup>, from project start (July 2015) to end (Dec 2020) (i.e. the complete 5 years), the project was under NIM with a reimbursement method based on activity-only invoices, and with direct procurement and payments to service providers. There were no direct cash transfers (funds advanced on a quarterly basis), and indeed there was no project bank account to receive such funds. Thus, from the start, UNDP had assessed the project's financial risk and implemented a restricted cash transfer modality.

Whilst the HACT Framework describes this cash transfer modality as one having a minimal impact on implementation, in reality the impact of such a method was significant. The reason being was that the IP (FD and their PIU) had zero flexibility on running activities. The IP was basically implementing (albeit from an approved quarterly plan) the activities that UNDP decided to 'pick and choose,' 'where and when.' This resulted in a certain loss of interest in FD project management with project ownership at District Forest Office (DFO) level being minimal<sup>30</sup>

In September 2016, the accountant Deloitte, on behalf of UNDP, conducted a financial risk (micro) assessment to determine

<sup>28</sup> The GRES scale is presented in **Annex 5**

<sup>29</sup> <https://unsdg.un.org/resources/harmonized-approach-cash-transfers-framework> (2014)

<sup>30</sup> In the TE Consultant's experience, such 'squeezed' financial control under NIM – HACT measures by UNDP is common

Harmonised Cash Transfer (HACT) transfer modalities under NIM, for MLNR, ZEMA, ZCCN, Comaco and the Kasanka Trust. Only Comaco was deemed low risk and therefore eligible to manage project funds. All other were deemed 'moderate or high risk'. No further assessment was possible within UN rules, for another two years.

In the case of MLNR / FD, the 'moderate risk' was given because the Ministry of Finance does not audit MLNR accounts, nor are their accounts following MoF procedures or in the public domain. However, one could say that UNDP financial project procedures to advance funds based on a quarterly plan, invoice and re-imburement should have been acceptable, especially with UNDP's experience in project management and M&E.

It was brought to the attention of the PSC two years into a 5-year project (in July 2017), and the project having gone through a design phase from July 2013 (i.e. 4 years to this date), that the IP was financially unfit to manage the project, and furthermore they couldn't be reassessed until September 2018, i.e. about 18 months before project closure.

UNDP managed Comaco via the UN Funding Authorization & Certificate of Expenditures (FACE) accounting system (all under the 72600 – Grants budget line (as expected)), together with a final report (Aug 18 – Oct 19, pp13), which followed standard UNDP annual / quarterly progress report format.

### Co-financing<sup>31</sup>

It was difficult to identify the role / co-financing in six out of the eight co-financiers. Co-financing was already noted as an issue during the MTR. The MLNR / FD co-contribution (\$11.4m) originally included a 2<sup>nd</sup> phase of the National Tree Planting Programme (NTPP), which never materialised, so with this tree planting / associated staffing removed from this expected contribution, together with the fall in FD budgets after the NTPP (as it didn't do well), and also the devaluation of the Kwacha<sup>32</sup>, it probably meant that the GoZ contribution was significantly less, and estimated by the TE, to be ~\$5m.

Comaco's involvement was supposed to be co-financing (\$11m), however, they were then sub-contracted (paid) to work specifically with the VAGs in the five new ANR areas. Thus whilst, Comaco's contribution nationally, provincially and district-wide may have been \$11m, their direct co-contribution in the two project districts was probably nearer \$2m<sup>33</sup>.

Therefore, the GEF / LDCF contribution was \$3.9m; with an estimated GoZ contribution at \$5m and Comaco direct contribution at \$2m, would suggest a project spend of ~ \$11m, as opposed to the total \$33m projected. The contributions are recorded in **Annex 3**.

### 3.2.5 M&E Systems – Design & Implementation

Overall, at design and during implementation, the grading was considered as '**Unsatisfactory**'. The main issue with the M&E, was a lack of any tracking (spreadsheet) system, indicating progress against outputs, indicators, or inputs (service contracts for example), thus monitoring project progress would have been difficult. The standard M&E framework for these UNDP-GEF projects, is report-based, with PIRs, which unlike most annual reports, run from July to June each year.

#### Tracking Tools

The LDCF CCA AMAT tool was utilized by the project. See **Annex 5** for a summary.

#### Mid-term Review

An MTR was undertaken in September 2018 (52pp + annexes), with the ratings given as: Objective, Outcome 1, and Outcome 2 all MS; Outcome 3 – MU; UNDP / DF Implementation – MS; and Sustainability – MU. (See **Annex 5** for further detail)

### 3.2.6 Adaptive Management (Work planning, Reporting & Communications)

#### Work planning

Inception Report (Sept, pp13, 29 participants including 13 from FD and 3 from UNDP)

The project inception workshop was ~2.5 months after the project began. The project was considered as the 4<sup>th</sup> NAPA project. Project staff were yet to be recruited. 2015 Q4 workplan was presented. Site selection was scheduled for October, once the PM was expected to be on-board. ZEMA was to lead Component 2, but fire

<sup>31</sup> Co-financing contributions, either as direct support funds (grant or in-kind) or as complementary funds (e.g. linking up with similar project in a neighbouring area), are not formally accounted for under GEF methods, with only GEF and UNDP normally funds audited.

<sup>32</sup> from US\$1 - ZMW 6.5 to 20 (2014 - 20)

<sup>33</sup> To note, they were contracted (subsidized) for ~\$0.45m by the project (UNDP) to provide livelihood services. If one were to take this as their input that would have been a co-contribution, instead and totally over 5 years, this would equal \$2.5m. Then minus the project payment, this would leave ~\$2m [i.e. \$0.5m x 5 years minus project contract value]

management needed to be anchored within the FD. The collaborating institution, the DoE for Component 3 appeared missing from the meeting. Also, the Q4 C3 'Energy' workplan was missing.

Re. ANR 15,000 ha site selection, the FD / Kasanka Trust (National Park) in Serenje should begin engagement with traditional leaders even before the PM recruitment<sup>34</sup>.

#### Overall Workplan & Budget

The overall workplan budget was informative as to how CBRIF was expected to be implemented (prodoc p62):

	Budget (US\$)	Item (including)	TE comment
<b>Outcome 1 - Technical &amp; institutional capacity</b>			
Contracts	252,000	PIU staffing	
Consultants	286,500	ANR / AF x2, CBNRM x2, Comm. Mobilizer, GIS, M&E, Livelihoods, Land Tenure, Agric	
Materials & Goods	532,500	20 community nurseries (\$100,000), ANR / AF equipment (\$35,000), Seedling procurement (\$200,000)	
Training	132,000	20 district forest staff & 2,000 VAG (\$132,000)	
	937,500	'Cash for Work' @ \$5 per day x 2.5 days per ha x 15,000 ha x 5 years (ANR)	Partly provided for Comaco contract
	<b>2,200,000</b>		
<b>Outcome 2 - Fire management</b>			
Contracts	222,000	Fire-break contractor (\$120,000)	
Consultants	91,500	Fire, GIS	
Materials & Goods	364,500	4 tractors (\$300,000) to create firebreaks	2 tractors + equipment @\$102,000. Equipment usefully added for farming
Training	200,000	On fire-break management & early burning	
	202,000	'Cash for Work' (fire patrol and fire-breaks)	
	<b>1,200,00</b>		
<b>Outcome 3 - Wood energy-efficient technologies</b>			
Contracts	60,000		
Consultants	53,000	Briquetting, kiln, charcoal licencing	
Materials & Goods	137,500	120 retort kilns @ \$1,000 each, 50 briquette presses @ \$350 each, rotation system tools (\$40,000)	
Training	35,000	20 charcoal user groups	Groups were initially formed, but then not provided with a new / improved technology
	0		
	<b>300,000</b>		This component was comparatively underfunded, relying on \$3.2m co-financing from Pioneer which didn't materialise

#### Annual Workplan & Budgets (AWPBs)

The Overall Workplan & Budget was informative as to how CBRIF was expected to be implemented. Financially, Component 1 was focused on 'cash for forest planting work' and buying / producing tree seedlings; C2 was focused on fire control equipment and 'cash for forest fire control work'; and C3 was focused on retort kilns.

AWPB 2015 was signed by FD / UNDP in November 2015, with only one month to run before it ended. A note under project management indicated to hire a firm to conduct a UN HACT assessment (suitability / accreditation to manage GEF funds). (The firm actually reported back in September 2016, with the information only conveyed to the PSC in 2017 Q3, so from planning to conducting to reporting to PSC, it took over two years). The procurement of four tractors was budgeted at \$99,500 (however later two tractors (70HP) with trailers, plough & harrows were procured for ~\$102,000, suggesting that the original costing had not been carefully undertaken.

AWPB 2016 was signed in February 2016, and AWPB 2017 was signed in January 2017. AWPB 2018 was only signed in May 2018, i.e. five months into the 12-month plan. AWPB 2019 was signed in January 2019 and included ambitious activities (by Energy Dept), including the retort kiln which didn't happen. C3 also included only \$13,000 for TDAU to assess the crop residue kiln, which was all too late in the project. Added to Comaco's input into the

<sup>34</sup> The TE found no evidence that the project actually worked with the Kasanka Trust

AWPB, it looked like it was prepared by another party in comparison to the previous four AWPBs 2015-18. AWPB 2020 was signed in March 2020, and in another new format. The plans followed too closely the prodoc expected outputs, when certain activities were just not being undertaken, but with CDR reporting, and generalised information in PIRs, there wasn't sufficient M&E to expose this. (see **Annex 5** for more detail)

### Reporting

PIU record-keeping was poor with no standardized filename system, even for key meeting notes such as for the PSC and Technical Committee (TC) meetings.

#### Annual & Quarterly Reports

Annual reports followed an output-based progress table format, including the budget allocated and % spend. Quarterly reports with a similar format appeared to only be intermittently produced.

#### Exit Strategy (Handover Report, pp4)

The strategy discusses the conversion of the ANRs with their VAGs to become CFs and respective CFMCs.

Terminal Report (July 2020, 18pp) – reiterated the outputs table produced for the TE (see **Annex 2**). It included a number of lessons: Partnership with government and private sector (Comaco) was strategic and beneficial, especially in supporting the value chain from production to market buyer; Increased benefits from the forest resulted in changed mindset re. value of forest and need for conservation; The use of community radio to promote forest conservation was successful; Seasonality of activities was not fully understood; MLNR / FD and partners (DoE, ZEMA) not solely focused on PIU project support

#### Project Implementation Reviews (UNDP PIRs)

Three PIRs were assessed covering July 2017 to June 2020. No critical risks were mentioned until Covid-19. (see **Annex 5**)

#### Consultant Reports

The project hired quite an array of consultants<sup>35</sup>, although the impact of some / many was perhaps limited or peripheral to the actual results of the project. The reports are either reviewed directly in the results section (e.g. for VAG formation, and fire control plans), or reviewed in **Annex 5**.

### Communications

Communications are often difficult to assess, but the TE noted a certain lack of cohesion in project management, which increased once Comaco were awarded the large livelihoods contract. In particular, the DIT became somewhat sidelined. This was compounded by UNDP monitoring not being a prominent activity.

## 3.3. Project Results

The TE assessed the three levels of the project results framework - Objective, Outcome and Output. This was guided by the indicators and targets set at each level. Project success is also built upon the achievement of the outputs, according to 'the framework's intervention logic'<sup>36</sup>. UNDP / PIU were provided with two tables, within which they entered data:

- Progress towards Objective and Outcomes (Indicator-based) which is presented in **Annex 1**, and
- Progress towards Outputs which is described in **Annex 2**

According to UNDP-GEF TE guidance (**Annex 9**), these tables were rated and commented on. A detailed result-level analysis now follows of the Objective, Outcomes with their Indicators, and then of their corresponding Outputs.

### 3.3.1 Overall Result – Achievement of Objective and Outcome Indicators

#### Objective Level Indicator (Overall Result)

<sup>35</sup> Nat'l consultant ANR; Int'l consultant sustainable livelihoods; Nat'l consultant M&E; Int'l & Nat'l consultants GIS; Int'l consultant participatory Land Use Planning; Int'l consultant CBNRM, Forests and Land Tenure; Int'l & Nat'l consultants fire management; Nat'l consultant briquetting; Nat'l consultant efficient kilns; Socio-economic survey for briquetting; Nat'l consultant community mobilizer; Int'l consultant land cover mapping; Nat'l consultant VAG boundary verification; ESIA

<sup>36</sup> The 'intervention logic' of the strategic results framework (i.e. the project's logical framework) works vertically – activities should lead to outputs, which should lead to the outcomes, which in turn should lead to the objective and goal; and horizontally – if the assumptions are correct and the inputs (funds and human resources) are delivered, then the activities, outputs, outcomes should be able to lead to the goal (see [www.logframer.eu/content/what-logical-framework](http://www.logframer.eu/content/what-logical-framework))

The project objective was to '**Promote climate-resilient, community-based regeneration of indigenous forests in Zambia's Central Province, thereby securing ecosystem goods & services and enhancing the adaptive capacity of local communities**' (2 indicators)

The result was the establishment of five ANRs, to be managed by 30 VAGs, who had their capacity built to become more resilient to climate-change, had learnt and had adapted to new (farming and forestry) techniques. The stopping of the late-burn to the forest, was a key measure. The overall grading is **Moderately satisfactory**

### **1/ Number of forestry staff and local groups participating in climate-resilient, community-based regeneration of indigenous forests**

*(Baseline – 0; Target - At least 20 foresters and 1,200 members of local groups)*

#### *Result against Indicators*

There were 4,324 persons trained, of which 2,215 were men and 2,117 (49%) were women. There were 2,735 members of VAGs who participated in the project's agriculture activities. Twenty-six forestry staff (17 men, 9 women) were trained in sustainable forest management, climate-smart agriculture<sup>37</sup>, and renewable energy technologies.

#### *Analysis*

The figure of 4,324 persons trained was based on the training course numbers, from which some individuals may have attended more than one event. These persons were trained during 144 days, which was equivalent to ~29 days / year, over the 5-year project duration. The figure of 2,735 VAG members participating in agriculture activities is an actual number of identified and registered persons, who were recipients of the training and inputs provided under the Comaco sub-contract.

### **2/ Households benefiting from climate-resilient, community-based regeneration of indigenous forests**

*(Baseline - 0; Target – 3,000 households)*

#### *Result against Indicator*

The number of households benefiting from the project was 25,884, of which 14,976 households benefited from climate-smart agriculture, and 7,200 benefited from forest-based activities through (increased forest protection leading to) increased production of honey, caterpillars, and mushrooms (source project records). A fair and guaranteed price was provided by Comaco, who added market-value through their processing, packaging and marketing operation<sup>38</sup>. The project (via the Comaco contract), also supported livelihoods (household food health and nutrition) with protein-based provision of soya bean, 'K' beans and groundnut (40,680 kg in total) to 2,310 households, who after harvest, 'returned' 6,594 kg of seed to the VAGs for replication and upscaling.

#### *Analysis*

The project provided a significant benefit to the participating households of the 30 VAGs. The total direct number of households registered to work with Comaco (on agriculture and forestry interventions) from 2018, was 2,735. There were also ~500 direct beneficiaries of 'cash for work' boundary clearance. In terms of total membership of the VAGs, working for forest conservation, then the figure of 25,884 could be taken for total number of beneficiaries.

### **3.3.2 Effectiveness – Achievement of Outcomes 1-3**

#### **Effectiveness – Outcome 1 at the Indicator and Output Level**

**Outcome 1: Technical & institutional capacity of forest staff / communities to implement climate-resilient A/F & ANR practices** (2 indicators, 6 outputs)

The overall grading is for Outcome 1 was **Moderately satisfactory**. There were two indicators rated as: Satisfactory and Moderately satisfactory

### **1/ Change in capacity score of district forestry officers and VAG members for implementing ANR and A/F (CCA Indicator 10)**

*(Baseline – 0; Target - VAGs and district forestry officers score 2)*

<sup>37</sup> In the project context, inter-changeable with the term 'conservation agriculture'

<sup>38</sup> <https://itswild.org/products/>

*Result against Indicator*

The capacity of forestry staff and VAGs implementing ANR and AF interventions was significantly increased. The capacity assessment report<sup>39</sup> indicated a score to be 4 (**Annex 1**), however, the PIR 2019-20, indicated it was 3.

Capacity building included: sustainable forest management (protection and halting land conversion, illegal charcoal production, and 'slash & burn' fuelwood collection / shifting cultivation), improved forest fire management (patrolling, prohibition of a late season burn, fire-break establishment), conservation agriculture, small livestock production, on-farm charcoal production (from crop residues), and improved cookstoves (to reduce fuelwood use and reduce kitchen woodsmoke.) In total, within the 30 VAGs, there were 154 user / producer groups<sup>40</sup> established, participating in community livelihood development allied to reducing pressure on the (designated ANR) forest areas. (see **Annex 5** for list) The communities planted on-farm, 20,000 *Glyricydia* seeds / seedlings, which is an A/F species which is easily coppiced for fuelwood.

*Analysis*

The project scoring of the AMAT CCA Indicator 10 'Capacity of national / local government to implement adaptation measures', gives a maximum score of '2' ('To a large extent'). However, the TE would score the DFO staff together with the VAGs at '1' ('Partially'). The reason, is that whilst, a number of the VAG activities have become sustainable and have reduced their own pressure on the forests, they still require DFO support (which will become limited post-project) to stop pressure on the forest by outsiders.

**Participatory resource mapping & zoning (to identify areas for ANR and A/F) in six districts of Central Province (Output 1.1)***Result*

The project indicated that 'resource mapping was undertaken for the 11 districts in Central Province,' and that suitable areas for ANR and AF were identified.

*Analysis*

There was no evidence of the mapping for 11 districts, not even for the two project districts, apart from the identification and mapping of the five ANR areas, which were designated with the support of three chiefs. The project was designed to be undertaken in Serenje District (one district out of 11), which was divided in 2015, to become Serenje and Chitambo districts, thus the output here (including with its 'participatory' label) was somewhat confusing.

**30 VAGs formally established, with delineation of legal VAG boundaries and resource use rights (Output 1.2)***Result*

Thirty Village Action Groups (VAGs) were registered with the Register of Societies (for non-profit / small groups). Each VAG has a 10-person committee and constitution. VAG 'entity' registration enables opening a bank account and therefore to also access other funds / loans. The VAGs were additionally organised into 'user / producer groups' depending on activity.

Consultant Reports on VAG formationVAG formation (Aug 2017, pp26)

Reports on the formation of 22 of the VAGs with 120 user / producer groups<sup>41</sup>. The consultant worked with the FD, Community Dev. Dept, Agriculture Dept, Comaco, Traditional Authorities. (Out of 220 VAG committee members, 99 were women – i.e. 45%.)

The report lists the 22 VAGs by name and location together with their producer / user groups. (see **Annex 5**)

A template constitution is included. A link to the ANR sites in the constitution is unfortunately lacking

User groups listed include: Beekeeping, Mushroom, Caterpillars, Munkoyo roots, Timber, Charcoal production, Small livestock, Fish farming, Legume crops, Chikanda (Ichinyeka - Wild orchid), Crafts and Carpentry, Homestead woodlots, Wild

<sup>39</sup> Not provided to the TE

<sup>40</sup> Source PIR 2019-20. The two VAG formation reports list 160 groups

<sup>41</sup> The number of 'user / producer groups' may have expanded from 2018, under the Comaco livelihood contract. However, Comaco recorded household by intervention data, and not by number of groups

fruits<sup>42</sup>

VAG formation (March 2017, pp39)

Reports on the formation of 8 of the VAGs with 40 user / producer groups. Out of the VAG committee members, 46% were women. The report lists the 8 VAGs by name and location together with their producer / user groups. (see **Annex 5**)

### Analysis

The project design terminology was confusing in stipulating both ANR and VAG boundaries, with the latter being a group of households expected to support the management of ANR areas. Thus, there was no evidence of VAG boundaries mapped, but rather the ANR boundaries were mapped. The delineation of the portion of each ANR attributed to each VAGs was missing from the maps. The formal (legal) link between a VAG and an ANR was not apparent. Despite the VAGs themselves, being legal entities, they are new institutional structures and require further FD support in ANR area forest management, and in official designation post-project to become community forests (CFs). They also need continued support from the Comaco organisation in terms of livelihood activities (on-farm and in-forest) and their linkage to (ANR area) forest conservation.

### VAG boundaries & use zones registered under the Zambia Integrated Land Management & Information System (Output 1.3)

#### Result & Analysis

The project indicated that the VAG boundaries were mapped and submitted for registration with the Zambia Integrated Land Management and Information System (ZILMIS). The TE found no evidence of this. Furthermore, there was no evidence of the registration of the ANRs, beyond the maps produced by the Lusaka FD.<sup>43</sup> The project design here was probably also at fault, for not understanding, the legal context.

### Training for 20 district forestry staff & 2,000 VAG members on site-specific climate-resilient AF & natural regeneration practices (Output 1.4)

#### Result

This is a repeat of the first objective indicator.<sup>44</sup> See earlier.

In 2018/19, the project changed direction somewhat in undertaking a significant number of livelihood activities, which were delivered by the service provider, Comaco:

#### Inside the ANRs

- Mopane caterpillar; honey; mushroom collection – with secure market - These NTFP volumes increased due to reduction in late burning & technical support

#### On-farm

- Goats (300 nannies, 34 bucks – improved breed), with breeders constructing 235 secure 'loafing' benches for them – which collect manure underneath and thus less disease (100 initial beneficiaries) – offspring selected to give to three more goat farmers who in turn each had three goat farmers to provide for in the future [replication model]
- Vegetable garden seed packs (~220 x 25g) – good evidence that improved techniques had increased farmer income
- Treadle water pumps (x 130) for vegetable irrigation – cost ~2,500 ZMW - significant impact; Watering cans & sprayers (x 123)
- Mushroom driers (x 8)<sup>45</sup> in 4 ANR areas – need a baffle in the design, but otherwise efficient
- Bee hives (x 4,000) [537 beneficiaries, of which 196 were women] – Comaco indicated ~53% colonisation, farmers indicated marginally less at ~40%, quite possibly due to the hot tin rooves of the hives. Also, if burn late-season and during day – bees leave the hive
- Fish ponds [covering #11 ha] with fingerlings (limited no. of farmers benefitted - 14)
- Demonstration Plots with lead farmers / Farmer Field School activity (x 30) - Comaco worked well with Agri Dept & their 'Camp' Extension Officers to deliver / support FFSs and demos

<sup>42</sup> Comparison with the livelihoods assessment list of forest products being obtained (or forest use): Fuelwood, Poles, Mushroom, Insects, Charcoal, Medicinal, Indigenous vegetables, Honey, Timber, Bush meat, Fiber, Water, Insect (Caterpillar), Grazing (livestock), Wild fruit and nuts, Farmland, Tubers, Munkoyo, Grass

<sup>43</sup> The maps are not stamped, nor endorsed by the MLNR Land Administration Department, thus they legally remain as customary land under the control of the relevant chief (See **Annex 5** for example map for Musola ANR)

<sup>44</sup> Except for the VAG trainee numbers changing from 1,200 to 2,000.

<sup>45</sup> The driers can use the briquettes to dry mushroom, cassava, caterpillars and vegetables thereby improving product shelf-life

- Soya bean (x 22,000 kg); K Bean (13,180 kg); Groundnut (5,500 kg) [2,180 beneficiaries]
- A/F *Gliricidia* seed [600 kg planted over 2,000 ha on-farm – TE couldn't verify this. Used for fuelwood
- Training – bees / livestock / mushroom / vegetable gardening (x ~1,900 farmers)
- Farmers beneficiaries - 2,735 of which all received conservation farming / improved agricultural techniques training

**Outputs**

- Seed recovery for VAG seed banks >6,000 kg for distribution to 386 other farmers [Replication]. (i.e. the model was if Comaco gave 10kg seed, after harvest the farmer gave the VAG 10kg seed to bank / provide to another farmer)
- Value-chain purchase of farmers goods (~66,000 kg @ ~280,000 ZMW) – for which soya bean (56,213 kg), honey (2,498 kg), caterpillar (1,738 kg), mushroom (5,000 kg)
- Value-chain uptake – of the 2,735 farmers in the scheme, 788 sold their products back to Comaco

**Analysis**

Comaco was brought in during 2018 and supplied services in 2018/19. They were given a large direct contract by UNDP (~\$0.45m) to deliver income generating activities. The budget was from Component 1 - ANR 'cash for work' budget line (~\$0.94m). Their work was very successful (as this was what they already do), but the agriculture aspects weren't really part of the project design, except if you considered the approach to be as an integrated forest 'conservation & development' model. i.e. 'villagers gain interest in forest management as livelihoods are concurrently made more secure.' Without this contract, the VAGs wouldn't have benefited very much from the project.

**2/ Climate-resilient A/F and ANR practices implemented across 15,000 hectares (CCA Indicator 2)**

*(Baseline - 0; Target – 15,000 hectares of climate-resilient agro-forestry established)*

**Result**

District	ANR	Village	Area (ha)	Chiefdom
Chitambo	<b>Musangashi</b>	Musangashi	2,589	Chief Chitambo
Chitambo	<b>Musola</b>	London	4,100	Chief Muchinka
		Mwimbula		
		Myenje		
Chitambo	<b>Nakatambo</b>	Nakatambo	3,318	Chief Muchinka
Serenje	<b>Teta</b>	Teta	400	Chief Kabamba
Serenje	<b>Mwenshi</b>	Mwenshi Butele	5,153	Chief Kabamba
<b>Total</b>			<b>15,560</b>	

The project set aside 15,560 ha of miombo woodland for ANR. There was an increase in the goods and services coming out of these areas. The increase in honey, caterpillars and mushrooms was clearly recorded, and resulted in increased income for the communities. The ANR areas are now in the process of being transformed into CFs, and are part of the project exit strategy. This will mean increased responsibilities, roles and benefits to the local communities.

**Analysis**

The project design confused A/F with ANR all the way through. To be clear, A/F is unsuitable as an intervention inside the miombo woodlands, as the woodlands regenerate naturally and are communally managed. Also, to note, 'ANR' as a forestry intervention, is usually associated with 'gap planting with key species' and protection. In this case, there was no planting inside the woodlands as again, they regenerate naturally. So, the only 'assists' were improved protection measures (boundary demarcation, patrolling and prohibition of late-season burning - i.e. stopping by end August). Thus, there was no tree planting inside the forest, despite the project budget including \$0.1m for nurseries and \$0.2m for seedling procurement<sup>46</sup>.

**Fuelwood collection zones established in all VAGs and coppicing practices promoted (Output 1.5)**

**Result and Analysis**

The ANRs were zoned based on available resources and uses, which included fuelwood, bee-keeping, caterpillars mushroom, and wild fruit. The zoning was not evident to the TE.

<sup>46</sup> The Comaco UNDP FACE form indicated ~\$250 (i.e. <\$0.001m) for A/F *gliricidia* seed, which once planted can be collected and passed on to the next farmer (replication). It was all planted on-farm (see Output 1.4)

## Climate-resilient AF & ANR piloted in 15,000 hectares (Output 1.6)

### Result

This is a repeat of the earlier indicator. Five ANR zones were designated covering an area of 15,560 ha, and delineated on FD maps. Their boundaries were 'demarcated' on the ground by clearance lines (~10 m wide). The five ANRs were: Teta, Musangashi, Musola, Nakatambo, and Mwenshi. They were provided by three chiefs for demonstration. In terms of the project timeline, the ANRs were agreed in 2016; the VAGs to manage them established in 2017; they were mapped and had their boundaries cleared in 2017. This was all good progress.

### Analysis

Shifting cultivation was effectively stopped. Illegal charcoal production was significantly reduced, although the villagers found it difficult to stop repeat offenders. However, in the surrounding district areas, forest is still being opened-up for agriculture, thus, forest land in general is not secure, even if project partners indicated that the chiefs are not giving away land inside the ANRs.

At issue is the fact that the legal status of the ANRs is now unclear, and there is with no formal agreement post-project. The ANRs are also missing boundary marker pillars and signboards, which was part of the ZEMA contract. The reasons are unclear, including a delay in 2020 due to Covid-19, however, it could be because the land has no binding legal status as an ANR. The chiefs' (written) permission was for project duration only.

The project had an opportunity in 2018 to follow the new CF regulations and pilot one of the areas to become a CF. Although this was an FD / project intention for some time, it is difficult to gauge the level of awareness-raising needed for areas to become CFs. What the project had was staffing with financial resources, which the FD post-project now doesn't have to implement CF actions.

### Effectiveness – Outcome 2 at the Indicator and Output Level

**Outcome 2: Fire management plans (in all Central Province districts) to deliver regeneration targets and reduce fire frequency by 25% across the province, averaged over 4 years (2 indicators, 4 outputs)**

The overall grading for Outcome 2 was **Moderately Unsatisfactory**. There were two indicators rated as: Moderately satisfactory; and Moderately unsatisfactory. There was a project design issue in considering fire control plans for all Central Province districts, whereas the project itself only prepared plans to cover the 15,000 hectares of ANR land, and not even for one pilot district - Serenje.

### **1/ Change in capacity score of district forest staff, VAG members & local authorities for planning & implementing fire management actions (CCA Indicator 10)**

(Baseline – 0; Target - VAG members and local authorities score 2)

#### Result against Indicator

In 2016, the project identified the ANRs in 2016. In 2017, the boundaries were delineated (on maps) and demarcated (on the ground through boundary clearance), and fire break avenues were created. In 2018-19, there was maintenance (boundaries and fire break lines) with ~500 villagers involved. The early-burning regime was agreed with local leaders (chiefs) and villagers in 2018. Five fire management plans were prepared, one for each of the ANRs<sup>47</sup>. The project's capacity assessment indicated a score of 4.

#### Analysis

The project scoring of the AMAT CCA Indicator 10 'Capacity of national / local government to implement adaptation measures', had a maximum score of '2' ('To a large extent'), however, the TE would score '1' ('Partially')<sup>48</sup>, if considering the VAGs together with the government officers.

The issue is now one of management and sustainability, bearing in mind the use of the tractors for fire-break work is unlikely without funds. This leaves all the fire control work to the VAGs themselves, without much support, even if the villagers continue patrol work.

### **Fire incidence dataset for Central Province to determine burn severity classifications & climate change vulnerability of Miombo Woodlands (Output 2.1)**

#### Result

<sup>47</sup> Only two were provided to the TE to assess

<sup>48</sup> The only other option is '0 - Not at all'

'ZEMA collects MODIS<sup>49</sup> satellite data for national fire detection and analysis, and is in the process of developing a district-level fire-warning system. The project developed a fire incidence database, which is hosted by ZEMA, with FD having access. Updates are made on an annual basis' (source – project records). Twelve district officers were trained in the use of satellite data to detect fire, however the relevance of this once they returned to their districts wasn't clear.

### Analysis

The TE found no evidence of the fire incidence database. There isn't either a regular bulletin on fire-risk warning, or a real-time fire-warning system set-up. This is despite meteorological office seasonal / periodic weather forecasts being available.

### Fire management plans developed & operational based on fire incidence & local inputs (Output 2.2)

#### Result

Fire risk management plans were developed for each of the five ANRs. The plans have been operationalised by the communities who have formed fire management teams.

#### Musola ANR Fire Management Plan (2017, pp59) – as an example:<sup>50</sup>

- Musola ANR is 4,100 ha in Chitambo District
- The community-based plan sets out to: identify primary causes of fire; assess its impacts; identify fire exclusion zones with protection methods; establish a fire management team; provide an awareness method; provide a firebreak creation & maintenance schedule; provide a monitoring schedule
- Nine communities cover the ANR
- Map produced by FD GIS Unit 2017 (see **Annex 5**)
- Notes that Chitambo district annually sets fire to and burns ~300,000 ha of land, of which early season (Apr-June) covered 18,090 ha; mid-season (July -Aug) covered 132,925 ha; and late season fire (Sept – Nov) covered ~162,908 ha (av. 2000-15)<sup>51</sup>
- Provides a fire management strategy – Prevention (education, outreach); Fire use (controlled vs uncontrolled); Fire suppression (organized vs ad hoc)
- The plan indicates a step-wise method: Fire suppression – Controlled burning – Prevention – Weather observation
- Causes of fire – to improve edible caterpillar habitat; to hunt for mice; to slash & burn for land conversion to agriculture
- Recommends that the Fire Control Team is placed under the District Co-ordinating Committee
- PRA maps were produced by the villages to indicate fire break zones which was good
- The plan debunks the traditional burning in Musola (Aug 25 – Sept 5) or even later, to promote new leaf growth of *Julbernardia paniculata* trees, when in fact the tree naturally loses its leaf mid-Aug – early Sept, before producing new leaf which the caterpillars like. [The project instigated 'no burning after August' which improved caterpillar yield]
- Slash & burn clearance in Oct – Nov, prior to the rainy season, but practice only allows a few years of agriculture, before the land needs to be vacated for ~25 years, due to the inherent low fertility. Plus, maize depletes the soil nutrients faster than sorghum or millet. So, such maize fields are only cultivated for 2 years.
- Fire break schedule included - good
- Monitoring schedule included (post-burning in Nov; pre-fire in April; post-fire in Nov; agri field inspection in July) – with areas and responsible person - good
- Includes fire legislation - good

### Analysis

The plan is partly a learning guide and template, as well as elements of a plan. E.g. the plan provides a process to establish a fire control team. As a learning guide, it is clear and informative. However, the plan is missing the institutional responsibilities, the local village agreement on where / how to control fire, and when to burn etc. and who will 'pay' for the labour to maintain the ANR boundary and internal fire breaks. It does include a fire monitoring schedule and a firebreak maintenance schedule. Thus, the plans are a good start.

<sup>49</sup> Moderate Resolution Imaging Spectroradiometer - satellite data for land use change (including temperature and fire data)

<sup>50</sup> The other fire control plan seen for Teta was the same

<sup>51</sup> Serenje District Average 2000-15, annual forest burn 226,479 ha / year (~20% of the land area of 1,161,188 ha) with early-season fires (April - June) burning 3,221 ha; mid-season fires (July - Aug) burning 114,660 ha, and late-season fires burning (Sept - Nov) 108,798. With most hot dry post-harvest season fires are set between late Aug - Oct. (Source Teta Fire Management Plan)

## District forestry staff, VAG members & local authorities trained in fire protection (boundary and fire-break management, early burning) (Output 2.3)

### Result & Analysis

There were 65 participants trained for 10 days on fire control management planning (data from training record – **Annex 5**). Unfortunately, the ANR boundaries are not visible to outsiders, as ZEMA have not erected the boundary markers, nor signboards (which would include fire prohibition months).

## 2.2/ Change in frequency of fire across all districts in Central Province

(Baseline – not stated; Target - Frequency of fires reduced by 25%)

### Result against Indicator

'The frequency of late-fire occurrence has been a challenge and has led to forest degradation. To address this, the project supported fire management training, and the development of fire management plans at both district and VAG levels. The fire occurrence database was also updated'. ZEMA fire occurrence data for Serenje and Chitambo pilot areas indicated that fire incidence has been reduced by 16% (2015-18) (source - PIR - June 2019)

### Analysis

The evidence district-wide of reduced fire could not be verified. The original ZEMA report was not available to determine the statistical / analytical methods used to obtain this figure of 16% reduction. Also, the project only worked in the five ANRs, so the project impact district-wide was difficult to measure.

## Awareness-raising across all districts on fire management measures to strengthen the adaptive capacity of Miombo forests to climate change (Output 2.4)

### Result & Analysis

Fire awareness was undertaken for 604 participants over 6 days (see **Annex 5** – training record). The project claimed that the awareness training was conducted in all 11 districts in the province, although no evidence was found to support this.

## Effectiveness – Outcome 3 at the Indicator and Output Level

### Outcome 3: Energy-efficient charcoal production and fuelwood-saving technologies in targeted areas of Central Province (1 indicator, 2 outputs)

The overall grading for Outcome 3 was **Unsatisfactory**. There was one indicator rated as: Unsatisfactory

#### 1/ Improved charcoal kilns and briquetting machines (CCA Indicator 4)

(Baseline – 0; Target - 120 households using charcoal retort kilns; and 50 households using crop residue briquetting machines (20% should be women)

### Result against Indicator

There were no retort kilns supplied by the project. There were 40 briquetting machines supplied by the project.<sup>52</sup>

### Analysis

From a budget of \$300,000, there was \$120,000 for 120 retort kilns, \$17,500 for 50 briquetting sets, plus \$113,000 for service providers, as well as \$50,000 for training / awareness materials. There were no retort kilns supplied by the project, essentially because the project design failed to convey any sustainable forest management methodology for fuelwood generation within the miombo woodlands. Also, the 15,000 ha was too small to service 120 retort kilns. As mentioned, the project design assumed 'coppicing' in the woodlands was the answer, but it was not, as it perpetuated the slash (& burn) practice<sup>53</sup>.

The second issue was that the FD had no interest in licensing charcoal production from these retort kilns, as the FD couldn't monitor if the wood was from sustainable sources or not, and if successful, the retort kilns could be replicated to other areas, where there was even less protection of the woodlands. So, despite, the concept of 'more efficient charcoal production would lead to less pressure on the woodlands', the intervention was a non-

<sup>52</sup> AMAT CCA Indicator 4 (Adoption of climate-resilient technologies/ practices) – 40 briquetting 'drum and press' sets supplied

<sup>53</sup> The A/F species supplied to generate fuelwood, through coppicing, was successful, but on-farm, and with the wood used directly for cookstoves.

starter for these reasons.

**Within 20 VAGs: (i) charcoal producer groups formed to operate retort kilns; (ii) 120 charcoal retort kiln piloted to replace earth kilns; (iii) monitoring, tracking & licensing system for retort kilns (Output 3.1)**

*Result*

Twenty-five sustainable charcoal producer groups were formed with 25 members each. The groups were trained in energy-efficient technologies such as solar, LPG, improved clay cookstoves, briquetting and efficient kilns. There were no retort kilns supplied, as they were said to be inefficient (a low wood to charcoal conversion rate) and stationary.

*Analysis*

Whilst the DoE was responsible for fuel-efficient cooking systems, the FD was responsible for the sustainable supply of the fuelwood, and they couldn't guarantee this. The charcoal producer groups only really benefited from the supply of 40 briquetting 'drum and press' sets. (see next Output 3.2). There was \$120,000 budgeted for the purchase of the retort kilns. The question is, why if the intervention wasn't implemented, weren't the funds re-directed to the successful briquette 'drum & press' sets? The retort kilns also had mobile versions. A number should have been supplied on a community group-basis, i.e. through the VAGs so that groups of farmers could utilise together their own A/F woodlots (which were beginning to produce more fuelwood), to produce sustainable charcoal, which could easily be monitored and licenced<sup>54</sup>.

**50 'Crop residue to charcoal' briquetting machines / presses piloted (Output 3.2)**

*Result*

There were 40 briquetting 'drum & press' sets provided (target was 50), by the Technology Development & Advisory Unit (TDAU, University of Zambia). They designed the airflow (holes) system for the 210 litre oil drums (i.e. the combustion chamber for the pyrolysis), with a smoke chimney to remove the toxic chemicals from the wood<sup>55</sup>. The material used to make the charcoal was mainly crop residues (available June – Oct), such as spent maize cobs. After combustion, the burnt mix was pulverised and mixed with a binding agent (cassava peel powder), and then put through a press to make the briquettes. There were two press designs demonstrated, one like a standard 'brick-making press' and the other a converted meat mincer (with the perforated disks modified to make a sausage-shape briquette).

*Analysis*

The drum and press briquetting system was technically excellent. The residue to charcoal conversion rate was good and the quality of the briquettes high. A standard 50kg bag of charcoal sells for 25 ZMW (\$1.25), whereas a 50kg bag of these sustainable briquettes is being sold in local markets for 150 ZMW (\$6.5).

However, these briquette systems were delivered very late to the project, and there were not enough. Twenty of the 40 sets were only supplied during the TE mission in August 2020, meaning that their training was limited, with no promotion, outreach or replication. The briquette 'sausage' mincer was an imported German and modified meat mincer, which meant it was expensive and not locally available. Thus, the project should have engaged TDAU much earlier, and requested more attention to the 'pressing' structure. For example, the TDAU workshop is a fully equipped light engineering metal workshop, and should have been utilised to design and develop a double egg-carton shaped mould, which could be replicated by a local blacksmith. Then the whole process, would be sustainable.

**Improved Clay Cookstove (Unintended Output)**

*Result*

DoE hired Zambia Energy & Environmental Organization (Zengo) to demonstrate two designs of clay cookstove, one with and one without a chimney. Zengo built 20 clay stoves (during a five-day training in Chitambo).

*Analysis*

The design 'without chimney' should not have been promoted. Chimney-less stoves are a high danger to women

<sup>54</sup> A twin-drum retort kiln was recommended for piloting (24-hour burn time depending on wood moisture content). The design was said to have a 30% conversion efficiency from small Acacia wood, compared with a 20% conversion for an improved earth kiln. (Piloting charcoal efficient kilns in Chitambo & Serenje Districts, Draft Report, Mwenya, K. K., 2017, 62pp)

<sup>55</sup> Smoke turns white, then yellow which is the toxic materials burning off, then clear. It burns at 200-300°C

and children's health<sup>56</sup>. Even the project's 'Energy manual' had a picture of chimney-less stove on the cover. The stove design used 3 pieces of iron to rest the pot on, however the stoves viewed by the TE had already cracked. An embedded iron tripod ring would have been better, such as those commonly used in clay stoves in Nepal and India. The TE estimated that for a Serenje VAG, that only 3 out of 20 households had stoves with chimneys, which was very poor compared with Chitambo VAGs (who received the training and demonstration). Thus again, the promotion, demonstration, and replication was very limited.

### 3.3.3 Training and Awareness

#### Training, Awareness & Knowledge Products

There were 4,324 persons trained under the project, of which 2,215 were men and 2,117 (49%) were women<sup>57</sup>. There were 144 training days delivered, which over five years amounts to ~29 days / year or 2.4 days / month. See **Annex 5** for full table.

Comaco were active in presenting a regular slot on the community radio farming programs in the districts which were three times per week. They also supplied a 'Better Life' book, which covered forest conservation, farming, villager health and nutrition for example.

## 3.4. Efficiency, Relevance & Ownership

### Efficiency

According to the budget, planned expenditure on project management staffing was: within the three Outcomes \$414,000 (PM, Admin, and Driver); and under project management (Admin) \$36,000, which added up to \$450,000 out of a GEF budget of \$3,885,000. This equated to nearly 9% of the total budget. Thus, the cost-efficiency of running this project over five years as opposed to four, could be questioned. UNDP provided 'Combined Delivery Reports' with their standard accounting codes<sup>58</sup>, whereas the annual plans were prepared against the logframe and activities. This meant that there was no accountability or transparency regarding what the GEF funds were actually spent on. Thus 'Efficiency' was graded as **Moderately Unsatisfactory**.

### Relevance

The project was in line with LDCF Climate Change Adaptation Objectives (CCA-1: Vulnerability to climate change impacts, including variability, at local, national and global level; CCA-2: Institutional / technical capacities for CCA; and CCA-3: Promote transfer and adoption of adaptation technology). The project was in line with UN Sustainable Development Goals (SDGs - Target 1.1 (eradicate poverty); Target 12.2 (sustainable use of natural resources); and Target 13.1 (resilience & adaptive capacity to climate-related hazards) and 13.2 (integrate climate change measures into national policies, strategies and planning). (See Section 2.1 – Development Context)

On a national level, there are a number of policies / plans that are relevant. The 7<sup>th</sup> National Development Plan (7<sup>th</sup> NDP, 2017-21) calls for an integrated / multi-sectoral approach with its Vision 2030 as a planning tool which targets: food security & climate-resilient livelihoods; socio-economic development & the promotion of integrated environmental management; and sustainable use of natural resources. The National Decentralisation Policy (NDP, 2010) allows for decentralised decision-making down to district level with bottom up planning / budgeting. The National Agricultural Policy (NAP, 2013) supports Objectives: 9 - Improve food & nutrition security; 10 - Sustainable management of natural resources; and 11 - Mainstream environment and climate change in the agriculture sector.

The Forests Act (2015) defines Community Forests (CFs), and the Forest CF Management Regulations (2018), provide the mechanism and process to create CFs. The Lands Act (1995) – provides for the leasehold certification of land holding (99 years), taking into account customary land laws / local Chief consent. The forest and lands acts are relevant for the future sustainability of the indigenous forests.

<sup>56</sup> UNDP PIR 2019-20 – 'The outcome on energy efficient technologies has made some progress as more communities have adopted the fixed biomass stoves. These have supported the government strategy of enhancing human development through improved health and related services. The reduction in air pollution indoor when cooking has resulted in improved health for women and girls especially for respiratory problems'. The TE would say that such sweeping statements should not be made by an international 'development' agency, when there was only evidence of ~10 stoves with chimneys having been constructed.

<sup>57</sup> Some individuals may have attended more than one course.

<sup>58</sup> Contractual services Companies (72100); Miscellaneous Expenses (74500); Audio Visual & Print Prod Costs (74200); Travel (71600); Local consultants (71300); Contractual Services Individuals (71400); Training workshops & conferences (75700); Equipment & furniture (72200); Professional services (74100); International consultants (71200)

In hindsight, the project design was relevant, but poorly presented, with a number of short-comings. Whilst it was a forestry project, needed forestry interventions were either missing or not appropriate in cases. E.g. any requirement to prepare a forest management plan, or the fact that coppicing trees within a 'slash' culture, was never going to work, especially without a plan. There wasn't an intervention that linked improved protection, with improved fuelwood availability, with a future where fuelwood zones could be rotated. This was only implied. The requirement to link a sustainable / certified supply of fuelwood with certified charcoal production was mentioned in the prodoc, but no mechanism explained. As a result, for example, there was no charcoal production licensed, and the improved retort kilns were never implemented. There was no legal link between the project's local institutional structures and the forests they were responsible for. Furthermore, the budget included significant sums (\$335,000) for tree nurseries and seedlings, when 'planting' inside naturally regenerating forest areas was not a technically sound option. 'Relevance' was graded as **Moderately Unsatisfactory**.

### Ownership

The ownership at local 'VAG' level was noticeable, in particular the enthusiasm for user / producer groups. However, the ownership by line agencies from district to province to national level was poor. This was in part due to UNDP controlling the project and not allowing much responsibility to the FD to implement the project. This in turn was partly due to the FD lacking the skills needed in certain respects, especially it appeared in managing and communicating requirements to the partners for Component 1, namely the DACO, Component 2, namely ZEMA for the fire control, and Component 3, namely DoE for the improved fuelwood production and use technologies.

## 3.5. GEF Additionality

GEF 'additionality' considers the added value of the GEF funding, above what it would have been without the investment. The concept is one where GEF finances the increment or additional costs associated with transforming a project with national benefit into one with added global environmental benefit. Such 'incremental cost funding' is a fundamental operating principle of the GEF. This 'additionally' can be broken down into six categories, and whilst they are covered within the report, they are specifically summarised here against the project's 'incremental design' (See also Section 2.2. Project Design which includes a table - Incremental Cost Advantage / Environmental Additionality by Design)

<b>Additionality</b>	<b>Design Increment</b>	<b>TE Assessment of Result</b>
<u>Environmental</u> (interventions / services to achieve the global environmental benefits (e.g. CO <sub>2</sub> reduction)	From 'slash & burn' uncontrolled degradation of forest to community managed regeneration, protection, and added NTFP value – making the protection of the forest economically viable	Halting the degradation of 15,000 ha of forest land through improved community management. The methodology used as a precursor for CF
<u>Legal / Regulatory</u> (environmental improvement through legal change)	No legal system to control forest fire – Environment Act (2011) only mentions fire once in connection with national emergencies	Forest Act (2015) – requires forest management entities / CFs to have a management plan, which includes fire control (fire-breaks, controlled burns) CF Regulations (2018), were applied by the project in beginning to convert VAG ANR areas to CF management areas
<u>Institutional / Governance</u> (improvement via change in institutional behaviour or operational methods)	Decentralisation Policy (2010) – was seen as an opportunity for local management of resources by district government and local communities	Decentralisation Policy was not applied by FD to DFOs, however village empowerment over forest areas was modelled by the project Fire management plans prepared by the villagers for their 5 forest areas (15,000 ha)
<u>Financial</u> (incremental cost which allows country benefits into global environmental benefits)	FD lacked financial resources to support local forest management	The FD was enabled to support local forest management, and learnt that it was a viable option for SFM with their limited funds and physical resources
<u>Socio-Economic</u> (livelihoods & societal benefits)	The villagers lacked the assets to protect the forest, indeed their dependency on it was destroying it	The project provided the villagers with 'Livelihood Capital Assets' <sup>59</sup> – <u>Natural</u> – developing income from the forest

<sup>59</sup> DfID – sustainable Livelihoods – 5 Capital Assets - [www.glopp.ch/B7/en/multimedia/B7\\_1\\_pdf2.pdf](http://www.glopp.ch/B7/en/multimedia/B7_1_pdf2.pdf)

		<p><u>Human</u> – provided skills in agriculture, A/F, forest management, and NTFP production</p> <p><u>Physical</u> – provided seed, small livestock and tools to develop their farming systems</p> <p><u>Social</u> – formed VAGs to protect the forest and create ‘User / Producer’ groups</p> <p><u>Financial</u> – provided a community-managed feedback mechanism from inputs, so that more villagers could benefit (revolving fund); significantly increased village income generation</p>
<p><u>Innovation</u> (sustainable technologies, &amp; overcoming bad practices)</p>	<p>Charcoal production - from inefficient earth kilns to improved retort kilns</p>	<p>Crop residue to charcoal briquetting ‘drum &amp; press’ system was successful. Retort kilns not taken up</p>

## 4. SUSTAINABILITY

The overall rating is that sustainability is **Moderately Unlikely**<sup>60</sup>

### 4.1. Financial Risks to Sustainability

The rating for Financial Sustainability is ‘Moderately Unlikely,’ i.e. there is a significant risk that key outcomes will not carry on after project closure, although some outputs should carry on.

The forestry sector remains significantly underfunded in comparison to other departments and ministries. At issue is the fact that the FD struggles to generate funds as its only sources are from licensing timber felling and charcoal production, both of which directly damage the environment and accelerate climate change.

In 2021, the project interventions need to become self-financing, however the FD, under their budget cycle 2021, are unable to include (as ceiling amounts are pre-set by the Treasury and state planning offices), for example the costs of running the vehicles (2 4WD, 2 Tractors, 4 motorbikes) or the new DFO at Chitambo. Maintenance contracts and insurance costs appear not to have been written in, at the time of purchase. Moreover, the costs of maintaining the ANRs and their VAGs are not there on the side of the FD, despite the project / FD promoting CF for the last 2-3 years, the FD lack the funds to actually instigate this.

### 4.2 Socio-economic Risks to Sustainability

The rating for Socio-economic Sustainability is ‘Moderately Likely,’ i.e. there are moderate risks, but expectations are, that at least some outcomes will be sustained.

At present, the village development model, is based on a revolving fund of goods only, and not cash. Thus, with the project having provided the start-up inputs, if you want to become a soya bean grower or goat farmer, then seed and kids are now given free (with a percentage return post-harvest or post off-spring production). However, such a model is limited to those with land, and / or an interest in the particular farming interventions. The vulnerable or poor households (such as the land-less, young mothers / parents looking after children with no time to labour, or seasonal labourers) can’t easily access such interventions. Therefore, in order to support diversification, and less limited income generating activities, it is recommended that village saving and lending schemes are introduced<sup>61</sup>.

The villager forest conservation model is also based on improved forest protection (e.g. stopping the late burn after August, stopping fuelwood collection, and stopping charcoal production) to increase NTFPs, for which there is a ready-market. The NTFPs (honey, Mopane caterpillars, mushrooms) provided added income, making the value of maintaining the forest higher than from otherwise making charcoal for example. Added to this, with increased managed protection, the timber / wood volume is becoming more available (thus can be sustainably managed in the future), and this added biomass supports carbon sequestration. The idea is that under such management, the options for carbon credits increase. This has proved viable and is working for Comaco in Eastern Province, and is

<sup>60</sup> The low rating from all 4 sustainability categories must be taken as the overall rating for sustainability

<sup>61</sup> Comaco also support cooperatives in village banking, outside the formal banking sector – (details in their ‘Better Life’ book)

a model they are hoping to replicate in the project area. These actions together are a tribute to the FD, Comaco, chiefs and villagers.

### 4.3. Institutional & Governance Risks to Sustainability

The rating for Institutional & Governance Sustainability is 'Moderately Likely,' i.e. there are moderate risks, but expectations are, that at least some outcomes will be sustained.

The main institutional structure created by the project was the VAG. The main objective of the 30 VAGs was to govern the five ANRs. For sustainability, the VAGs need to be formally linked to the ANRs, which are located on customary land. The mechanism through which this can now happen is community forestry (CF). However, it is a challenge for FD to support the creation of CFs, as they need the resources to do so (logistics, finances, mapping, inventory surveyors, CFMP preparation consultant). CFs may also obtain legal tenure in the future via Land Leasehold Certification.

In the meantime, Comaco appear willing to 'adopt' the VAGs and their ANRs, as Comaco have been working with the VAGs and generating income from the ANRs since 2018, and on a significant scale. What is less clear is the immediate future of the ANRs, in terms of their land tenure. The ANRs require the further 'agreement to manage' by the three chiefs involved, and this may need letters of request from the FD to the chiefs.

In terms of institutional governance, FD lags behind under the decentralisation policy. Much more should be made of the capacity of the provincial FD (in Kabwe) to support local forest management, such as trained foresters advising on sustainable (low-impact rotational) harvesting plans, for multi-purpose forest i.e. for NTFPs, carbon capture and licenced charcoal production. Indeed, the one major input of the Kabwe office was the identification and mapping of the five ANR boundaries. But in order to support CF in the future (e.g. boundary mapping, CF management plan with inventory, monitoring system etc), the provincial office need to be at least fully staffed (which they are not), and provided the resources to work in the field. It was suggested that the Lusaka-based project 4WD vehicle (or equivalent) be re-assigned to the Provincial FD.

### 4.3. Environmental Risks to Sustainability

The rating for Environmental Sustainability is 'Moderately Likely,' i.e. there are moderate risks, but expectations are, that at least some outcomes will be sustained.

Comaco have Community Conservation Areas (CCAs), which are equivalent to ANRs, indeed, the ANR model was from Comaco. Furthermore, Comaco have such CCA areas in the two districts (~37,000 ha), with group agreements on farming support in return for improved management of the forest CCAs. The clear option at present is that Comaco adopt the five project ANR areas, which they are willing to do. If and when these areas are converted to CF, then this would improve their sustainable management and official status<sup>62</sup>.

Post-project, the fire maintenance activities need to continue, however these are not really sustainable without further funds. For the maintenance of boundaries and fire breaks, the VAGs either need to provide 'community labour days' or generate a tax from the NTFPs being produced from these forests, for the purpose of paying for the clearance of boundary lines, and fire control monitoring<sup>63</sup>.

## 5. IMPACT & CATALYTIC EFFECT

### 5.1. Impact

#### Reduction in stress on ecological systems

The overall rating for impact would be 'Minimal'<sup>64</sup>. SFM remains fairly weak. However, the most important point is that the area covered by the project 156 km<sup>2</sup> (15,560 ha) is very small in comparison to the land area in Serenje (23,351 km<sup>2</sup>) and Chitambo (5,252 km<sup>2</sup>) districts, much of which is forested. Furthermore, of the forested land,

<sup>62</sup> The terminology ANR or CCA, is not important, however, as a CF, the legal status of the forest land would be 'grounded' for the first time.

<sup>63</sup> FD lack resources to get out into the communities, and ZEMA lack field staff, thus this work is now down to the communities.

<sup>64</sup> Using the 2012 guideline. There is no grading for impact under the 2020 guideline.

the two districts annually burn an area covering over 5,250 km<sup>2</sup> (525,000 ha), which equates to ~3% of this for the project area.

### Regulatory & policy changes

#### Community Forestry (CF)

The ANR land given by the chiefs, was for the project duration only and lacks effective / full legal status, despite endorsement by the FD (as the ANRs were located on customary land, and not in State forest land.) The VAGs need to become CF management groups. Under the Forest Act (2015), a CF management committee (board) can manage a CF area<sup>65</sup>, and its standing resources for the long-term purpose of forestry. The Forest Act (2015) legalised CFs, with a registered group, constitution, and CF management plan (CFMP), which the FD endorses, and is brought into law under ministerial Statutory Instrument, and if need be with Presidential Ascent. The details were set out with in the CF Regulations (2018). However, it would be better if the CFs could be approved by government decision, as opposed to by a 'minister under Statutory Instrument', which could be the subject of inducements, or dispute once a minister changes. Furthermore, whilst a minister may approve a CF, it would remain under customary land ownership, and could be the subject of the chief giving away plots of land within.

However, under the Lands Act (1995), the MLNR's Land Administration Department can issue a 99-year land leasehold certificate, which would ensure 'sustainable use for forestry purposes' and empower a community to stop land appropriation for other uses<sup>66</sup>. Thus, a registered VAG or Community Conservation Area group would be afforded greater legal status, if once they have completed the basic CF steps (as far as FD endorsement), they then applied for a CF leasehold certificate (up to 99 years)<sup>67</sup>. This would effectively take the CF out of customary or state land, and become under private entity tenure<sup>68</sup>.

Why make CFs and legalise through tenure certification? The CFs (as demonstrated by the project ANRs) can: generate income (NTPFs, carbon credits); address the imbalance toward agriculture land conversion; and mitigate against climate change (less GHGs via carbon capture). The former two points means that CFs are at risk, unless they secure such tenure.

## 5.2. Catalytic Effect

### Scaling-up and Replication

The project's best example of scaling-up or replication was the 'revolving fund' model for agriculture and livestock inputs. The replication (collection) of *Gliricidia sepium* seed for further distribution was also of benefit to the farmers in fuelwood production (as it readily coppices), in soil-fixing of nitrogen as it is a leguminous tree, indirectly in taking 'pressure off the forest,' and in labour-saving in reducing the need for fuelwood collection.

### Demonstration

The production of the participatory fire management plans for the forest areas was opportune, especially when measured against the traditional biannual burning of the forest, which was degrading it.

### Production of new technologies / approaches

Whilst strictly speaking CF wasn't part of the project design because it didn't exist prior to 2015, it became the main approach and future direction for the ANRs and their VAGs. In the future, hopefully within the next 5-10 years, the development of CFs with CFMPs, should eventually allow for the sustainable extraction of wood resources, which will counter-balance the unsustainable supply / demand of charcoal. In this context, in the future, mobile twin-drum retort kilns may be managed on a VAG basis for further 'licenced' income generation.

<sup>65</sup> Similar to Wildlife 'Game' Management Board

<sup>66</sup> A community as a registered CF entity, with a committee and a membership, would be unlikely to sell the certificate, as they would need widespread agreement of their CF members. Although in the past, there have been some issues of community game areas being sold / put into private hands (not verified)

<sup>67</sup> Confirmed by the Land Administration Department. But to note, if >250ha, then by Statutory Instrument for a Minister to sign, then the land office map / issue certificate

<sup>68</sup> There are two other avenues for land allocation. Where there are land plots of <250 ha, they can have a 30-year Occupancy Licence issued by the DC Commissioner, or in the case of customary land, chiefs can apportion (same size of area. But in both case, there would be too many parcels for making too many CFs. With chiefs, if the chief changes, this could result in land disputes, or in other cases, chiefs not giving land for CF.

The 'crop residue to charcoal' briquetting 'drum and press' system was successful, but needs promotion and a press than can be locally made by blacksmiths.

### 5.3 Theory of Change

'Theory of change' (ToC) was not described as such within the prodoc, thus the TE has re-constructed one with a pathway discussion from basic problem through to intervention and on to outcome and then impact<sup>69</sup>. The comparison then is 'has or hasn't the project / national partner achieved this desired change?'<sup>70</sup> ToC should also consider 'change in behaviours'. As is more common, the prodoc does describe threats, root causes, and solutions to barriers. It also describes risks and assumptions, as well as having a logframe with its inherent logic flow from output to outcome to achieving its overall objective.

Parameter	Pathway
Concept	Community-based regeneration and protection of forests (15,000 ha managed by 30 communities), to increase their ecosystem goods & services value, and enhance the climate adaptive capacity of the communities.
Root causes & threats	Land conversion to subsistence agriculture and degradation from fuelwood collection, charcoal production and biannual burning – all due to poverty. Climate change, with changing weather patterns, drought periods exacerbating the degradation
Solution (Input to Output)	Community management of forest areas, with protection and regeneration interventions. Offsetting of exploitation due to poverty, through increased NTFPs production for market, and on-farm livelihood interventions.
Outcome required	New institutional mechanisms (i.e. Village Action Groups with management committees, constitutions), with forest management tools (fire protection plans). Increased capacity in government, political willpower, and change in behaviours towards decentralised forest management on customary land
Result	Institutional VAG system established, but legal status of the forest regeneration areas not clearly defined. Technical (and financial) capacity of government to support forestry remained low. Behaviours not sufficiently changed in favour of sustainable fuel supply (charcoal), with charcoal production moving elsewhere outside the project forest regeneration areas – sustainable forest management with sustainable charcoal supply across the districts of Serenje and Chitambo, is paramount to reversing the accelerating land degradation.
Impact	An 'integrated conservation & development' model was proven to be effective, despite the 'development' of improved farming techniques for livelihoods and reducing forest pressure not being part of the project design. The exposure during the project of the Serenje and Chitambo district administrators, chiefs and villagers to the new concept of CFs, which was legislated for in Forest Act (2015) and CF Regulations (2018), was beneficial.

Note – the complete Theory of Change presented here, was prepared by the TE Expert, for this evaluation

## 6. MAIN FINDINGS, CONCLUSIONS, LESSONS & RECOMMENDATIONS

### 6.1. Main Findings

The main findings of the TE cover the listed headings (below), each with a main statement or two.

#### Relevance

The project was relevant to the needs of the forest stakeholders, especially on a community level in providing greater rights and controls over the management of their local forests. It was adapted to the capacities of the villagers and forestry staff. The relevance was high in terms of being a precursor to community forest establishment. The ownership at local 'VAG' level was noticeable, in particular the enthusiasm for user / producer groups.

<sup>69</sup> Guidelines for GEF Agencies in conducting Terminal Evaluations for Full-sized Projects (2017) require a Theory of Change discussion

<sup>70</sup> Theory of Change is a similar development tool to 'Logical Framework Analysis' where underlying problems (root causes and threats) and solutions (change in behaviours) are directly responded to through the logical framework itself – i.e. the implementation of the project design, to ultimately achieve the goal and development objective, which in turn should lead to the desired impact.

### Quality of the design / intervention logic

There were some major issues with the design of the project, which made it awkward to implement / achieve the expected results. (See Section 6.2 Conclusions for a summarized presentation). There were also differences between the design coverage of the interventions, and the piloting nature of the implementers.

### Efficiency (of inputs and human resources)

The IP and UNDP relationship with the DoE in undertaking Component 3 activities was weak. The bringing in of Comaco to support livelihood activities was effective in terms of results, although originally Comaco was expected to provide their own funds through co-financing.

### Effectiveness /Results

The quality of the results was affected by project design issue, mostly of a technical nature, in not connecting the miombo ecosystem with effective management actions.

Under Component 1, the project put 15,604 ha of forested land under stronger management. The project also established VAGs as institutional structures, to manage this forested area.

Under Component 2, the project produced fire management plans to cover the 15,604 ha of forested land, however with over 500,000 ha of forested land burnt annually across the two districts, the impact was negligible. i.e. 3% of the area. The target was for plans across the central province districts and to reduce fire overall by 25%.

Under Component 3, The project piloted 40 'crop residue to charcoal' briquetting machines / presses. The 'drum & press briquetting system' was technically excellent. The residue to charcoal conversion rate was good and the quality of the briquettes high. However, the project should have engaged TDAU much earlier, and requested more attention to the 'pressing' structure, so that it could be produced by local blacksmiths.

### Sustainability

The project improved the sustainable livelihoods of the VAG members

### Cross-cutting issues (women's empowerment & mainstreaming)

Using the 'Gender Results Effectiveness Scale (GRES)', the TE scored the project as: 'Gender Targeted' (focused on achieving equity in numbers of women, men or disadvantaged groups); and 'Gender Responsive' (focused on the differing needs of women, by trying to provide an equitable benefit share, but did not address the root causes of inequality towards women).

## **6.2. Conclusions**

The project tried hard, but it was hampered somewhat by a poor design that didn't understand forestry or natural resources management in a technical or institutional context. Tree planting was planned, when tree planting wasn't a suitable action to regenerate the miombo woodlands. Then tree coppicing was proposed when tree coppicing wasn't a suitable action in the face of a 'slash and burn' culture within degraded woodlands. Then charcoal production was proposed, when it needed to be stopped, at least until the woodlands had regenerated, and thereafter needed to be licenced as sustainable. Moreover, all these measures were foreseen without preparing a forest management plan, which of course would be needed to measure a sustainable supply of wood for charcoal. 'Assisted natural regeneration' was offered as the solution, but without substance, except 'agro-forestry', which again indicated a design not understanding forestry. Whilst the design concept and intentions may have been acceptable, the project itself needed a 5-year real-time plan to get to the stage where the forest ecosystem was fully functioning and tree growth was across age-classes, ready to be sustainably managed for fuelwood and charcoal. However, the project design was lacking in this, despite its lengthy descriptions of the miombo woodlands and figures on rotational harvesting for charcoal taking 18 years, under a 5-year project.

The project set-up institutional structures to manage designated forest areas, but within the legal system, it was unable to consolidate this advance on local natural resources management. Although from 2018, it could have done so, through piloting an ANR (e.g. Teta which was smaller and thus more manageable) to become a CF, under the CF regulations of that year. This would have provided the legal link between the institutional structures (the VAGs) and the forests (ANRs). This would have been a useful progression and an advance on the project design.

Indeed, the project in the same year did make a major change / advance in the project design, in becoming smallhold farming development-oriented. i.e. becoming a 'conservation and development project', thus providing the economic link between farmer and forest. So, despite 'talking about CF', the project missed an opportunity, to make an actual move towards piloting it, which would have provided much kudos to the FD, and its director.

### 6.3. Lessons Learned

- If the village forest conservation and village development approaches are put together, a standard 'conservation and development' model can be seen – conserving the forest in return for receiving revolving farming inputs. Whilst the farming inputs, were not originally part of the project design, their provision and success in generating on-farm income, has made the protection of the forests sustainable.
- If you wish to license charcoal production, then you need a forest management plan with volume inventory and monitoring system to demonstrate a sustainable 'annual allowable cut', bearing in mind NTFP, carbon and other ecosystem / livelihood values.
- Community Forestry has arrived in legislative terms. Whilst, the VAGs and ANRs exist, there is a perfect opportunity to make the advance to CF for these project demonstrations.
- Skilled foresters are needed for CF establishment and for preparing CF management plans with forest inventories and allowable cuts for sustainable charcoal production. This means that provincial forest offices need to be appropriately staffed with trained foresters, and resourced to be able to go to the field.
- The fire management plans provided a template and system for local fire control, including prohibition and enforcement against late-burning of the forest (which was damaging the forest), but without signboards, boundary-markers, and boundary fire-breaks maintained, the plans may not be effective.
- The 'crop residue to charcoal' briquetting process needs promotion as does the on-farm production of *Gliricidia* trees, which can be coppiced for fuelwood.
- Community radio farming programmes had an impact not only on best-practice climate change adaptation techniques (e.g. climate-smart agriculture), but they also provided a forum for concurrently promoting forest conservation and generating a sustainable income from it.

### 6.4. Recommendations

The recommendations are listed with the responsible party identified in brackets.

1. The national FD sign an MoU 'lending agreement' with the District Agriculture Coordinators Office(s), to provide the two tractors to them. This so that the DACOs can rent out the tractors to VAG / ANR farmers on cost-recovery basis, and with sufficient profit for maintenance, insurance and for forest boundary work for two months a year. [National FD, the two DFOs in Serenje and Chitambo with the two DACO offices, with UNDP to draft the MoU and act as a witness]
2. National FD enter in their 2021 plan and budget – 'to pilot two CFs in Serenje and Chitambo' [National FD]; and UNDP to assess if the GEF Small Grants Program can supply some funds towards this [UNDP]
3. Provincial FD to receive the project Toyota Prado 4WD (or equivalent), so that they can support CF in Serenje and Chitambo, especially in the survey and inventory work for CFMPs [FD]
4. UNDP and MLNR / FD jointly write to the three project chiefs to request support that the ANRs can become CFs in the future [UNDP with MLNR / FD]
5. The ANR boundary pillars and signboards need to be erected, with a VAG maintenance agreement [ZEMA with FD / UNDP to supervise]
6. The 'crop residue to charcoal' briquetting 'drum and press set' needs: a press designed for it that can be locally-made, or locally-sourced at a reasonable cost; a promotion leaflet with website supplier listed; be adopted by DoE as an improved energy-efficient technology [TDAU / DoE, with support from UNDP]
7. All equipment and infrastructure needs servicing before handover, including the tractors, and the solar power inverter at Chitambo DFO. [FD / UNDP]
8. Post-project, for the maintenance of boundaries and fire breaks, the VAGs either need to provide 'community labour days' or generate a tax from the NTFPs being sold from these forests, for the purpose of paying for the clearance of boundary lines, and fire control monitoring. [FD / DIT to advise the VAGs]

## 7. ANNEXES

### Annex 1: Delivery of Project Objective and Outcomes against Performance Indicators

**Assessment Key:**

**Green:** Completed / Achieved

**Yellow:** On target to be completed / achieved

**Red:** Not on target to be completed / achieved

Extracted from produc			IP to fill out this column with detail text on achievement	TE team	TE team fills out
Indicator	Baseline	End of Project target	2020 End term Level & Assessment	Achievement Rating	Justification for Rating
<b>Objective: To promote climate-resilient, community-based regeneration of indigenous forests in Zambia's Central Province, thereby securing ecosystem goods and services and enhancing the adaptive capacity of local communities</b>					
Number of foresters and members of local groups in Central Province participating in climate-resilient, community-based regeneration of indigenous forests	0	At least 20 foresters and 1,200 members of local groups	<p>The project is likely to achieve its objective of promoting climate resilient community based regeneration of indigenous forests in Zambia's Central province. Climate variability and change is a major threat to sustainable development in Zambia. The country has been experiencing climate induced hazards such as dry spells, seasonal flash floods and extreme temperatures. Some of the hazards especially floods and droughts have increased in frequency and intensity over the past few decades thereby adversely impacting on food and water security, water quality, energy and livelihoods of people especially in rural communities.</p> <p>The project supports the country's program of mitigation through sustainable forest management by promoting assisted natural regeneration , sustainable charcoal production and utilization practices, improved cooking devices, forest fire management and capacity building. The forests set aside for assisted natural regeneration have been preserved and are providing goods and services that have contributed to improved livelihoods of the target communities. This has been evidenced through supporting the government strategy of diversified export agriculture sector. There has been an increase in the number of farmers using climate smart agriculture technologies and practices, crop diversification and value-chain linkages promotion. The strategy of promoting small holder agriculture through farmers' organization development has been enhanced through formation and capacity building of cooperatives and farmer field schools. There has been a contribution to the strategy of poverty and vulnerability reduction where the project has provided improved access to diverse and quality agriculture inputs (soya, groundnuts, maize, beans) to vulnerable but viable smallholder farmers. Communities have also been supported to ensure improved health and health related services by enhancing income, food and nutrition security. This has been done by promoting a diversification in local food</p>	MS	There were 4,324 persons trained, based on the training course numbers, from which some individuals may have attended more than one event. These persons were trained during 144 days, which was equivalent to ~29 days / year, over the 5-year project duration.

			production and processing and nutrition information. Out of a target of 20 forestry officers, 26 (17M; 9F) have had their capacities built in conservation and smart agriculture, sustainable forest management, sustainable fisheries and aquaculture and renewable energy technologies.		
Number of households benefiting from climate-resilient, community-based regeneration of indigenous forests	0	At least 3,000 households	There has been an increase in the number of households benefiting from climate resilient community based regeneration of indigenous forests from 22,176 the previous year to 25,884. This has been through the support provided to communities thereby contributing to a number of strategies promoted towards poverty reduction. 7200 community members are practicing agro-forestry, those participating is sustainable livestock management, sustainable fisheries and aquaculture, smart and conservation agriculture are totaling 14,976. There has been enhanced value-chain linkage promotion for honey, mushroom, caterpillars and wild fruits. The mushroom and caterpillars and being processed, packaged and sold through the chain stores. Community members have established better marketing of their produce (maize, beans,groundnuts and soya beans) through formation of cooperatives and bulking centres.	MS	The project provided a significant benefit to the participating households of the 30 VAGs. The total direct number of households registered to work with Comaco (on agriculture and forestry interventions) from 2018, was 2,735. There were also ~500 direct beneficiaries of 'cash for work' boundary clearance.  In terms of total membership of the VAGs, working for forest conservation, then the figure of 25,884 could be taken for total beneficiaries
<b>Outcome 1: Strengthened technical and institutional capacity of foresters and communities in Central Province to implement appropriate climate-resilient agro-forestry and natural regeneration practices in designated zones</b>					
1.1 Change in capacity score of district forestry officers and Village Action Group (VAG) members for planning and implementing Assisted Natural Regeneration (ANR) and agro-forestry interventions (CCA Indicator 10)	0	VAGs and district forestry officers score at least 2	Change in capacity score of district officers and VAGs for planning and implementing ANR and AF interventions has been noticeable. At the start of the project in 2015 the capacity was at zero. Since then a number of capacity building activities have been undertaken covering improved cooking devices, forest fire management, sustainable agriculture, sustainable forest management, sustainable fisheries and livestock. A number of sustainable user groups have been formed and trained in briquetting, efficient kilns, processing caterpillars and mushroom and enhanced food security and nutrition. The capacity assessment report done shows that the capacity score is now at 4	MS	Whilst, a number of the VAG activities have become sustainable, and have reduced their own pressure on the forests, the VAGs still require DFO support (which has limited physical capacity) to stop pressure on the forest by outsiders.
1.2 Climate-resilient agro-forestry and ANR practices implemented across 15,000 hectares (CCA Indicator 2).	0	At least 15,000 hectares of climate-resilient agro-forestry established.	The project had a target of setting aside 15,000 ha for assisted natural regeneration. This target was achieved where 15560 ha of miombo forests were set aside. There has been an increase in the goods and services coming out of the conserved areas. An increase in mushroom, caterpillars, wild fruits has been noticeable. This has also resulted in increased income for the communities. The	S	The project set aside 15,560 ha of miombo woodland for ANR. There was an increase in the goods and services coming out of these areas. The increase in

			ANR areas are now in the process of being transformed into Community Forest Areas. This will result in increased responsibilities, roles and benefits to the local communities. This has been earmarked as an exit strategy for the project.		honey, caterpillars and mushrooms was clearly recorded, and resulted in increased income for the communities
<b>Outcome 2: Robust fire monitoring and management protection plans and measures in place in all districts in Central Province to maintain desired regeneration targets and reduce fire frequency by 25-30% annually across the province, within a four-year burning cycle</b>					
2.1 Change in capacity score of district forestry officers, VAG members and local authorities for planning and implementing fire management interventions (CCA Indicator 10)	0	VAG members and local authorities score at least 2.	<p>The outcome has been achieved. The assessment done for the district forestry officers, local authorities and VAG members for planning and implementing fire management interventions is now at 4.</p> <p>Using the fire management plans, communities were trained in designing and developing fire lines to zone and protect forest resources. The fire lines have since been opened and maintained. Training in prescribed fire management was done and fire equipment provided. Communities are able to undertake patrols, early burning, prescribed fire and fire break maintenance.</p> <p>District implementation team has had its capacity enhanced and are capable to train VAGs in planning and implementation of fire management plans and prescribed fire management.</p>	MS	In 2016, the project identified the ANRs in 2016. In 2017, the boundaries were delineated (on maps) and demarcated (on the ground through boundary clearance), and fire break avenues were created. In 2018-19, there was maintenance (boundaries and fire break lines) with ~500 villagers involved. The early-burning regime agreed with local leaders (chiefs) and villagers in 2018. Five fire management plans were prepared, one for each of the ANRs.
2.2 Change in frequency of fire across all districts in Central Province.		Frequency of fires reduced by 25%.	The communities have successfully implemented the fire management plans that they developed. Fire management blocks have been created including internal boundaries for resources management and protection. The fire occurrence database has been created and is located at Forestry Department HQ. The database is updated on annual basis. ZEMA is spearheading the activity using the MODIS. The report for 2019 indicates that the fire occurrence for Serenje and Chitambo pilot areas remains at 16%.	MU	The evidence district-wide of reduced fire could not be verified – the original reports were not available. Also the project only worked in the 5 ANRs, so the project impact district-wide was difficult to measure
<b>Outcome 3: Energy efficient charcoal production and wood-saving technologies successfully replace inefficient systems in targeted areas of Central Province, helping offset pressure on the forests as the climate changes</b>					
3.1 Change in number of users of improved charcoal kilns and briquetting machines (CCA Indicator 4).	0	At least 120 community members using charcoal retort kilns; and	The outcome on energy efficient technologies has made some progress as more communities have adopted the fixed biomass stoves. These have supported the government strategy of enhancing human development through improved health and related health services. The reduction in air pollution indoor when cooking has resulted in improved health for women and girls especially for respiratory	U	There were no retort kilns supplied by the project, essentially because the project design failed to convey any sustainable forest management

		<p>50 community members using charcoal or sawdust briquetting machines (20% of who should be women) - To be validated during project inception</p>	<p>problems. 40 briquetting machines have so far been distributed and are in use. The driers that were constructed at community level are using briquettes to dry mushroom, cassava, caterpillars and vegetables thereby improving the shelf life of the products.</p>		<p>methodology for fuelwood generation within the miombo woodlands. Also, the 15,000 ha was too small to service 120 retort kilns. As mentioned, the project design assumed 'coppicing' in the woodlands was the answer, but it was not, as it perpetuated the slash (&amp; burn) practice.</p>
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## Annex 2: Delivery of Outputs

Comment here may be limited to stating 'on target', 'partially on target' or 'not on target'. Details are reported under section 3 'Findings'

Outputs	Achievements Reported by IP	TE Comment
<b>Project Objective:</b>		
<b>Component 1: PILOTING OF COMMUNITY-BASED, CLIMATE ADAPTIVE AGRO-FORESTRY AND ASSISTED NATURAL REGENERATION TECHNIQUES</b>		
Output 1.1: Participatory resource mapping and zoning (identification of suitable areas for agro-forestry and assisted natural regeneration measures) taking alternative climate change scenarios into account completed in all six districts of Central Province	Resource mapping done for the 11 districts of central province indicating suitable areas for AF and ANR. The information is more generalized for the districts where the project is not operating but more detailed for Serenje and Chitambo pilot sites.	There was no evidence of the mapping for 11 districts, not even for the two project districts, apart from the identification and mapping of the five ANR areas which were designated with the support of three chiefs.
Output 1.2: Between 30-40 VAGs formally recognised and constituted in Serenje district, with clear resource rights and delineation of legally-recognised VAG boundaries and use zones	30 VAGs formed and registered as societies with registrar of societies. Their respective VAG boundaries verified and mapped.	The formal (legal) link between a VAG and an ANR was not clear. Despite the VAGs being legal entities, they are new institutional structures and require further FD support, in ANR area forest management, and in official designation post-project to become community forests (CFs).
Output 1.3: All VAG boundaries and use zones registered under the Zambia Integrated Land Management and Information System	The VAG boundaries mapped and submitted for registration with ZILMIS	The TE found no evidence of this. Furthermore, there was no evidence of the registration of the ANRs, beyond the maps produced by the Lusaka FD.
Output 1.4: Training delivered for at least 20 district forestry officers and 2,000 VAG community members on site-specific appropriate climate-resilient agro-forestry and natural regeneration practices	Training delivered to 24 forest officers and 2500 VAG members on site-specific appropriate climate-resilient AF and ANR	In 2018/19, the project changed direction somewhat in undertaking a significant number of livelihood activities, which were delivered by the service provider, Comaco (see also 1 <sup>st</sup> Objective indicator, Annex 1)
Output 1.5: Wood fuel collection zones established in all VAGs and coppicing practices promoted	The Areas set aside for ANR were zoned based on available resources and uses. These include wood fuel, mushroom, caterpillars, wild fruits, beekeeping	The zoning was not evident to the TE.
Output 1.6: Climate-resilient agro-forestry and ANR practices are piloted over 15,000 hectares under management in Serenje district	Climate-resilient AF and ANR practices piloted over 15560 ha in Chitambo and Serenje districts	Five ANR zones were designated covering an area of 15,560 ha, and delineated on FD maps. Their boundaries were 'demarcated' on the ground by clearance lines (~10 m wide).
<b>Component 2: INTEGRATED CLIMATE-RESILIENT FIRE MANAGEMENT</b>		
Output 2.1: Geospatial fire occurrence dataset developed for Central Province based on satellite data and GIS mapping to ascertain burn severity classifications and	Database developed and installed at Forestry HQ and at ZEMA. This is being updated on an annual basis. 12 District Officers have been trained in the use of satellite fire data and are able to detect and	The TE found no evidence of the fire incidence database. There isn't either a regular bulletin on fire-risk warning, or a real-time fire-warning system set-up.

Outputs	Achievements Reported by IP	TE Comment
climate change vulnerability of miombo woodlands	map fires.	
Output 2.2: Fire management plans developed and operational (based on independent verification) for Serenje district based on fire occurrence dataset and local inputs	Fire management plans developed for each of the 5 ANRs. The plans have been operationalised by the communities who have formed fire management teams	Fire risk management plans were developed for each of the five ANRs. The plans have been operationalised by the communities who have formed fire management teams.
Output 2.3: District forestry staff, relevant VAG members and local authorities trained on appropriate climate-resilient fire protection practices (boundary and firebreak management, early burning, etc.)	16 district forestry staff and 3 from the local authorities including 25 VAG members trained in appropriate climate-resilient fire protection practices. The teams are able to maintain boundaries that were opened and do prescribed early burning	There were 65 participants trained for 10 days on fire control management planning (data from training record – Annex 5. Unfortunately, the ANR boundaries are not visible to outsiders as ZEMA have not erected the boundary markers, nor signboards (which would include fire prohibition months)
Output 2.4: Awareness-raising campaigns undertaken across all districts about the benefits of adopting fire management measures to strengthen the adaptive capacity of miombo forests to climate change	Awareness done for 11 districts in the province. Fire occurrence and frequency report produced	Fire awareness was undertaken for 604 participants over 6 days (see Annex 5 – training record)  The project indicated that the awareness training was conducted in all 11 districts in the province, although no evidence was found to support this.
<b>Component 3: INCREASED KNOWLEDGE ABOUT, AND UPTAKE OF, APPROPRIATE SUPPLY-SIDE BIOMASS ENERGY PRODUCTION TECHNOLOGIES</b>		
Output 3.1: Deployment of technologies and development of sustainable charcoal schemes in 20 VAGs with (i) charcoal producer groups formed and trained to operate kilns; (ii) charcoal retort kiln pilots introduced (120 improved kilns to replace earth kilns); (iii) monitoring, tracking and licensing system established for all improved kilns piloted	25 Sustainable charcoal producer groups formed consisting of 25 members each. The groups have been trained in energy efficient technologies such as solar, LPG, fixed mud stoves, briquetting and efficient kilns. So far 40 briquetting machines have been provided. The communities have preferred to use briquetting machines as opposed to the kilns as the kilns are seen as not supporting the conservation of trees.	Whilst the DoE was responsible for fuel-efficient cooking systems, the FD was responsible for the sustainable supply of the fuelwood, and they couldn't guarantee this.  No retort kilns were supplied
Output 3.2: 50 charcoal or sawdust briquetting machines or presses piloted across 20 VAGs	40 briquetting machines piloted in all the 30 VAGs. The machines use biodegradable materials and cassava as a binder to produce briquettes.	There were 40 such briquetting 'drum & press' sets provided (target was 50), by the Technology Development & Advisory Unit (TDAU, University of Zambia). They designed the airflow (holes) system for the 210 litre oil drums (i.e. the combustion chamber for the pyrolysis), with smoke chimney to remove the toxic chemicals from the wood.

Annex 3: Co-financing Table

Sources of Cofinancing <sup>1</sup>	Name of Cofinancer	Type of Cofinancing <sup>2</sup>	Confirmed at CEO Endorsement (US\$)	Amount Contributed by time of MTR	Expected Amount by Project Closure	New Investment or Recurrent Expenditure	Actual % of Expected Amount
GEF, UNDP, Co-financing signatories	GFF	Grant	\$3,885,000	\$2,588,710	\$3,380,998	New	87
	UNDP	Grant	\$100,000	\$40,000	\$100,000	New	100
	COMACO	In kind	\$11,000,000	\$10,166,657	\$11,000,000	New/recurrent	100
	CERED	In-kind	\$147,661	\$0	\$0	n/a	0
	ZCCN	In kind	\$980,000	\$0	\$0	n/a	0
	KASANKA TRUST	In-kind	\$1,060,000	\$0	\$0	n/a	0
	ZIEM	In-kind	\$746,057	\$0	\$0	n/a	0
	ENVIRONMENT AFRICA	In-kind	\$386,372	\$0	\$0	n/a	0
	PIONEER	In kind	\$3,190,000	\$1,040,000	\$1,040,000	Recurrent	33
<b>UNDP &amp; Partners Sub-Total</b>			<b>\$21,495,090</b>	<b>\$13,835,367</b>	<b>\$15,520,998</b>	<b>n/a</b>	<b>72</b>
National Government	MLNR (FD)	In-kind	\$11,420,000	\$10,166,657	\$11,420,000	Recurrent	100
<b>Government Sub-Total</b>			<b>\$11,420,000</b>	<b>\$10,166,657</b>	<b>\$11,420,000</b>	<b>n/a</b>	<b>100</b>
<b>Total</b>			<b>\$32,915,090</b>	<b>\$24,002,024</b>	<b>\$26,940,998</b>	<b>n/a</b>	<b>82</b>

1/ Sources of Co-financing may include: Bilateral Aid Agencies, Foundation, GEF Partner Agency, Local Government, National Government, Civil Society Organization, Other Multi-lateral Agency(ies), Private Sector, Other

2/ Type of Co-financing may include: Grant, Soft Loan, Hard Loan, Guarantee, In-Kind, Other

3/ Excludes PPG

4/ The TE found no evidence of co-financing by Pioneer, but retained the MTR figure.

5/ The GEF contribution at 'project close' is up to 30 September 2020

6/ The TE estimates that the MLNR (FD) actual co-financing figure is probably closer to \$5m

7/ The TE estimates that the Comaco direct contribution in the two project districts at ~\$2m (having deducted their \$0.45m contract with UNDP)

8/ Thus, the TE estimates the project total input of was ~\$11m out of a projected \$33m

Other

ZCCN confirmed participation via the PSC. ZCCN approached the project a number of times, to discuss working together, however further progress on this was not achieved.

**Annex 4: Planned Budget and Expenditures at End-term**

Outcome	2015 USD	2016 USD	2017 USD	2018 USD	2019 USD	2020 USD	Total USD
<b>Indicative Breakdown of Project Budget in Project Document:</b>							
Outcome 1	\$797,400	\$502,900	\$354,900	\$291,400	\$253,400		\$2,200,000
Outcome 2	\$557,300	\$191,300	\$163,800	\$163,800	\$123,800		\$1,200,000
Outcome 3	\$196,600	\$51,100	\$19,600	\$17,600	\$15,100		\$300,000
Project Management	\$60,962	\$34,432	\$72,242	\$33,286	\$84,078		\$285,000
<b>Total</b>	<b>\$1,612,262</b>	<b>\$779,732</b>	<b>\$610,542</b>	<b>\$506,086</b>	<b>\$476,378</b>		<b>\$3,985,000</b>
Outcome	2015 USD	2016 USD	2017 USD	2018 USD	2019 USD	2020 USD	Cumulative total 30/9/2020
<b>Annual Work Plan Budgets and Actual Expenditures Incurred through Endterm:</b>							
<b>Outcome 1:</b>							
Annual Work Plan	\$145,100	\$644,317	\$606,200	\$606,000	\$186,400	\$77,000	\$2,265,017
Disbursed	139,073.88	477,446.64	664,779.23	\$587,901	\$253,799		\$2,123,000
Balance (AWP-Disbursed)	\$6,026	\$166,870	-\$58,579	\$18,099	-\$67,399	\$77,000	\$142,017
<b>Outcome 2:</b>							
Annual Work Plan	\$144,600	\$189,400	\$287,500	\$120,000	\$149,211	\$8,300	\$899,011
Disbursed	\$65	\$228,900	\$390,002	\$237,842	\$118,226	\$70,000	\$1,045,034
Balance (AWP-Disbursed)	\$144,535	-\$39,500	-\$102,502	-\$117,842	\$30,985	-\$61,700	-\$146,023
<b>Outcome 3:</b>							
Annual Work Plan	\$3,000	\$25,000	\$192,500	\$137,000	\$215,100	\$27,700	\$600,300
Disbursed	\$0	\$16,402	\$70,816	\$105,495	\$90,251	\$22,500	\$305,465
Balance (AWP-Disbursed)	\$3,000	\$8,598	\$121,684	\$31,505	\$124,849	\$5,200	\$294,835
<b>Grand Totals:</b>							
Annual Work Plan	\$292,700	\$858,717	\$1,086,200	\$863,000	\$550,711	\$113,000	\$3,651,328
<b>Total Disbursed</b>	<b>\$139,139</b>	<b>\$722,748</b>	<b>\$1,125,597</b>	<b>\$931,238</b>	<b>\$462,276</b>	<b>\$92,500</b>	<b>\$3,380,998</b>
<b>Balance (AWP-Disbursed)</b>	<b>\$153,562</b>	<b>\$135,969</b>	<b>-\$39,397</b>	<b>-\$68,238</b>	<b>\$88,435</b>	<b>\$20,500</b>	<b>\$270,330</b>

End term – through to 30/09/2020

Note – the Project management figures include the UNDP \$0.1m contribution

## Annex 5: Further detail on plans, reports, meetings, training materials, etc

### Contents

- PSC Attendance
- History of PSC key decisions
- Technical Committee meetings
- Audits
- Annual Workplans & Budgets
- PIRs
- Field Mission Summary
- Training Events
- ANR areas with geo-coordinates
- VAG formation Reports with VAG names and User Groups
- Musola ANR Map
- Comaco – UNDP MoU
- Consultant Reports
- Gender Effectiveness Scale
- LDCF / SCCF Tracking Tool
- MTR Notes
- Co-financing Partner information
- Miombo Woodlands
- Zambia – Background information
- Alternative (GEF) Scenario – Socio-political and with respect to the 3 Outcomes

### PSC Attendance

PSC membership (prodoc) – MLNR (chair, responsible for approving activities); UNDP; District Councils' representatives; MAL; MoE (formerly MMEWD); Ministry of Chiefs and Traditional Affairs (MOCTA); ZEMA, Zambia Climate Change Network (ZCCN); others.

<p>Q2, 2016 – MLNR (chair), MCTA, UNDP x2, Serenje District Secretary, Chitambo District Secretary, ZCCN; Others - Central Province Admin Secretary, Ministry of Community Dev. &amp; Social Welfare, Ministry of Nat. Dev. Planning (MNDP), Envir. Manag't Agency, Ministry of Energy &amp; Water Dev., Envir. &amp; Natural Resources Dept., Ministry of Nat. Dev. Planning; Secretariat – PM, Project Focal Point / FD, FD, Admin Associate; Other – GEF V PM</p> <p>Q4, 2016 – FD (chair), MCTA, Dept of Lands, Land Surveyor (Lands Dept?), UNDP x 3, Nat. Remote Sensing Dept, Chitambo DC, ZCCN, Dept of Envir., Envir. Manage't Agency, Climate Change Secretariat; Project Secretariat – PM, Admin; Project Focal Point / FD, GEF V PM, Dept. of Energy</p> <p>Q4, 2016 – MLNR, Dept of Lands, MAL, UNDP x 2, Serenje DC, Chitambo DC, ZCCN, Dept of Energy, PIU x 2, FD</p> <p>Q3, 2017 – MLNR, MCD&amp;SS, Central Prov. Admin, Serenje District Admin, Serenje Town Council; UNDP x 3, Project Secretariat – PM, Admin; MAL x 2; Survey Dept (?); MNDP; Ministry of Energy; ZEMA; Chitambo Town Council; FD x2; Comaco; MoCTA; ZCCN</p> <p>Q2, 2018 – MLNR, MoCTA, Central Province Admin x 2, FD x 2, both DCs, Land Dept, Survey dept, Ministry of Energy x 2, PIU x 2, ZEMA, Comaco</p> <p>Q4, 2018 – MoCTA, Central prov. Admin; MAL x2, both DCs, ZEMA, ZCCN, Land Dept, MoFinance, UNDP, MCDSS, Climate Change NR Dept, FD x2, PIU x 2</p> <p>Q1, 2019 – New PSC structure covering all Climate Change projects – MNDP x 5, MLNR x 5, Min Housing, x 2 Min of Transport (Met Dept), Min Home Affairs, Ministry of Gender, MofFinance, MAL (ZARI), Mino of Local Govt. Min of Energy, Min of Water, Sanitation &amp; Envir. Protection (Disaster Management / Mitigation Unit), Mini of Mines Dev x 2, Min Communi De. &amp; SS</p> <p>Q1, 2020 – MNDP x 4, Office VP, Min of Gender, MCDSS, MLNR x 3, Min of Transport &amp; Comms, Min of health, Min of Finance, Disaster Unit x 2, Min of Housing &amp; Infa Dev, Min of Water S &amp; Envir Protection, Min of Home Affairs, MAL x2, Min of labour, Mini of Education, Min of Broadcasting, Min of Works, UNDP, ZEMA x 2, Zambia Integrated Forest Landscape</p>
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Project (ZIFLP)

## History of selected key points / decisions by the PSC

Date	Key Points	TE Comment
Q2 2016 (1 <sup>st</sup> meeting)	<ul style="list-style-type: none"> <li>- Governance – PSC, Technical Committee &amp; Regional Committees</li> <li>- Procurement of vehicles, equipment, PM and PIU Associate</li> <li>- Issue – reluctance of Chiefs to allocate 15,000 ha for ANR; Manganese mine in Serenje uses charcoal</li> <li>- Resolutions – Include on PSC – Lands Commissioner, Nat. Remote Sensing Centre; Include Chief Kabamba's 1.000 ha despite no communities and on hilly land; Project sensitization needed to be enhanced, and communication materials into local languages; Project needed alternative income activities; TC to include – Central Province Planning and Gender reps, Provincial Royalty</li> <li>- Resolutions – Retort kilns from 20 to 200 and post-project maintenance of them needed; NAMA plan includes grants for charcoal kilns – to be considered</li> <li>- Resolutions – Manganese mine – to follow up with the MLNR Secretary</li> <li>- AWPB approved subject to amendments</li> </ul>	<ul style="list-style-type: none"> <li>- 1<sup>st</sup> meeting 10 months after project start</li> <li>-</li> </ul>
Q4, 2016 (2 <sup>nd</sup> )	<ul style="list-style-type: none"> <li>- Presented AWPB 2017</li> <li>- Chitambo DC – said high deforestation due to manganese metal plant, and his requested MLNR to solve the problem</li> <li>- Suggest that ANR plots (which were customary land) post-project are registered community trusts</li> <li>- ANR area identified was 15,560 hectares (by Chiefs Chitambo, Muchinka &amp; Kabamba) More land had been offered by Chieftainess Serenje and Chief Mailo.</li> <li>- Fire management plans noted as deliverables</li> <li>- An A/F tree nursery had been established at the FD in Serenje. The seedlings were to be distributed to communities around the ANRs for planting in December in both Chitambo and Serenje</li> <li>- 6 consultants mobilized</li> <li>- PSC questioned how the charcoal groups would be formed and then sustained.</li> <li>- The Dept. of Energy had a draft charcoal production manual which should be referenced by the project</li> <li>- PIU needed to engage with Dept of Energy re. awareness on efficient charcoal production in the project area</li> <li>- PSC indicated the need for a link between FD and Dept. of Energy, and harmonize operations (FD issues licenses while the Energy Dept develop efficient production systems</li> <li>- Partnerships had been established with MoA, ZCCN, GLM and COMACO in Conservation Agriculture, Beekeeping, A/F, and awareness in the chiefdoms</li> <li>- Study tour to bamboo propagation farm in Kenya had been undertaken</li> <li>- Five chiefs were sensitized (Kabamba, Serenje, Mailo, Muchinka and Chitambo). Their communities sensitized except Chieftainess Serenje &amp; Chief Mailo's chiefdom</li> </ul>	<ul style="list-style-type: none"> <li>- Indicates that future ownership of the ANR plots was not part of a clear strategy or known to the PSC</li> <li>- Good to see ANR areas being agreed</li> <li>- Good to see A/F seedling production underway</li> <li>- The link between FD and Energy Dept should have been in the prodoc and a high priority – already 1.5 years into the project and a lack of inter-government collaboration, and lack of PIU / FD urgency on this.</li> </ul>
Q4, 2016 (3 <sup>rd</sup> )	<ul style="list-style-type: none"> <li>- AWPB 2017 approved</li> <li>- Discussed budget for container office for Chitambo and title deed of land</li> </ul>	<ul style="list-style-type: none"> <li>-</li> </ul>
Q3, 2017 (4 <sup>th</sup> )	<ul style="list-style-type: none"> <li>- In September 2016, the accountant Deloitte, on behalf of UNDP, conducted a financial risk (micro) assessment to determine HACT transfer modalities under NIM, for MLNR, ZEMA, ZCCN, Comaco and Kasanka Trust. Only Comaco was deemed low risk and therefore eligible to manage project funds. All others were deemed 'moderate or high risk'. This was explained to the PSC</li> <li>- UNDP consultant recruitment – Nat'l &amp; Int'l GIS, Int'l Sustainable Livelihoods, Int'l ANR – all recruited; M&amp;E and Nat'l ANR - being re-advertised</li> <li>- PSC recommended that the PIU be moved from Lusaka to Kabwe (Prov. Capital town) or Serenje District</li> <li>- Tractor supplier (CAMCO) has after sales service and spares. UNDP said tractors should be shared by the two districts</li> </ul>	<ul style="list-style-type: none"> <li>- Project now over 2 years old with 3<sup>rd</sup> PSC meeting just starting</li> <li>- PSC has just understood that their MLNR will have no financial control of the project</li> <li>- Why taken 2 years to recruit consultants by UNDP – when the consultants need to shape the project approaches</li> <li>- PIU never moved</li> </ul>

	<ul style="list-style-type: none"> <li>- Councilors' concern on charcoal going to the Southern African Alloy Ferro Limited (SAFAL) refining Manganese in Serenje District. Joint Visit Report by FD &amp; ZEMA not circulated</li> <li>- Chitambo Forest office included toilet block and bore hole / tank</li> <li>- DFOs – have a security issues re. equipment</li> <li>- 8 VAGs registered with Dept of community Dev. &amp; Social Services; Needed to be in compliance with gov't Ward Dev. Committees.</li> </ul>	<ul style="list-style-type: none"> <li>- Tractor use – 'after the event' and not formal agreement on their use (e.g. for VAG farmers and 'their' future CF ANRs!)</li> <li>- Security of equipment issue – was not solved by time of TE in Aug 2020, except for 4WD vehicle being kept at Serenje police station</li> </ul>
Q2, 2018 (5 <sup>th</sup> )	<ul style="list-style-type: none"> <li>- Reported that the 30 VAGs would apply to become CF Management Committees to manage the ANRs</li> <li>- Security guard recruitment on-going</li> <li>- Presentation of 2017 report and 2018 AWPB, which was approved</li> <li>- Boundaries of the 5 ANRs cleared - Teta, Musola, Musangashi, Nakatambo and Mweshe Butelele</li> <li>- 30 VAGs now established and registered, with 43 user / producer groups</li> <li>- Reported that 5 fire management plans prepared</li> <li>- 2018 plan included: Maintenance of the ANR boundaries; Grants for livelihood activities; Resource mapping of the 9 districts of central province (Mkushi, Kapiri mposhi, Ngabwe, Kabwe, Chisamba, Chibombo, Mumbwa, Luano and Itezhi tezhi); Development of ANR plans; ANRs - Establishment of zones for prescribed fire management; Alternative energy technologies</li> <li>- Under 'Observations' it was noted that Comaco would now take the lead for Component 1, especially 'grants for livelihood activities'</li> <li>- ZEMA to lead C2; Dept of Energy to lead C3</li> </ul>	<ul style="list-style-type: none"> <li>- A decision should / could have been made here in 2018 to switch from VAGs to CFs (under the law)</li> <li>- So the two key aspects of the project achieved (ANRs and VAGs)- almost 3 years into the 5 year project -now need the management activities (apart from boundary clearance which has been done)</li> <li>- Check the fire management plans</li> <li>- This was a significant change in the project to now bring in Comaco to implement C1</li> </ul>
Q4, 2018 (6 <sup>th</sup> )	<ul style="list-style-type: none"> <li>- Report of 2018, and presentation of 2019 AWPB, which was approved</li> <li>- Progress report mentioned the recommendations of the MTR</li> <li>- Tractor sheds still not constructed</li> <li>- VAGs sensitized to CF</li> <li>- Land use maps for the 9 districts in Central Province had been prepared</li> <li>- Fire control zones in the 5 ANRs mapped</li> <li>- Fire patrol during Aug-Oct, according to the Fire Management Plans</li> <li>- Fire Occurrence Database was established at FD</li> <li>- Cookstove training (319 participants) – 22 stoves made as demonstrations; tinsmiths trained to make chimneys</li> <li>- 10 briquetting machines piloted</li> <li>- Noted that CF establishment would provide greater legal security of the ANRs</li> </ul>	<ul style="list-style-type: none"> <li>-</li> <li>-</li> </ul>
Q1, 2019 (7 <sup>th</sup> )	<ul style="list-style-type: none"> <li>- PSC now changed to cover all 12 climate change projects -</li> <li>- CBRIF -AWPB 2019 was \$0.56m and approved</li> <li>- Technical Committee approved to visit CBRIF in Q1 2019</li> <li>- Note - National Policy on Climate Change (2016) created the Dept of Climate Change &amp; Natural Resources (under MLNR) (with the Interim CC Secretariat closed down)</li> <li>- This new PSC (under the Mini Nat Dev. Planning) requests that all these projects stop their own PSC meetings, and only work under this one</li> </ul>	<ul style="list-style-type: none"> <li>- Change in PSC structure</li> <li>- Did the budget include the \$0.45 m Comaco contract?</li> <li>- Technical committee report?</li> <li>- No more FD, UNDP present</li> </ul>
Q1, 2020 (8 <sup>th</sup> )	<ul style="list-style-type: none"> <li>- Note Climate Change Bill expected to pass by end 2020</li> <li>- 2020 budget for CBRIF is \$0.2m – AWPB approved</li> </ul>	<ul style="list-style-type: none"> <li>- UNDP DRR present</li> <li>- Small budget remaining for 2020</li> </ul>

Technical Committee (TC, 2016-19)

The TCs considered a number of issues [with TE comment]<sup>1</sup>:

<p><u>2016</u></p> <ul style="list-style-type: none"> <li>- Dec 2016 (2<sup>nd</sup> Meeting) – good representation from the differing district line agencies; FD Director – said attendees were mostly on District Development Coordinating Committee (DDCC) or Provincial Development Coordinating</li> </ul>
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<sup>1</sup> The minutes of TC meetings were improperly headed (with often an old title / date) and poorly file-named (different every time, and not consistent with the tile contents), thus the TE was only able to review a selection.

Committee (PDCC), therefore needed to network instead of working in silos

### 2017

- July 2017 (4<sup>th</sup> Meeting) – Noted that DCs were allocating land from inside forest reserves, without informing FD – showing poor communication [TE - CBRIF was only working in public i.e. customary forest land, not State forest land]; 8 VAGs formed to date with 43 user / producer groups; GIS consultant hired [TE - already 2 years into project before starting]; draft fire management plans prepared for the 5 ANR sites; proposed that the resource mapping be done for the 5 ANR sites 1<sup>st</sup>, then scaled up to the 9 districts in the province. [this is a change in the prodoc design sequence] – the TC noted that after mapping to find the ANR areas in the ‘nine’ districts, there were no follow-up activities except in the 15,000 ha selected in the 2 districts [TE agrees – a design flaw]; there is no legal way to provide VAGs with resource rights in the ANRs, but they can be registered as societies [TE – yes, but the link as managers / users of the ANRs depended on: chiefs providing the land for project duration; and FD mapping and endorsement, with the latter not being a legal step in line with the Land Act (as customary land, not State Forest)]; DFOs to report on their issuance of charcoal licences, to demonstrate that they are not issuing them to the manganese factory, and thus causing environmental destruction [TE - This was a good point, but evidence reported back to the TC was not found]; poor security at the DFOs mentioned again; the Southern African Ferro Alloys (SAFAL) manganese factory visited by FD / ZEMA – was using 2,000 kg charcoal / day (i.e. 2 tons / day)

### 2018

- Sept 2018 (6<sup>th</sup> Meeting) – Comaco indicated that they couldn't implement certain activities due to late fund release by UNDP; ZEMA had visited the ANR sites to determine fire-break lines [TE – this fits with the boundaries mapped / cleared in 2017, but to note the fire break lines – seen by TE were too narrow to be effective – and certainly needed further clearance work]; DoE – said they had conducted cookstove training; PIU was advised to cost CF into the Exit Plan, and allocate budget for this purpose [TE – which under GEF UNDP projects, is not easily achieved, except for on-going maintenance contracts for example]; the Gender Expert became ill, so the work was not completed; PIU & Comaco to work more closely with the DIT / communities
- Nov 2018 (7<sup>th</sup> TC Meeting) – DoE reported all VAGs had representatives trained in improved stoves, yet only 25 stoves were constructed [TE suggests that training was consolidated to a few locations only, and therefore did not reach effectively sufficient members of the VAGs]

### 2019

- Jan 2019 (covered all climate change projects) – same meeting / same personnel as the PSC meeting on same time, with the same meeting notes repeated.
- July 2019 (project level with IPs / RPs only) – TDAU – briquette training in all 5 ANR areas in 2018, with plan for retort kiln training in Aug 2019, but participants noted the design was not approved, nor the conversion rate known – they all agreed to go with the training in Serenje to see for themselves. [TE – no agreed design to demonstrate thus far, and now too late in the project cycle to start – switch to briquetting should have been made earlier, and the demonstration of the retort achieved earlier as well – why so late management by PIU?]; TDAU needed to work with DoE and FD together on the retort kiln pilot concept; ZEMA had not conducted the fire awareness training [TE – why?]; signboards to be finalized [TE – Aug 2020 – still not present on-site a year later]

## Audits

### Audit 2018

- MLNR / FD – Issue over the technical specification of bee hives supplied by Comaco, which was different to the standard FD approved design. However, one of the reasons Comaco were hired was due to their stronger skills in bee-keeping.
- MoE / Dept. of Energy (DoE) – The audit indicated DoE did not undertake training of charcoal producer groups in use of improved kilns. UNDP indicated ‘sensitization’ activities only. Also, the delivery of retort kilns to 9 charcoal producer groups was not undertaken.
- DoE did not undertake ‘strengthening value-chains by linking producers / suppliers of biodegradable crop residues to charcoal producer groups.’ [TE - This was part of a package (Output 3.2) to train / supply nine charcoal groups with briquetting presses (@17,500 for the training / facilitation, and \$21,000 for the presses). The provision of retort kilns was in the 2018 AWPB, but not undertaken. The AWPB 2018 follows the OWPB, but didn't seem tailored to the actual capacity or willpower to implement. Thus, it appeared to be a UNDP / FD / PIU planning and supervision issue.]
- Baseline energy survey for Kapiri-Mposhi (AWPB 2018, \$20,000 for DoE) was not undertaken, because it was outside the project area. [TE – The question is why it was included in AWPB 2018, and approved by UNDP if this was the case.]

### Audit 2017

- The auditor noted that ‘the gauge for project success was being based on the rate of fund utilization, rather than project

delivery,' when 'project success should be measured by effectiveness (delivery of desired outputs) and efficiency (use of the funds to achieve this.)' UNDP response was 'delivery is linked to the financial input, thus as all projected funds were spent in 2017, all outputs were attained' (paraphrased). [TE - However, for example, the AWPB 2017, included 50 briquette presses and 120 retort kilns (@\$137,500 in the budget). The kilns were not procured, thus the UNDP statement is incorrect.]

## AWPBs

AWPB 2015 - \$306,900, FD / UNDP signed Nov 2015 – with only one month to run before it ended. Note under project management – hire of firm to conduct the HACT assessment (suitability / accreditation to manage UN GEF funds) [The firm reported back in September 2016 – so took 10 months, then this was not reported to the PSC meeting in 2016 Q4, but rather a year later in PSC meeting 2017 Q3 – so from planning to conducting to reporting to PSC took over two years]

Procurement of four tractors for \$99,500 suggested that the FD / PIU had not researched the topic, as in reality two tractors (70HP) with trailers, plough & harrows were procured for ~\$102,000s. Who holds the insurance and maintenance contracts for the equipment?

AWPB noted that the FD with the Kasanka Trust were to conduct the identification / mapping of the ANR sites, but they were not involved.

AWPB noted 'sensitization of communities to CFs' – this activity was continuing under AWPB 2020

AWPB 2016 - \$903,679, FD / UNDP signed Feb 2016. Of which 2/3<sup>rd</sup> of AWPB budgeted under component 1 (\$644,317), of which \$329,000 was budgeted for PIU / project equipment; Component 2 - \$189,400 for ZEMA fire mapping, including the preparation of fire management plans for the two districts (\$90,000); C3 – only \$25,000 for Energy Dept / Pioneer to create two charcoal producer groups and train them.

AWPB 2017 - \$1,118,115, FD / UNDP signed Jan 2017. C1 \$606,200; C2 \$287,500; C3 \$192,500 of which \$137,500 was for 50 briquetting machines and 120 retort kilns; Project Management \$31,915 of which \$20,000 was for M&E

AWPB 2018 - \$923,000, FD / UNDP signed May 2018, i.e. five months into the 12-month activity cycle, which was too late. C1 \$606,000 for development of ANR plans; ANRs - establishment of zones for prescribed fire management; and alternative energy technologies. In detail - resource mapping of 9 districts in Central Province (\$40,680), registration of VAG boundaries (*sic*) under ZILMIS (\$5,000); C2 \$120,000; C3 137,000.

AWPB 2019 – \$560,711, FD / UNDP signed Jan 2019. C1 (\$186,400 – all Comaco inputs, nothing else); C2 \$149,211; C3 \$215,100 – many ambitious activities (by Energy Dept), which mostly went nowhere, including the 'defunct retort kiln' actions still continuing. C3 also included \$13,000 only for TDAU to assess the crop residue kiln – all too late in the project. But AWPB looks like it was prepared by another party in comparison to the previous four AWPBs 2105-18.

AWPB 2020 - \$220,000, unsigned / undated. Different format, and possibly different producer again. C1 FD mentioned as responsible party, when in fact it was Comaco in direct contract with UNDP.

## PIRs

### PIR July 2017 – June 2018

- Impact story – 'The project has resulted in increased adoption of AF activities through the provision of seed which is now locally available. E.g. Mr Chime after growing the AF trees, is now a supplier of their seeds to other farmers'. 'The nursery originally raised 88,000 seedlings, which were distributed in the communities.' [An indication of the A/F work before the Comaco contract]

### PIR July 2018 – June 2019

- No comment

### PIR July 2019 – June 2020

- Critical risk – 'Covid-19 has affected the community/ field meetings. The measures put in place include having online meetings and observing Covid protocols in conducting meetings that require physical presence'
- Delays - 'The project has experienced a delay in the TE and project closure due to the outbreak of the Covid-19. Planned activities for the year 2020 especially those that involve field work have not been done. the TE consultant has been recruited, although it is not clear if he is able to travel to the field' and 'It is envisaged that some of the activities might not be implemented' [TE – The TE was delayed from May- July 2020, due to Covid-19 and the lack of int'l flights, permission from the Zambia Ministry of Health, obtaining a visa during this time, and general safety issues. The TE mission took place, with quarantine observed, and visited the field in August – September 2020.]

## Field Mission Summary

Location	Stakeholder
Lusaka	- UNDP, FD Director & staff, ZILMIS, ZEMA, TDAU, ZENGO, Comaco
Kabwe	- FD, PACO, Land Office
Serenje	- Commissioner, DC Chairperson (Mayor), DC Secretary, FD including the project Focal Point and DFOs, Agri office, Chiefs & TAs office - Chief Kabamba - Comaco West – Project Operations Office & Processing Factory - VAG Teta Central; VAG Teta Natural Resource; VAG Chitenda – committees and members meeting
Chitambo	- Commissioner, DC Secretary, FD including the project Focal Point and DFOs, Agri, - Munibula VAG; Kaselenga VAG; other VAGs (VAG Committee representatives meeting; VAG members meeting)
Interventions	- Tractors & implements, Motorbikes - Project Resource Centre (Chitambo) - Teta and Musola ANRs (2 out of 5) - Goats, Treddle pumps, Briquetting, Vegetable Farming; Cookstoves, Mushroom drier, A/F Gliricidia trees, bee hives, fish ponds (Observation & farmer / h/ouseholder discussions for each)

## Training

Subject Title	Content focus	Men	Women	Total	No. of Days	Location	Date
<b>National Level</b>							
Motorbike training	riding training	8	2	10	10	Serenje	Oct-16
Community based Natural Resource Management	CBNRM	20	5	25	11	Chisamba	Sep-16
Land use Planning training	Land use	22	8	30	10	Serenje	Mar-17
Earth Kiln	efficient earth Kiln	30	10	40	5	Serenje	Mar-20
Charcoal Briquetting	Briquetting production	30	10	40	5	Serenje	Mar-20
Chiptata exchange farmers visit	Exchange Visit	20	10	30	5	Chipata	Aug-17
Fire Management Plans training	Fire plans and management	20	5	25	10	Chisamba	Aug-17
Prescribed burning	Fire plans and management	30	10	40	10	Chisamba	Aug-17
Training in Needs assesment	GIS	30	20	60	10	Serenje	Oct-17
Sitelight data for Fire	Monitoring fire	20	5	25	10	Chisamba	May-18
Enterprenurship Training	Enterprenurship	25	5	30	10	Chisamba	May-18
Awareness Mud stove Training	Energy	118	214	332	18	Serenje /Chitambo	Aug-18
Awareness Rasing fire management	Fire management	350	254	604	6	Serenje /Chitambo	Oct-19
Training of beneficiaries in improved agricultural technologies	Conservation Agriculture	526	575	1101	10	Serenje/Chitambo	Sep-19
Livelihood activities (Livestock, Garden, Mushroom, Bees)	Livelihood	960	980	1940	10	Serenje/Chitambo	Oct-19
<b>Int'l level</b>							
Study tour - Kenya Kitil Bamboo Farm	ANR	6	4	10	6	Kenya	Aug-16
		<b>2,215</b>	<b>2,117</b>	<b>4,342</b>			
	%	<b>51.0</b>	<b>48.8</b>				

## Assisted Natural Regeneration Areas (with geo-coordinates)

District	ANR	Villages	Area (ha)	Chiefdom	X Point (Long)	Y Point (Lat)
Chitambo	<b>Musangashi</b>	Musangashi	2,589	Chief Chitambo	30.45009	-12.47522
Chitambo	<b>Musola</b>	London	4,100	Chief Muchinka	30.42786	-12.77144
		Mwimbula			30.39483	-12.85725
		Myenje			30.35943	-12.80927
Chitambo	<b>Nakatambo</b>	Nakatambo	3,318	Chief Muchinka	30.74723	-12.78873
Serenje	<b>Teta</b>	Teta	400	Chief Kabamba	30.30641	-13.26597
Serenje	<b>Mwenshi</b>	Mwenshi Butele	5,153	Chief Kabamba	30.54977	-13.12632
		<b>Total</b>	<b>15,560</b>			

Status - All FD Endorsed, for the purposes of the project

## ANR Areas by VAG

ANR (and District location)	Area (ha)	Village Action Group
Teta ANR (Serenje)	400	Chitenda
		Teta Central

		Teta Natural Resource
<b>Kampambwa ANR (Serenje)</b>	5,153	Kampabwa
		Chikabi
		Mikuku Makolongo
		Chipendeshi
		Kampakasa
<b>Nakatambo ANR (Chitambo)</b>	3,318	Kabanga
		Nakatambo
		Mpempa
		Nsalu cave
		Chipaata
		Katoba
		Mukanga
		Bunwa
Yosefe		
<b>Musola ANR (Chitambo)</b>	4,100	Miyenje
		Masaka
		Chioma mape
		Mwimbula
		Mumbu
		Kasensela
		Kobola
		London
		Nchele
<b>Musangashi ANR (Chitambo)</b>	2,589	Musangashi
		Moses Makosa
		Muchelwe
<b>Total ANR Area</b>	<b>15,560</b>	

All VAGs registered in March 2017. All ANRs formed in 2016

VAG formation Report (August 2017) – VAG name and User Groups

S/n	Project sites	NRM/ VAG committees	User groups
1	Musangashi	Muchelwe Tusungilile Impanga Yesu	Beekeeping
			Small livestock
			Legume crops
			Charcoal production
			Gardening
2		Moses Makosa Twangwe Impanga Bwino	Beekeeping
			Small livestock
			Legume crops
			Crafts and carpentry
			Mushroom collection
	Charcoal production		
3	Kobola	Nchele Twafwane Ukusunga Impanga	Beekeeping
			Small livestock
			Agroforestry
			Fish farming
			Mushroom collection
4		Nshimba Usuunge Bwino Ifilengwa na Lesa	Beekeeping
			Small livestock
			Legume crop farming
			Fish farming
			Handcrafts
5		London Tusunge Bwino Impanga	Beekeeping
			Small livestock

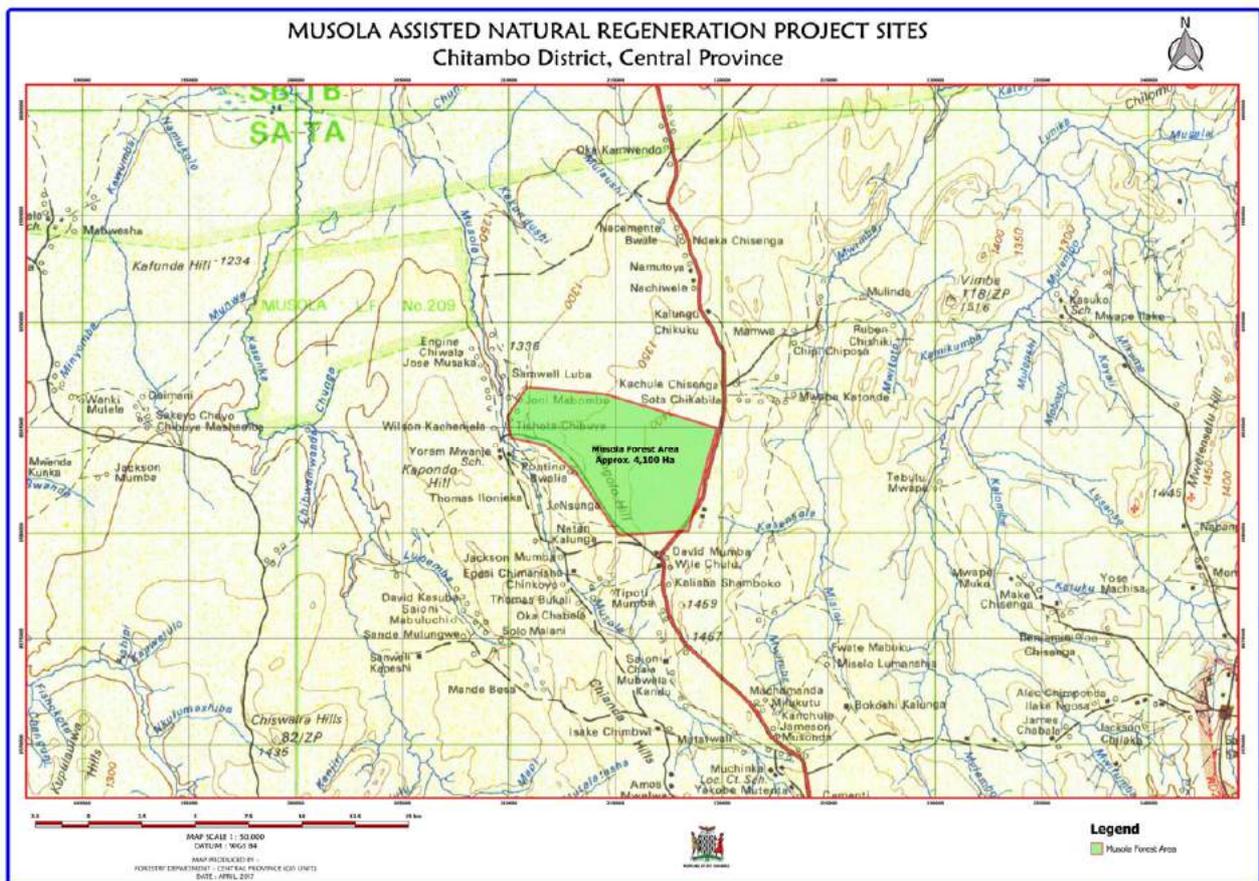
			Legume crop growing
			Fish farming
			Crafts and carpentry
			Caterpillar collection
			Mushroom collection
			Wild fruit collection
6	Myenje	Masaka Tusunge Ifilengwa na Lesa	Beekeeping
			Small livestock
			Fish farming
			Agroforestry
7	Mwimbula	Chiona-Mape Twikatane Ukucingilila Ifilengwa na Lesa	Beekeeping
			Small livestock
			Legume crop farming
			Crafts and carpentry
			Charcoal production
8		Kasensela Twafwane Ukusungilila Ifilengwa na Lesa	Beekeeping
			Legume crop farming
			Crafts and carpentry
			Timber production
			Charcoal production
9		Mumbu Twikatane Mukusungilila Impanga	Beekeeping
			Small livestock
			Legumes
			Crafts and carpentry
			Charcoal production
10	Teta	Teta Central Tubukulushe Impanga	Beekeeping
			Small livestock
			Legume crops
			Fish farming
			Gardening
		Teta Natural Resource Management	Beekeeping
			Small livestock
			Legume crops
			Fish farming
			Gardening
12	Kampabwa	Chikabi Tusungilile Ifilengwa na Lesa	Beekeeping
			Small livestock
			Legume crops
			Fish farming
13		Mikuku-Makololo Tusungilile Bwino Ifilengwa na Lesa	Beekeeping
			Small livestock
			Fish farming
			Agroforestry
			Crafts and carpentry
			Mushroom production
			Charcoal production
14		Chitenda Tubukulushe Impanga	Beekeeping
			Small livestock
			Legume crops
			Fish farming
			Gardening
15		Chipendeshi Twikatane Tusunge Bwino Impanga	Beekeeping
			Small livestock
			Agroforestry
			Charcoal production
			Mushroom production
16		Kampakasa Buyantanshi Sungilila Bwino Impanga	Beekeeping
			Small livestock
			Fish farming
			Agroforestry
16		Kabanga Suunga Impanga	Beekeeping
			Small livestock

			Legume crops
			Fish farming
			Gardening
		Mukanga Twikatane Tusunge Bwino Impanga	Beekeeping
			Small livestock
			Legume crops
			Mushroom collection
			Charcoal production
17	Chipaata/ Nakatambo B	Yosefe Twikatane Tusungilile Impanga	Beekeeping
			Small livestock
			Legume crops
			Fish farming
			Woodlot Establishment
		Bunwa Tusunge Bwino Impanga Yakwa Lesa	Beekeeping
			Small livestock
			Legume crop farming
			Charcoal production
			Mushroom collection
19		Katoba Twafwane Tusungilile Bwino Impanga	Beekeeping
			Small livestock
			Legume crops
			Fish farming
20	Nakatambo A	Kabamba/ Nsalu Cave Tusunge Bwino Impanga Yakwa Lesa	Beekeeping
			Small livestock
			Crafts and carpentry
			Caterpillar collection
21		Mpempa	Beekeeping
			Small livestock
			Legume crop farming
			Crafts and carpentry
			Gardening
22		Lucele	Beekeeping
			Small livestock
			Legume crops
			Fish farming
			Gardening

### VAG formation Report (May 2017) – VAG name and User Groups

	Pilot site	NRM committee	User groups/ Interest groups
1	Musangashi	Musangashi Imiti Ikula Empanga	Beekeepers, wild orchids (Chikanda) harvesters, mushroom collectors, small livestock producers and legume crops growers
2	London/ Kobola	Kobola Tusunge Bwino Impanga	Beekeepers, wild fruits collectors, small livestock producers, legume crops growers, mushroom collectors, caterpillar collectors and crafts and carpenters
3	Myenje	Myenje Tusungilile Impanga Bwino	Beekeepers, mushroom collectors, charcoal producers, small livestock producers and legume crops growers
4	Mwimbula	Mwimbula Twafwane Ukucingilila Impanga	Beekeepers, wild orchids (Chikanda) harvesters, mushroom collectors, caterpillar harvesters, legume crops growers and small livestock producers
5	Nakatambo A	Nakatambo Sunga Impanga	Beekeepers, fish farmers, legume crops growers, small livestock producers and charcoal producers
6	Nakatambo B/ Chipaata	Chipaata Tubukulule Impanga	Beekeepers, fish farmers, legume crops growers and small livestock producers
7	Kampabwa	Kampabwa Tusunge Bwino Imiti	Beekeepers, wild orchids (Chikanda) harvesters, legume crops growers and small livestock producers
8	Teta	Teta Natural Resource Management Group	Beekeepers, woodlots establishers and small livestock producers

### Musola ANR Map



### Comaco MoU with UNDP

1. Train community forestry management groups across the 30 Village Action Groups to understand potential market opportunities from Climate Conservation/ Assisted Natural Regeneration AREAS, including honey, mushrooms, and carbon; exchange visit with local leaders in selected chiefdoms in Central Province.
2. Establish key value-added processing facilities at the COMACO Serenje processing hub to 1) promote adoption of crop rotation and agroforestry by establishing a peanut butter processing line and a scaled-up soy processing line for production of yummy soy and poultry feed (note, the peanut processing line will include a desheller and briquette-making processor for the manufacture of a renewable energy source) and 2) promote forest protection by establishing a honey processing plant and a dry processing facility for dry-processing wild mushrooms and caterpillars.
3. Strengthen farmer Cooperative structure to oversee distribution of inputs and compliance to conservation pledge by training 600 farmers in conservation farming, 40 bee keeping producer groups, 35 garden groups and 1050 farmers in small livestock.
4. Train households identified in needs assessment survey and undertaken jointly by Cooperative leaders and their trained lead farmers in Serenje and Chitambo Districts by establishing 60 farmer business schools across the 9 cooperatives.
5. Train 7 women groups in Serenje and Chitambo Districts in meeting specific standards before pre-processing of fresh mushrooms.
6. 2,500 booklets training materials printed and circulated to farmers coupled with broadcast through COMACO farm talk radio program

The Parties agree to cooperate in the following areas of activity:

- I. To facilitate forest regeneration activities around the 15,000 hectares in Serenje and Chitambo Districts through promotion of livelihood activities and agroforestry activities.
- II. The livelihood activities will be strengthened by value addition and market linkages.
- III. The project life is from July 2015 to June 2020 so there is need to plan for execution of these activities within a year.

### Consultant Reports

#### Integrated Land Use Planning – Training (2017, pp13)

Training of Trainers on Participatory Land Use Planning

#### Participatory GIS Mapping – Training Needs Assessment (2017, pp18)

The assessment continued to follow the misleading prodoc design flaw of discussing 'VAG boundaries' when the village groups were being directed towards 'ANR boundaries.' The TE struggles to understand the words 'participatory' and 'GIS' being together. A GIS system is in reality a 'satellite to computer' system, whereas 'participatory' meaning working together, often in a 'bottom-up field planning exercise'. The assessment was in the field with villagers who had no understanding of GIS, so this was a pointless exercise<sup>72</sup>.

#### Participatory LUP Manual (2017, pp37)

A fairly standard how to do manual. Mentions that the Village Land Management Committee be involved.

#### Land Tenure, Forests & CBNRM in Central Province - Chitambo & Serenje Districts (Draft, undated, unnamed, 44pp)

The report is too general, although it does discuss approaches. It doesn't consider CF, nor the legal options for land tenure.

#### Livelihood Assessment (2017, pp48)

Some useful information, but difficult to see how the information was used. It was written as a report to identify forest-based interventions, but these were already part of the approved project design since 2015. The assessment could have been conducted at project start (baseline) and project end to determine the impact of the project, as well as providing insights into useful interventions

#### Fire training course (ppt slides taken from the report)

#### Piloting charcoal efficient kilns in Chitambo & Serenje Districts (Draft, Mwenya, K. K., 2017, 62pp)

A twin drum retort kiln was recommended for piloting (24-hour burn time depending on wood moisture content). The design was said to have a 30% conversion efficiency from small Acacia wood, compared with a 20% conversion for an improved earth kiln. However, the design was not taken up, when perhaps a few more should have been made and piloted.

#### Charcoal Briquette Training Guide (pp16, undated)

Appears incomplete, as the only the drum is demonstrated. The briquette press is missing

#### Briquette Training Report (2017, pp22)

Good training, but the pressing equipment was not really presented in the report (different from the 'sausage' machine)

#### Briquette Training (2017, pp18)

Press & piston equipment to make briquette was in the report

Zengo Report (pp3) - Cook stoves in serenje - Zengo sub-contracted by DoE to train on the Pulumusa stove (with tinsmiths) for urban areas and fixed mud stove for rural areas. Zengo replaced the chimney stove (DoE design) as it didn't fit well enough to stop the smoke

Zengo Cookstove Manual (pp14) - A series of ppt slides, with pictures and not diagrams, so not easy to understand and no chimney design

#### Household Fixed Mud Stove Manual (Ministry of Energy, pp30, 2018)

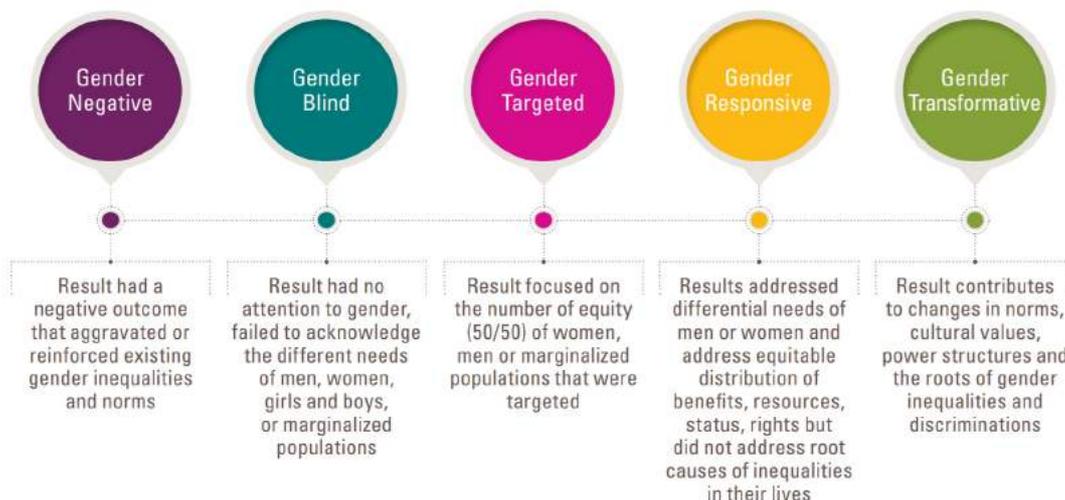
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<sup>72</sup> Perhaps taken out of context, but participatory no – 'Questionnaires were administered in an exam like format. Each member sat alone to fill in the responses so that we could test their ability to answer and read English' (p5 of the report)

No link to the UNDP project. Most of the design principles are OK, although the issue of the chimney 'sparks' and thatched rooves is not dealt with.

Gender – GRES Tool

The TE utilised the Gender Results Effectiveness Scale:



(Source – Evaluation of UNDP Contribution to Gender Equality and Women’s Empowerment (2015))

This scale is also now part of the ‘Guidance for conducting Terminal Evaluations of UNDP-supported, GEF-financed projects (2020).

LDCF / SCCF Tracking Tool – Summary edit

Indicator	Unit	Baseline	Target	Result	Comment (Project / TE)
<b>Objective 1: Reduce the vulnerability of people, livelihoods, physical assets and natural systems to the adverse effects of climate</b>					
1: Number of direct beneficiaries	number of people	0	3,000	3,850	Bee Keeping - 537, Gardening - 284, Goats - 441, Fish farming - 14, Agroforestry - 257 (Goats rearing the figure is accumulative because it is the Pass on), mushroom driers 850. The facilities are being used for other products such as caterpillars, cassava and vegetables
	% female	0	20	52	woman participation was good
	vulnerability assessment	No		Yes	Adapted the vulnerability assessment matrix for the Ministry of Community Development and Social Welfare
2: Type of assets better managed to withstand the effects of climate change	ha of land	0	15000	15560	Out of the 15,000 ha, 15560ha have been identified, mapped and zoned. The boundaries have been opened and maintained
3: Population benefiting from the adoption of diversified, climate-resilient livelihood options	no. of people			3850	as above
	% female			52	
4: Extent of adoption of climate-resilient technologies/ practices	number of people	0	170	40	target was: charcoal kilns (120); briquetting machines (50). Result 40 briquetters only
	% female	0	20	20	20 improved cookstoves were demonstrated
	number of ha		15000	15560	ANR areas
<b>Objective 2: Strengthen institutional and technical capacities for effective climate change adaptation</b>					
5: Public awareness activities carried out and population reached	Yes/No			yes	
	number of people			5500	The project used Serenje community radio station. Programmes are run on a weekly basis
	% female			52	
6: Risk and vulnerability assessments, and other relevant scientific and technical assessments carried out and updated	number			8	Sustainable livelihoods Assessment, Fire regime assessment, Efficient energy technologies baseline survey, Resource mapping, community radio programmes covering, ANR, AF, fish farming, prescribed fire management, CA, NTFPs
7: No. of people/ geographical area with access to improved climate information services	number of people			120,000	TE - this assumed the population is all listening to the community radio. There is an Automatic Weather Station in Chitambo which covers both districts (18,548 km <sup>2</sup> )
8: Number of people/ geographical area with access to improved, climate-related early-warning information	number of people			36000	30% of the targeted population has access to improved, climate-related EWI. TE - would says - it depends on how many listen to local radio. There isn't a specific EWS set-up
	% female			40	
9: Number of people trained to identify, prioritize, implement, monitor and evaluate adaptation strategies and measures	number of people			350	350 (F- 18, M- 163) VAG Leaders were trained
	% female			52	
10: Capacities of regional, national, local government to prioritize, implement, and evaluate adaptation measures	number of institutions	0	1	7	FD, Agriculture, Community Development, Chiefs & Traditional Affairs, Town Councils, Comaco and Kasanka Trust.
	score	0	2	2	To a large extent / completely'. TE '0' - 'Not at all' for government entities
<b>Objective 3: Integrate climate change adaptation into relevant policies, plans and associated processes</b>					
11: Institutional arrangements to lead, and coordinate the integration of CCA into relevant policies, plans	no. of countries				TE - limited. Climate Change is under MLNR
	score			1	
12: Regional, national and sector-wide policies, plans and processes developed and strengthened to identify, prioritize and integrate adaptation strategies and measures	no. of policies			Yes	7th NDP, Climate change policy, Forest Act (2015), CFM regulations
	score			1	
13: Sub-national plans and processes developed and strengthened to identify, prioritize and integrate adaptation strategies	no. of plans			Yes	
	score			1	
14: Countries with systems and frameworks for the continuous monitoring, reporting and review of adaptation	no. of countries			Yes	
	score			1	TE - not effective

## MTR

The MTR noted under Component 1: a target of 3,000 beneficiaries (with AMAT aggregate figure at the time at 3,324 direct beneficiaries<sup>73</sup>); limitations in accessing fire early-warning online tool, despite fire management plans for Musola, Teta, Musamgashi, Mweshi Butetele and Nakatambo; and a time lag between training and inputs for beekeeping, gardening, and conservation farming, leading to unmet community expectations; the project had agreed to provide a wide range of inputs for beekeeping, gardening, conservation agriculture, with seed supply, small livestock, fish, treadle pumps, and knapsack sprayers; the procured design of bee-hive by Comaco was not liked by FD; and communal vegetable gardens were not considered as effective.

Under Component 2 it noted: The effectiveness of fire management depends on communication, with project procuring short-wave radios. (The TE is not clear why mobile phones were not adequate, with a hotline number for example); and a lack of awareness / signage showing ANR areas is a concern and limits the project's profile.

<sup>73</sup> Neither the PIF nor prodoc indicated a total beneficiary number, except the 2,000 VAG members.

Under Component 3, it noted: The effort already placed on implementing improved mud cookstoves and the start of providing briquetting presses; and promoting sustainable charcoal production required analysis / lessons.

Concerning stakeholder awareness and mobilisation, the MTR noted: a National Agriculture Information Services (NAIS) facilitated documentary on project agro-forestry activities, the Community Development Department facilitated the formation and registration of community groups, while the Departments of Agriculture, Community Development, Chiefs and Traditional Affairs, Kasanka Trust and Comaco took a leading role in community mobilization; and for ANR and agroforestry interventions, Chitambo District Council securing land for the community resource centre in Chitambo; and the Comaco business model of providing inputs and a buying option, is useful in creating a needed supply chain.

Concerning risk, the limited coordination between stakeholders at the national, provincial and local level, meant that this risk level should be raised.

#### Co-financing Partners (based on prodoc only)

- Ministry of Lands, Natural Resources and Environmental Protection (MLNREP), through the Forestry Department's National Tree Planting Programme (NTPP), will provide co-financing to the proposed LDCF project. The following activities are supported under the NTPP: i) procurement of nursery equipment and materials; ii) nursery establishment; iii) tree planting; iv) weeding; and v) fire management. The FD's contribution will focus on indigenous forest conservation. In addition, climate-adaptive agro-forestry, assisted natural regeneration techniques and fire management will be promoted. This co-financing in support of Components 1 and 2 will be in the form of: i) annual budgetary allocations for the planned activities; and ii) in-kind contributions to support the activities.
- Centre for Environmental Research Education & Development (CERED) - In the western part of Central Province, CERED has been working with local communities and traditional authorities in the Mopane sub-ecoregion within the miombo woodlands to conduct participatory forest resource assessment, promote agroforestry and alternative income-generation activities to address forest degradation arising from unsustainable charcoal production and enhance climate change adaption and resilience. CERED's co-financing contribution in support of Component 1 of the LDCF project focuses on piloting of community-based, climate-adaptive agro-forestry and assisted natural regeneration techniques within the Mopane sub-ecoregion.
- Community Markets for Conservation (Comaco) provides services to small-scale farmers. Comaco is undertaking a project, which commenced in 2014 and is scheduled to end in 2019. The support services provided by COMACO address issues of resilience by recommending crops and production technologies that promote soil improvement as well as viable income opportunities. Preferred technologies are those that can be started after brief training with low, if any, input costs, while benefiting from ongoing training updates to advance continued understanding of soils and diversification of income opportunities both on and off the farm. In addition, COMACO provides training on improved ways to promote food security, diversify income and mitigate against the effects of extreme events, pest problems and various social and health challenges arising from climate change. COMACO's operations extend throughout much of Eastern, Muchinga and Central Provinces. Through COMACO's activities, over 650,000 hectares have been set aside as community conservation areas (CCAs).
- Environment Africa has partnered with WFD, a German NGO, in working towards the enhancement of food security, afforestation and reforestation for subsistence. A project is currently being implemented in the Chisamba and Chibomobo districts – among the largest districts in the Central Province of Zambia – and is scheduled for completion in December 2017. The interventions focus on: i) climate-adaptive agro-forestry for rural farming communities; ii) support to farmers in practising conservation farming; iii) capacity building for the District Agricultural Coordinators (DACOs) and Forestry Department in climate-resilient AF and natural regeneration practices; iv) increased knowledge about, and uptake of, appropriate supply-side, biomass energy production technologies; v) reforestation projects; vi) climate change awareness programmes for schools and traditional leaders; and vii) building capacity amongst rural farmers in community participation in natural resources management.
- Pioneer is an NGO that works with a diverse array of civil society organisations, community-based organisations and communities within Central Province to provide energy efficient technologies. The objective of Pioneer is to reduce deforestation by developing and promoting alternatives to the current practice of making charcoal by cutting down trees. Pioneer has successfully established that organic matter – including maize cobs, groundnut shells, charcoal fines and brown cardboard boxes – and animal droppings can be used to produce charcoal briquettes. Pioneer will provide in-kind financing in support of Component 3 to increase the knowledge and uptake of appropriate supply-side, biomass energy production technologies.
- Zambia Climate Change Network (ZCCN) works with a diverse range of CSOs, CBOs and communities across Zambia, including in Central Province. The purpose of ZCCN's work is to deliver interventions that empower communities to actualise participatory climate change adaptation and mitigation actions. Within Central Province, ZCCN, in close collaboration with member organisations, is catalysing activities that have fostered: i) awareness; ii) resilient agriculture production; and iii) forest regeneration activities, by using approaches that integrate scientific and

indigenous knowledge. ZCCN's co-financing contribution is in support of Component 1 of the LDCF project, which focuses on piloting community-based, climate-adaptive, agro-forestry and assisted natural regeneration techniques.

- Zambia Institute of Environmental Management (ZIEM) works with a diverse array of CSOs, CBOs and communities within Central Province. ZIEM is currently implementing the following programmes in natural resource management: i) sustainable management of forestry in Central Province; ii) REDD+ tracking, social and environmental safeguards; and iii) REDD+ finance tracking mechanisms. ZIEM is also engaging various stakeholders on energy efficiency and financing of energy through pro-poor public-private partnership. The project commenced in 2014 and is scheduled for completion in 2020. The area of focus is Central Province. The in-kind co-financing is in the amount of US\$746,057 and is in support of the following LDCF project activities: i) piloting of community-based, climate-adaptive agro-forestry and assisted natural regeneration techniques; ii) enhanced capacity of foresters and communities in Central Province to implement appropriate climate-resilient agroforestry and natural regeneration practices in designated zones; iii) increased knowledge about, and uptake of, appropriate supply-side biomass energy production technologies.
- Kasanka Trust (KT) is an implementing organisation that has been active in the Kasanka National Park and surrounding areas for over 25 years with a focus on conservation and associated community development. As a result, KT has a long tradition of collaboration with local communities and other local stakeholders, including the local Community Resource Boards, ZAWA and the FD. KT follows a dual approach regarding local communities: i) seeking advice and support for conservation activities; and ii) supporting capacity building and income generating activities for the same communities. Activities carried out and envisioned to continue under climate change and related initiatives include inter alia: i) mitigating land degradation; ii) reduced deforestation; iii) erosion and sedimentation; iv) sustainable forest management; v) conservation farming/agriculture vi) sustainable wood fuel and charcoal production; and vii) implementing management plans for the National Park and Kafinda Game Management Areas, as well as nearby gazetted forests. The co-funding contribution from KT is in support of the activities under Components 1 and 3 to reduce deforestation and promote sustainable community-based joint forest management of indigenous forests in the wider Kasanka area within Zambia's central province.
- UNDP is committed to providing co-financing for the UNDP-implemented, LDCF-financed project. Over a four-year period, Target Resource Assignment from the Core (TRAC) funds in the amount of US\$100,000 will be made available. This cash co-financing is in support of Project Management Costs (PMCs), focusing on project execution.

### Miombo Woodlands Ecosystem

Zambia's forests<sup>74</sup> are located within the miombo eco-region, which has a notably high species richness. The miombo eco-region supports important populations of fauna. Moreover, this eco-region is floristically diverse, comprising ~8,500 plant species, of which ~54% are endemic (WWF-SARPO 2002). Also referred to as the Zambebian Regional Centre of Endemism, this eco-region covers ~3,770 million km<sup>2</sup>, extending from the Katanga (DRC) to the Vaal River (South Africa). The miombo eco-region comprises of Central Zambebian and Southern Miombo woodlands. Miombo woodlands cover most of this eco-region in Zambia.

The central miombo woodland, which consists predominantly of *Isoberlinia angolensis*, *Brachystegia spp.* and *Julbernardia paniculata*, is the dominant vegetation type in: i) Northern, Luapula, North-western and the northern part of Central Province; and ii) a portion of Kafue National Park. *Isoberlinia angolensis* does not exist in the southern miombo woodland. In some cases, a vaguely defined lower storey is evident, characterised by species such as *Albizia antunesiana*, *Anisophyllea boehmii*, *Brachystegia stipulate* and *Dalbergia nitidula*. The undergrowth consists of either a dense grass / suffrutex (dwarf shrub) layer 0.6–1.3 m high<sup>75</sup> or a dense evergreen thicket 1.3–3.6 m high.

Various sources estimate natural miombo woodlands to grow at a rate of 0.7–2.3 m<sup>3</sup>/ha/annum. For miombo woodlands coppice plots, Frost (1996) reports a mean annual increment in volume of ~2 m<sup>3</sup>/ha/annum<sup>76</sup>. The number of tree seedling stems per hectare in the miombo woodlands is estimated to range between 1,900–16,000 in the dry season, with the number doubling or even tripling in the wet season

Miombo woodlands in watersheds store water, thereby contributing to regulation of water flow and quantity. In addition, these forests contribute to purifying water by stabilising soils and filtering contaminants. This regulatory service is important for a most sectors in Zambia including agriculture, electricity, water supply, industry and tourism.

Miombo woodlands contribute notably to the livelihoods of local communities. In particular, these ecosystems produce dry-season fodder for livestock, fuel-wood for domestic and rural industry uses, medicines, fibre and food. Moreover,

<sup>74</sup> This box is an edit of prodoc Annex 2, with full references given therein

<sup>75</sup> Suffrutex trees / shrubs produce lignotubers (woody material at high volume) below ground, and are a marked feature of miombo woodland.

<sup>76</sup> In lay terms, this is very low, especially in comparison to tropical plantations of fast-growing species

Zambians use wood from forests for construction of farm structures and homes. Processed and unprocessed forest products contribute to ~50% of the household incomes of forest-adjacent communities. Production estimates for economic value of the Zambian forestry sector are ~US\$12 million *per annum*. Moreover, total employment for this sector is ~1 million people.

## Zambia – Background

### Socio-economic

In 2013, the population of the country was estimated to be ~14 million people, with an average growth rate of ~2.8%. The rate of rural - urban migration (4.2%) exceeds this. A large portion of the population resides in Lusaka in the south and the Copperbelt to the northwest.

Zambia faces widespread poverty - ~60% of the population live below the international poverty line of US\$1.25 per day. Moreover, there are notable disparities in incomes between rural and urban areas. The country has a Gini coefficient of 0.65 and is among the world's most unequal countries in terms of incomes. In particular, unequal land distribution has an effect on the capacity of poorer people to adapt to climate change and variability by limiting their livelihood diversification options.

Labour is constrained by the incidence of disease and sickness. Malaria is endemic during the rainy season and prevents many people from taking part in farm activities. ~14% of Zambians are estimated to be living with HIV, disproportionately more for women, who as a result are less able to regularly work in agricultural activities, and incur medical bills. As women are more involved in food provision, this adversely affects food security at the household level.

### Environment

Zambia's terrain is mostly high plateau, with some hills and mountains dissected by river valleys. The country is divided into three agro-ecological zones (See maps in **Annex 11**), with rainfall being the main climatic factor.

Zambia's forests are located within the miombo eco-region, which has a high species richness<sup>77</sup>.

Zambia's indigenous forests are under extreme pressure, with the deforestation rate well above the global average, with rates estimated in the range of ~275,000 ha per year (ILUA 2008).

Miombo woodlands are located on geologically stable rock formations and on nutrient-poor soils. Tree cover generally exceeds 40% when rainfall is above 600 mm per annum. If rainfall is above 1,000 mm, tree cover might be greater than 60%. Moreover, under this scenario, canopy height can exceed 15 m. Such dense woodlands are sometimes described as wet miombo. Various sources estimate miombo woodlands to grow at a rate of 0.7–2.3 m<sup>3</sup>/ha/annum. For miombo woodlands coppice plots, Frost (1996) reports a mean annual increment in volume of ~2 m<sup>3</sup>/ha/annum<sup>78</sup>.

### Agricultural productivity and Food Security

Commercial agriculture contributes ~20% to GDP. Moreover, ~67% of the labour force is employed within this sector and the majority of rural communities rely on subsistence agriculture. The effects of climate change – such as a predicted shortening of the growing season – will prevent key crop varieties from reaching maturation<sup>79</sup>.

Moreover, the area suitable for growing staple crops, such as maize, under rainfed conditions is likely to decline by 80% by 2100. Consequently, food security will be undermined. Within the last 20 years, prolonged dry spells and shorter rainfall seasons have reduced maize yields to only 40% of the long-term average.

Vulnerability assessments have indicated that agricultural production in the main Agro-ecological zone (AEZ) – including AEZ I and II (see maps **Annex 11**) will experience severe yield deficits at critical periods of the cropping calendar as a result of climate change. These regions are also notable livestock-producing regions. Consequently, the livestock sector is particularly vulnerable to the impacts of climate change because livestock numbers are

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<sup>77</sup> Also referred to as the Zambezi Regional Centre of Endemism, this eco-region covers ~3,770 m km<sup>2</sup>, extending from the Katanga (Democratic Republic of Congo, DRC) to the Vaal River (South Africa).

<sup>78</sup> In lay terms, this is very low, especially in comparison to tropical plantations of fast-growing species

<sup>79</sup> Whilst sunflower, coffee, tea and irrigated wheat are key crops, maize is the major staple food and accounts for over 87% of the calorific intake

strongly correlated with rainfall and temperature<sup>80</sup>.

### Forestry Economy

In 2009, the contribution of the forestry sector to GDP was estimated to be 6.3%. Importantly, the majority of rural communities rely on ecosystem goods and services from forests – including goods for subsistence agriculture – for their livelihoods. A majority of Zambia's poor rely on natural resources for their livelihoods. For households living adjacent to forest areas, a large share of the household income is derived from forest products (54%, with cropping 25%, labour 15%, and livestock 6%).

### Forest Degradation, Ecology and Charcoal

The miombo eco-region consists of Central Zambezian and Southern miombo woodlands.

These woodlands have a relatively high rate of mean biomass increase. Biomass increase is affected by species composition and site conditions. The mean annual volume increment in mature woodland ranges from 0.58–30 m<sup>3</sup> / ha / year. In coppice woodland, the mean annual increment of biomass ranges from 1.2–3.4 tonnes ha /year, which is about 47% of the above-ground biomass.

Currently, these woodlands are being degraded as a result of unsustainable management practices such as agricultural expansion, urbanisation and infrastructure development, wood extraction and increasing frequency and intensity of uncontrolled fires<sup>81</sup>. In particular, the increasing demand for charcoal both in rural and urban areas is resulting in higher rate of extraction of wood from forests for this product. Therefore, the total forest area under charcoal production from local communities is increasing.

Central Province is a major charcoal producer (mainly for transport to Lusaka and Copperbelt Provinces) and in a survey of the four major agriculture-based provinces, it ranked highest in charcoal use as the primary cooking fuel (with fuelwood 93%, charcoal 6%)

### Forest productivity

Climate change poses a threat to the forestry sector. Importantly, the regeneration of the miombo woodland<sup>82</sup> - which usually occurs relatively rapidly – has already been hampered by drought and excessive temperatures. Over 80% of Zambian communities rely on these woodlands for charcoal and fuelwood. Importantly, these communities are not adapting their harvesting techniques to consider lower precipitation levels, thereby avoiding unsustainable harvesting of the woodlands (e.g. clearing of forest for agriculture and charcoal production). Therefore, the negative effects of climate change within Zambia will exacerbate the current unsustainable land-use practices. Moreover, predicted warming temperatures and longer drought periods will result in an increased frequency and intensity of climate-related hazards.

Of particular relevance for miombo woodlands is the expected increase in the frequency and severity of fires in future climate scenarios. Climate change is predicted to result in : i) increased ignition of fires by lightning during more frequent storms; ii) greater biomass production resulting in greater fuel loads; iii) hotter and drier conditions that will result in easier ignition of fuel loads; and iv) windier conditions that will fan fires and cause them to burn more intensely and spread faster. More frequent and severe fires will lead to reductions in woody plant cover and conversion of miombo woodlands to grasslands. This will create enormous opportunity costs for communities that currently rely on wood and NTFPs for their livelihoods.

### Water availability

Floods and droughts will have a negative effect on the availability of drinking water. Moreover, droughts will directly reduce: i) the amount of drinking water available; and ii) surface water reserves in Zambia by lowering water tables and causing boreholes and streams to dry up. In rural communities, women and children frequently travel long distances to collect water. Therefore, the effects of diminishing surface water reserves will be notable in these areas, as the distances to be walked to collect this resource will lengthen. Moreover, the opportunity cost associated with collecting water will have a negative effect on these stakeholders.

### Land degradation

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<sup>80</sup> Grass feed, fodder and crop residues

<sup>81</sup> The traditional system is called 'chitemene' – slash & burn shifting cultivation

<sup>82</sup> Miombo woodland covers approximately 60 % of Zambia's surface area and thus is the most important vegetation type

The management of Zambia's woodlands – or lack of it – affects not only local communities, who are almost totally dependent on them for their livelihoods, but also the whole nation and even the broader region since the water flow in large rivers like Zambezi are affected by deforestation and degradation. Natural forests such as Miombo and Mopane forests are exploited in an uncontrolled manner in many parts of the country, and are now close to depletion in many areas.

Several of these practices are intricately linked to climate change-related risks and uncertainties. For example in the face of climate change it is clear that the natural regeneration of Miombo woodlands is facing major challenges as regards soil degradation, competition with weedy species, and recurring disturbances which inhibit natural regenerative processes. Climate-adaptive, agro-forestry and assisted natural regeneration techniques have proven effective on a limited scale but have not yet been mainstreamed into traditional agricultural methods and communities across the country and many communities are unaware of the need to manage Miombo woodlands in a sustainable manner.

#### Charcoal production

Charcoal production activities are a major impediment to sustainable management of miombo woodlands. Customary land and national forests are the major sources of charcoal. For those rural inhabitants who are able to access public roads which lead to major urban centers, sale of charcoal is one of the few available livelihood options which can generate cash income in the remote and undeveloped rural districts and it is widely practiced.

A USAID-funded study of charcoal production estimated that, without intervention, by 2030 the national deforestation rate from charcoal production would be 51,866 ha per year. The annual charcoal consumption for the Copperbelt, Eastern and Lusaka Provinces was estimated at a total of 1,423,400 tons leading to the loss of 14,234 ha of forests annually. That same study estimated that the bulk of the charcoal transported into Lusaka Province is from Central Province.

#### Coppicing (all ref from PIF)

Under component 1 - Wood fuel collection zones established in all VAGs and coppicing practices promoted

Furthermore, most charcoal production occurs on public land where there is little incentive to conserve forest, replant trees or practice low-impact harvesting techniques such as tree coppicing to allow for regeneration. Instead most trees are felled at ground level, thereby limiting the capacity for woodland to regenerate after harvesting.

Wood fuel collection zones and appropriate coppicing guidelines will also be established in all designated VAGs to reduce wood fuel use for cooking and heating (another primary driver of deforestation).

For example, improved fallows are established by planting leguminous trees, such as *Sesbania sesban*, *Tephrosia vogellii*, *Crotalaria* spp. and *Cajanus cajan* to speed-up soil fertility restoration. In some cases mixed intercropping with coppicing species, such as *Gliricidia sepium*, *Calliandra calothyrsus* and *Leuceana trichandra*, are used to obviate the replanting of non-coppicing species

#### Fire

Local communities burn vegetation more frequently compared with traditional practices, thereby destroying the (tree) seed bank. In addition, these communities have shifted the times of the year during which they burn (i.e. early to late seasonal burning). Consequently, the regeneration potential of miombo woodlands is being reduced. This shift is underpinned by increasing demands for thatching grasses rather than timber products.

The effects of climate change will exacerbate the non-climate related threats to miombo woodlands. In particular, the regeneration capacity of miombo woodlands is expected to decrease as mean annual temperatures and drought conditions increase. In addition, it is predicted that climate-related hazards – such as drought, pest outbreaks and fires – will further degrade these ecosystems. As a result of these effects, it is predicted that the area of miombo woodland in Zambia will decrease by 50%.

#### Alternative Scenario – Socio-political context

In Zambia, there is now a major opportunity for development work on integrated forest and other natural resources management on the district and community levels, including strong requests from districts, traditional leaders and communities that the former model of centrally directed management of local resources must come

to an end. Under the new government there is a strong political will towards decentralization and devolution of management functions from the central and provincial levels to districts and communities and (as described) significant new investments are going into the forestry sector. The need to decentralize and strengthen local administration in forests and natural resources management is consistent with the manifesto of the new Patriotic Front (PF) Party that formed government after winning the September 2011 General Elections. Decentralization is now one of the key issues in the country's development policy aiming to improve the livelihoods of rural population. Although a decentralization policy has been in place since 2003, its implementation has not yet been realized. In addition, implementation of the decentralization policy and sustainable natural resources management are in line with the Sixth National Development Plan (SNDP) and Zambia's vision 2030. The ongoing development of a new Forest Act and work to update the Zambia Forest Action Programme (ZFAP) is indicative of these new approaches. The first draft of the new constitution of Zambia (published in April 2012) reflects the new government's consistent focus on decentralization as it gives natural resources and their governance – including benefit sharing – a considerably stronger role at local level than it has the present constitution.

### Alternative (GEF) Scenario – with regard to the three Outcomes

#### Component 1

This component is focused on capacitating foresters and communities in Central Province to implement appropriate climate-resilient agro-forestry and natural regeneration practices in designated zones. Agro-forestry is a land use system in which trees and shrubs are grown or managed in association with crops or animals in the same land unit and provide service and productive functions (Bashir et al. 2006, in Chidumayo 2009). Improved agro forestry systems comprise of a range of technologies, such as improved fallows<sup>83</sup> and alley cropping with nitrogen fixing plants, which improve the agro-ecosystem and support cost-effective permanent agriculture and microclimate management. A higher degree of permanence in cultivation results in reduced demand for conversion of natural forests into agricultural land, maintaining and enhancing carbon cycles. The practice contributes to the increase in tree and vegetative cover on-farm, improving carbon stocking and sequestration by combing agricultural crops with trees in the same area. Soil fertility maintenance and improvement, as well as soil and water conservation, are the key premises of agro forestry technologies. By enhancing the soil quality, water retention capacities of the edaphic system are improved, which in turn contributes to the increase in the percolation of water into the underground water reserves. Farm trees also assist in nutrient recycling of leached soil nutrients,

In a recent study 'Forest Management Practices with Potential for REDD+ in Zambia' an analysis was done to establish transparent, scientifically sound and practical criteria for the selection of the most promising forest and land management practices in Zambia that are of relevance to REDD+. The main findings from the assessment of land use/management practices show a prioritized ranking in the order of (1) agro-forestry, (2) beekeeping and (3) Community Based Natural Resource Management (CBNRM) as being the most optimal land use practices for REDD+. That study noted that 'Agriculture as one of the key drivers of deforestation would benefit from the agro forestry technologies that have the potential of increasing soil fertility at low cost and at the same time increase the extent of forest and tree cover beyond what is obtaining in the natural forests.

In line with the fact that agriculture is one of the key drivers of Miombo deforestation and in direct response to the findings of these two REDD studies and their respective recommendations, this component proposes a variety of outputs related to the piloting of agro-forestry activities together with assisted natural regeneration techniques in designated zones across Central Province. As already mentioned, Assisted Natural Regeneration (ANR) is a simple, low-cost forest restoration method that can effectively convert deforested lands of degraded vegetation to more productive forests. ANR aims to accelerate, rather than replace, natural succession processes by removing or reducing barriers to natural forest regeneration such as soil degradation, competition with weedy species, and recurring disturbances (e.g., fire, grazing, and wood harvesting). It is proposed here because of the assumption that it can be applied to restoring Miombo areas where some level of natural succession of the ecosystem is already in progress compared to complete restoration.

The first sequence of activities to pave the way for the introduction of agro-forestry and ANR applications is through Participatory Action Research (PAR), which is a methodology for site identification, social mobilization

<sup>83</sup> For example, improved fallows are established by planting leguminous trees, such as *Sesbania sesban*, *Tephrosia vogellii*, *Crotalaria* spp. and *Cajanus cajan* to speed-up soil fertility restoration. In some cases mixed intercropping with coppicing species, such as *Gliricidia sepium*, *Calliandra calothyrsus* and *Leuceana trichandra*, are used to obviate the replanting of non-coppicing species

and awareness. As such participatory resource mapping and zoning (identification of suitable areas for agro-forestry and assisted natural regeneration measures taking alternative climate change scenarios into account), will first be completed in all six districts of Central Province. This will be followed by the formation of 30-40 Village Action Groups (VAGs) formally recognized and constituted in the zones identified under the participatory resource mapping; all VAGs will have clear resource rights and delineation of legally recognized VAG boundaries (it is likely that they will be on customary land but could also include local forests<sup>84</sup>). VAGs will be formally constituted in ways that are both legally recognized (i.e. Trusts, Conservancies, Village Companies) and following the principles of democratic, face-to-face, accountable participatory governance. Boundaries will be agreed and marked, and rights to use, manage, benefit from, sell and protect resources will be strengthened. Governance guidelines will be developed for VAGs. These will entrench the rights of members to participate in decision-making, to have access to information, control the agenda and vote.

### Component 2

This component will address the second major climate-induced threat to Miombo's natural regeneration capacity: fire. The component is focused on putting in place robust fire monitoring and management protection plans and measures in place in all districts in Central Province to maintain desired regeneration targets and reduce fire frequency, thus increasing the rate of forest regeneration in the Province. Similar to the approach taken in Component #1, it proposes to start with the required mapping activities, in this case funding the development of a geospatial fire occurrence dataset Central Province based on satellite data and GIS mapping to ascertain burn severity classifications and climate change vulnerability of Miombo woodlands. This activity is similar to that which has already been done as part of a fire monitoring program for Kafue National Park (KNP) and surrounding areas (one of the most important Miombo hotspots in the country)

### Component 3

More generally, a number of studies have demonstrated that for areas where charcoal is a primary driver of deforestation the introduction of improved kilns can be a powerful tool in increasing forest cover. The results of a study by the World Bank on the impacts of improved kilns in a Miombo woodlands context (see Annex 2) demonstrated that improved kilns were by far the most effective instruments in improving forest cover compared to a business-as-usual scenario. Moreover, the benefit of improved kilns goes beyond efficiency rates since traditional kilns cause extensive local degradation and soil erosion due to the intense heat generated by kilns as well as deforestation due to the clear-cutting of trees and construction of kilns. It is estimated that ~5% of an area cleared for charcoal production by earth kilns will not regenerate.

As regards briquetting technologies, a number of studies done in neighboring countries on the potential for briquetting technologies indicates that it can be an effective technology to reduce wood fuel use and utilize waste products.

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<sup>84</sup> While it is envisioned that most of the VAGs will on customary land but the zones could also include Local Forests, which are protected forest areas with the management objective of meeting the need for forest products for present and future generations of local people and settlements. The institutional arrangement for the management of the Local Forests is the same as the one for the National Forests, where government (via the Forestry Department) is the manager.

## Annex 6: List of Persons Interviewed

Name	M/F	Position / Organisation
Davison Mwela	M	Forestry Officer, Kabwe
Kangwa Sylvester	M	Technician Forestry Extension, Serenje
Toyanga Year	M	Technician Forestry Extension, Serenje
Charity Kantu	F	Technician Forestry Extension, Serenje
Musanse M C Kavuzya	F	Technician Forestry, Lusaka
Maureen Mwale	F	Project Co-ord. FD, Lusaka
Chibuye Paul Lee	M	District Forestry Officer, Serenje
Chishimba	M	District Forestry Officer, Chitambo
Victor	M	Technician Forestry Extension, Chitambo
Patrick Mpundu	M	Forest Ranger, Serenje
Mwape Chibale	M	Regional Coord. Comaco, Serenje
Biston Mbewe	M	Project Manager, Lusaka
Rodwell Chandipo	M	ZEMA, Lusaka
Joel Ngumayo	M	M&E, Comaco, Lusaka
Deuteronomy Kasaro	M	APFO, FD, Lusaka
Makumba Ignatious	M	Forestry Director, FD (MLNR), Lusaka
Chaka Kaumba	M	Acting PP, Dept of Wildlife & Parks, Lusaka
Herrick Mwena	M	Climate Change Dept, Lusaka
Owen Ngoma	M	Project Admin. (PIU and UNDP)
Velice Nangavo	F	Programme Officer, UNDP
Banda Fabian	M	TDAU Engineer, University of Zambia
Richard Mumba	M	Comaco
Winnie Musonda	F	Head of Environment Unit, UNDP
Comaco	F	Comaco Media Officer, Serenje
Gracious	F	M&E Officer, UNDP
Roland Seri	M	DRR, UNDP
Faris	M	RTA, UNDP Addis
Munini	F	Assistant, UNDP Addis
Zengo	F	
Edward	M	FD, Lusaka
Dale	M	Comaco
Japhet	M	Comaco
Ester	F	GEF Focal Point (cancelled)
Monica	F	ZCCN
Chief Kabamba	M	Serenje
Commissioner	M	Serenje
Commissioner	M	Chitambo
Chester Kasonde	M	Council Chair (Mayor) Serenje
Council Secretary	F	Chitambo
Jacob	M	Serenje DACO
	M	Chitambo DACO
	M	Central Province PACO
	M	DFO, Chitambo
Dept. of Chiefs & Trad. Affairs	F	Serenje
Teta ANR - VAGs	F/M	Serenje ~ 100 representatives, including VAG committees, members, farmers
Musola ANR - VAGs	F/M	Chitambo ~ 80 representatives, including VAG committees, members, farmers
MLNR – Land Office	M	
Province Land Office	M	

## Annex 7: List of Documents Reviewed

### Implementation Data (mainly from the EA/IP)

1. IP's M&E Data management system / spreadsheets – tabulated to at least each output level
2. Minutes of Project Board Meetings – full sequence of annual, quarterly, ad hoc
3. Minutes of Technical Steering Committee meetings
4. List of consultancies / sub-contracts for services and their reports / outputs, including baseline / endline survey reports
5. All outputs – e.g. guidelines produced by the project
6. Stakeholder list – by activity & location
7. IP's Annual Reports and Final Report
8. Progress reports of the IP, Responsible Parties / implementation task teams
9. Project training data - Table of all project trainings with participant numbers disaggregated by gender
10. Output and Results (by Indicator) – two tables to be provided by the TE
11. Project location / activity maps
12. Other Local Committees - Minutes of Meetings
13. Mainstreaming documents – e.g. legislation produced under the project
14. Other materials - Training materials (PPTs etc.), Knowledge, Attitudes, and Practices (KAP) survey reports – if used, News & Awareness materials, Project workshop PPTs, including if presented at regional workshops (list of materials + materials to be provided)
15. Project Inception Report
16. Tracking Tools – At CEO endorsement, midterm and end-term need to be prepared before TE visit and verified during the mission
17. Implementation Data (mainly from the IA - UNDP)
18. Annual Workplans (digital copy + signature pages)
19. Atlas Risk Register (word format to be provided)
20. Logframe revision if undertaken with approval letter
21. Financial expenditures and co-financing - itemized according to two table to be provided by TE team
22. Audit reports
23. Monitoring mission reports by UNDP, RTA, PMU / project manager, RTA etc
24. UNDP Annual Reports (PIRs / APRs)

### Preparation / Pre-implementation (from the IA – UNDP)

25. UNDP Project Document, but require signed cover page, signed co-financing letters & Annexes
26. Implementing/Executing partner (EA/IP) arrangements / contract (e.g. HACT agreement between UNDP and the IP; Project Cooperation Agreement; MoUs)
27. UNDP (Local) Project Appraisal Committee meeting minutes
28. MTR Report and UNDP Management Response (if not on the UNDP ERC webpage)
29. Project Identification Form (PIF), PPG, GEFSEC Review, STAP Review, CEO Endorsement Request (usually on the GEF projects webpage)
30. UNDP Initiation Plan
31. UNDP Country Programme Document (CPD) and Country Programme Action Plan (CPAP); and UNDP Development Assistance Framework (UNDAF)

### National / Programming documents

32. List of relevant national planning and policy documents (National Expert to compile list and provide)

## Annex 8: Stakeholder List

Stakeholder	TE Interest
<b>National Government</b>	
GIS mapping office	<ul style="list-style-type: none"> <li>• Output 1.1 - ANR zoning of 6 districts</li> <li>• Output 2.2 – fire mapping and warning system</li> </ul>
	Output 1.3 - Zambia Integrated Land Management & Information System
<b>Central Province (Kabwe)</b>	
Central Province Lands (Allocation) Department - Land Administration Section	<ul style="list-style-type: none"> <li>• Responsible for allocation of land and ensuring that new parcels of land required for development are properly planned by Local Authorities, Provincial Planning Authorities, Department of Field Services in the Ministry of Agriculture, and Department of Resettlement and subsequently allocated.</li> </ul>
Cadastral Office	<ul style="list-style-type: none"> <li>• To find evidence of integration of ANR forests with land registration office;</li> <li>• Land registration / audit (Component 1)</li> </ul>
Central Province Department of Climate Change and Natural Resources	<ul style="list-style-type: none"> <li>• Both sections to meet together</li> <li>• created from National Policy on Climate Change (NPCC) of 2016. (operational July 2018)</li> <li>• Responsible for climate change / natural resources policy, standards, and coordinating climate change projects</li> </ul>
Forestry Department - Forestry Extension Branch	<ul style="list-style-type: none"> <li>• Responsible for the rehabilitation of degraded and depleted areas, community participation and public awareness on forest as a natural resource, agro-forestry and surveys as well as extension services. The branch is also responsible for forest law enforcement.</li> </ul>
Councillor (rep. for Serenje & Chitambo)	<ul style="list-style-type: none"> <li>• Community participation, project value to the economy, climate change, and NRM</li> </ul>
Improved Kiln Production Factory	<ul style="list-style-type: none"> <li>• Component 3</li> </ul>
<b>Serenje / Chitambo Districts</b>	
Serenje District Government – Permanent Secretary & Planning Section	<ul style="list-style-type: none"> <li>• Planning / funding – how the forestry land delineation for VAGs is integrated with district planning; what district funding is for forestry in comparison with other agriculture and NR activities; obtain copies of district plans and budgets – sustainability.</li> </ul>
District Forest Offices	<ul style="list-style-type: none"> <li>• Visit to office (Fire warning system demonstration) and Assisted Natural Regeneration (ANR) Sites</li> </ul>
Agriculture offices	<ul style="list-style-type: none"> <li>• Disseminating technical information to the farming community; Providing technical services in land husbandry, &amp; horticultural and soil fertility</li> <li>• Cross-sector integration</li> </ul>
Traditional chief – village level or above	<ul style="list-style-type: none"> <li>•</li> </ul>
Village Action Groups (VAGs)	<ul style="list-style-type: none"> <li>• Output 1.2, Output 1.1</li> </ul>
Charcoal (kiln) producer groups	<ul style="list-style-type: none"> <li>• Output 3.1</li> </ul>
Improved stove households	<ul style="list-style-type: none"> <li>•</li> </ul>
Horticulture Farmers	<ul style="list-style-type: none"> <li>• Output 1.6</li> </ul>
ANR – Coppicing sites	<ul style="list-style-type: none"> <li>• Output 1.5</li> </ul>
District charcoal traders – in-situ	<ul style="list-style-type: none"> <li>•</li> </ul>
<b>Other</b>	
Community Markets for Conservation (COMACO) NGO	<ul style="list-style-type: none"> <li>• NRM NGO (service provider?)</li> </ul>
Zambian Land Alliance (ZLA), Zambian Alliance of Women (ZAW), & Zambian Climate Change Network (ZCCN)	<ul style="list-style-type: none"> <li>• Technical committee members</li> </ul>

## Annex 9: Rating Scales

The following UNDP-GEF grading scales were applied in the evaluation

### Evaluation Criteria

Criteria	Definition
<b>Effectiveness - Objective</b>	- The extent to which an objective has been achieved or how likely it is to be achieved.
<b>Effectiveness - Outcomes</b>	- Results include direct project outputs, short to medium-term outcomes
<b>Relevance</b>	<ul style="list-style-type: none"> <li>- The extent to which the activity is suited to local and national development priorities and organizational policies, including changes over time.</li> <li>- The extent to which the project is in line with the GEF Operational Programs or the strategic priorities under which the project was funded.</li> </ul> <p>(Retrospectively, relevance often becomes a question as to whether the objectives of an intervention or its design are still appropriate given changed circumstances.)</p>
<b>Efficiency</b>	- The extent to which results have been delivered with the least costly resources possible; also called cost effectiveness or efficacy.
<b>Sustainability</b>	<ul style="list-style-type: none"> <li>- The likely ability of an intervention to continue to deliver benefits for an extended period of time after completion</li> <li>- Projects need to be environmentally, as well as financially and socially sustainable</li> </ul>
<b>Impact</b>	<ul style="list-style-type: none"> <li>- The positive and negative, foreseen and unforeseen changes to and effects produced by a development intervention.</li> <li>- Longer term impact including global environmental benefits, replication effects and other local effects.</li> </ul>

### Rating Scale for Outcomes (Overall, Effectiveness & Efficiency)

<b>Highly Satisfactory (HS)</b>	The project had no shortcomings in the achievement of its objectives in terms of effectiveness (outcomes), or efficiency. The project is expected or has achieved its global environmental objectives. The project can be presented as 'good practice'.
<b>Satisfactory (S)</b>	There were only minor shortcomings The project is expected or has achieved most of its global environmental objectives.
<b>Moderately Satisfactory (MS)</b>	There were moderate shortcomings The project is expected or has achieved most of its relevant objectives but with moderate / significant shortcomings or modest overall relevance. The project isn't going to achieve some of its key global environmental objectives
<b>Moderately Unsatisfactory (MU)</b>	The project had significant shortcomings The project is expected to achieve its global environmental objectives with major shortcomings or is expected to achieve only some of its major global environmental objectives.
<b>Unsatisfactory (U)</b>	There were major shortcomings in the achievement of project objectives in terms of effectiveness, or efficiency The project is not expected to achieve most of its global environment objectives
<b>Highly Unsatisfactory (U)</b>	The project had severe shortcomings The project has failed to achieve any of its major environment objectives

Or Not Applicable (N/A); Unable to Assess (U/A)

### Note

**Overall Outcome:** Combined achievement of the project objective, outcomes, efficiency and relevance will be rated HS to U.

**Effectiveness:** Each of the project's three outcomes will be rated HS to U. The colour coding of the individual indicator targets in **Annex 1** will partially help determine the grade. Each of the outcome indicators will also each be given a grade (in the justification column), however the final rating for each of the three outcomes will be due to appropriate weighting in terms of attaining project objectives. This means

that professional judgement of the TE team will also be a key consideration.

**Efficiency:** HS to HU rating for cost-effectiveness will be provided

**Relevance** HS to HU rating for relevance will be provided

**Rating Scale for Implementing Agency (IA) and Executing Agency (EA) Execution**

<b>Highly Satisfactory (HS)</b>	The agency had no shortcomings in the achievement of their objectives in terms of quality of implementation or execution. Implementation of all five given management categories – IA or EA coordination & operational matters, partnership arrangements & stakeholder engagement, finance & co-finance, M&E systems, and adaptive management (work planning, reporting & communications, including update to project design) – has led to an efficient and effective project implementation. The agency can be presented as providing ‘good practice’
<b>Satisfactory (S)</b>	The agency had only minor shortcomings in terms of the quality of implementation or execution. Implementation of most of the five management categories has led to an efficient and effective project implementation
<b>Moderately Satisfactory (MS)</b>	The agency had moderate shortcomings Implementation of some of the five management categories has led to a moderately efficient and effective project implementation
<b>Moderately Unsatisfactory (MU)</b>	The agency had significant shortcomings Implementation of some of the five management categories has not led to efficient and effective project implementation
<b>Unsatisfactory (U)</b>	There agency had major shortcomings in the quality of implementation or execution Implementation of most of the five management categories had not led to efficient and effective project implementation
<b>Highly Unsatisfactory (U)</b>	The agency had severe shortcomings with poor management leading to inefficient and ineffective project implementation

**Rating Scale for Monitoring & Evaluation**

<b>Highly Satisfactory (HS)</b>	The M&E system – its design and implementation had no shortcomings in the support of achieving project objectives. The M&E system was highly effective and efficient and supported the achievement of major global environmental benefits. The M&E system and its implementation can be presented as ‘good practice’.
<b>Satisfactory (S)</b>	The M&E system – its design and implementation had minor shortcomings in the support of achieving project objectives. The M&E system was effective and efficient and supported the achievement of most of the major global environmental benefits, with only minor shortcomings
<b>Moderately Satisfactory (MS)</b>	The M&E system – its design and implementation had moderate shortcomings in the support of achieving project objectives. The M&E system supported the achievement of most of the major relevant objectives, but had significant shortcomings or modest overall relevance
<b>Moderately Unsatisfactory (MU)</b>	The M&E system – its design and implementation had major shortcomings in the support of achieving project objectives. The M&E system supported the achievement of most of the major environmental objectives, but with modest relevance
<b>Unsatisfactory (U)</b>	The M&E system – its design and implementation had major shortcomings and did not support the achievement of most project objectives. The M&E system was not effective or efficient
<b>Highly Unsatisfactory (HU)</b>	The M&E system failed in its design and implementation in terms of being effective, efficient or supporting project environmental objectives or benefits.

**Rating Scale for Sustainability**

<b>Likely (L)</b>	Negligible risks to sustainability with key Outcomes achieved by the project closure and expected to continue into the foreseeable future
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<b>Moderately Likely (ML)</b>	Moderate risks, but expectations that at least some Outcomes will be sustained
<b>Moderately Unlikely (MU)</b>	Significant risk that key Outcomes will not carry on after project closure, although some outputs should carry on
<b>Unlikely (U)</b>	Severe risks that project Outcomes as well as key outputs will not be sustained

According to UNDP-GEF evaluation guidelines, all risk dimensions of sustainability are critical: i.e., the overall rating for sustainability is not higher than the lowest-rated dimension.

Ratings should take into account both the probability of a risk materializing and the anticipated magnitude of its effect on the continuance of project benefits.

Risk definitions:

- a) Whether financial resources will be available to continue activities resulting in continued benefits
- b) Whether sufficient public stakeholder awareness and support is present for the continuation of activities providing benefit
- c) Whether required systems for accountability / transparency & technical know-how are in place
- d) Whether environmental risks are present that can undermine the future flow of the project benefits.

**Rating Scale for Impact** (NB this scale is no longer part of the 2020 GEF guideline)

<b>Significant (S)</b>	<b>Minimal (M)</b>	<b>Negligible (N)</b>
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Project Impact is rated as Significant; Minimal or Negligible, but also the positive or negative aspect of the impact will be stated.

Concerning impact, the TE will consider the extent of

- a) Verifiable improvement in ecological status; and/or
- b) Verifiable reductions in stress on ecological systems
- c) Regulatory and policy changes at regional, national and/or local levels

Process indicators will be specified to demonstrate achievement of stress reduction and/or ecological improvement.

Part of the impact assessment, will concern catalytic effect. The TE will consider if the project exhibited

- a) Scaling up (to regional and national levels)
- b) Replication (outside of the project),
- c) Demonstration, and/or
- d) Production of a public good, such as new technologies /approaches)

**Equivalent Numbering Scale** (under UNDP GEF 2020 Guideline)

Ratings for Outcomes, Effectiveness, Efficiency, M&E, Implementation/Oversight, Execution, Relevance	Sustainability ratings:
6 = Highly Satisfactory (HS): exceeds expectations and/or no shortcomings	4 = Likely (L): negligible risks to sustainability
5 = Satisfactory (S): meets expectations and/or no or minor shortcomings	3 = Moderately Likely (ML): moderate risks to sustainability
4 = Moderately Satisfactory (MS): more or less meets expectations and/or some shortcomings	2 = Moderately Unlikely (MU): significant risks to sustainability
3 = Moderately Unsatisfactory (MU): somewhat below expectations and/or significant shortcomings	1 = Unlikely (U): severe risks to sustainability
2 = Unsatisfactory (U): substantially below expectations and/or major shortcomings	Unable to Assess (U/A): Unable to assess the expected incidence and magnitude of risks to sustainability
1 = Highly Unsatisfactory (HU): severe shortcomings	
Unable to Assess (U/A): available information does not allow an assessment	

**Annex 10: Mission Itinerary**

Day/Date	Time	Activity	Participants / Contact	Remarks
Thur 6th Aug		Expert depart UK (LHR - Lusaka)		Richard Sobey - timosobey@gmail.com
Fri 7th Aug	PM	Arrival Lusaka	from Addis / Harare - ET 0873 14:40	Hotel - Mika Hotel Kabulonga, off Kudu Rd, +260 97 8956315
<b>Thurs 13th</b>		<i>End Quarantine Week 1 (Day 7)</i>		
Fri 14th				
Sat 15th Aug		TE time		
Sun 16th Aug		TE time		
Mon 17th Aug		UNDSS Briefing, inc. Covid advice <b>Inception Briefing by UNDP</b>		Virtual meeting
Tues 18th Aug	AM	<b>Inception Briefing by the IP (Forestry Department)</b>		At FD
	PM		14 hours Department of Energy	Anna Chandipo 0979400771 - Virtual Meeting
		Hotel Lusaka		
Wed 19th	AM		TDAU 09 hours.	<b>TDAU contact Fabian 0976318587</b>
			ZCCN at 11 hours	Monica 0977688621 - Virtual Meeting
			RTA Regional Office	Faris Addis at 12 hours - Virtual Meeting
	PM	<b>COMACO Team</b>	Meeting COMACO at 14 hours	Japhet 0955265499, Richard 0976918300, Dale 0977373747 - Virtual Meeting
			GEF focal point Mr Gondwe 16 hours	Gondwe contact 0978793309 - Virtual Meeting
Thur 20th	AM	<i>End Quarantine Week 2 (Day 14)</i>	ZEMA at 08:30am hours	Gift Sikaundi 0955794395; Annel 0977510864
	AM	<b>Department of Climate Change</b>		
			ZILMIS at 10 hours	Leonard Chunga 0977782623
	PM		Mr Shitima CC Tech Committee Secretariat 15:00 hours	Mr Shitima 0977893961 - Virtual Meeting
			National Tree planting; 16 hours	Mulongwe; 0977172151 - Virtual Meeting
Friday 21st	AM	<b>Travel to Field</b>		
	AM	Kabwe	FD province; Provincial Forest Office at 10 hours	Odilia ; 0977792005; Davy 0977714523
			Survey Dept at 1030 hours	Mr Saka 0979586405
			Lands Dept 1130	Chisanga 0979671789
			Pioneer at 1230	Kapapa Kenson 0977751532
	PM	Travel to Serenje		
Sat 22nd Aug	AM	<b>Field Day 1</b>	Assisted Natural Regeneration (ANR) visit to Teta site	To see coppicing demonstration sites
			Kasanka Trust (Co-financier)	
		Hotel - Kasanka National Park		Kasanka National Park
		Hotel Field		
Sun 23rd Aug		<b>Field Day 2</b>	TE time - Seminar Preparation	
		Hotel Kabwe / Kasanka National Park		Kasanka National Park
Mon 24th Aug	AM	<b>Field Day 3 - Chitambo</b>	DC Chitambo coutersy call	

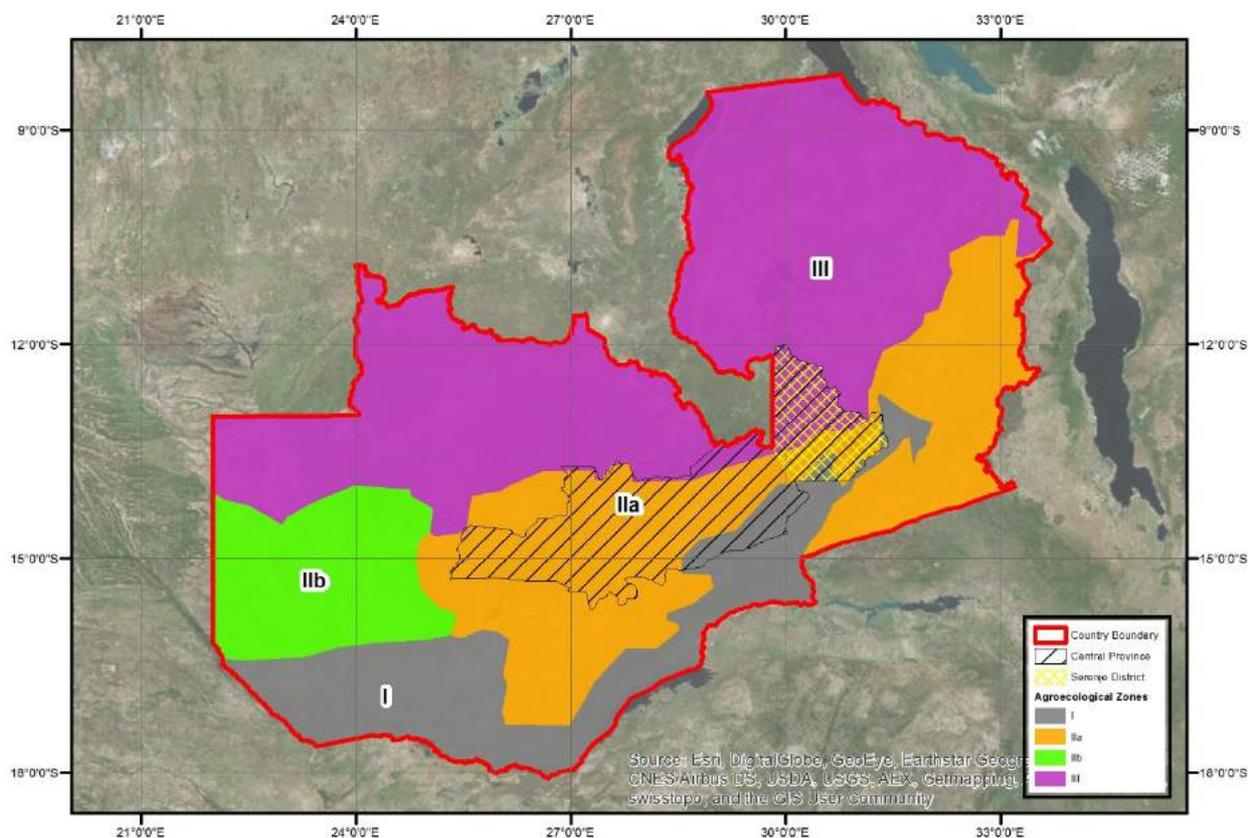
**Terminal Evaluation Report - Climate-resilient Community-based Regeneration of Indigenous Forests in Zambia's Central Province**

Tues 25th Aug			Council Secretary and Planner Chitambo	
			Forestry; Agriculture	
	PM	Serenje	DC Serenje courtesy call; CS, Planner, Agric, FD	
	AM	<b>Field Day 4</b>	Teta VAG	
			Horticulture farmer Teta	
Wed 26th Aug	PM		Musola VAG - Charcoal producer group, Musola. Fixed mud stoves; Horticulture farmers	
		Hotel Field	Assisted Natural Regeneration (ANR) Musola	
	AM	<b>Field Day 5</b>	COMDEV Chitambo, Livestock and Fisheries, Chiefs and Traditional Affairs, Agric.	
Thur 27th Aug			VAGs - Nsalu cave	
	PM		Charcoal producer group; Horticulture farmers	
		Hotel Field	ANR sites - Nakatambo	
Fri 28th Aug		<b>Field Day 6</b>	District charcoal trader Serenje	
			Community Markets for Conservation (COMACO) NGO	
Fri 28th Aug		Hotel Field		
	AM	<b>Field Day 7</b>	Assisted Natural Regeneration (ANR) visit to 2-3 sites	To see coppicing demonstration sites
Sat 29th Aug	PM			
		Hotel Field / <b>Return from Field</b>		
	AM	<b>Return from Field</b>	TE PPT preparation time	
Sun 30th Aug				
		Hotel Lusaka		
Sun 30th Aug		TE PPT preparation time	TE PPT preparation time	
		Hotel Lusaka		
Mon 31st Aug	AM	<b>Technical Committee</b>	TE to meet - Zambian Land Alliance (ZLA), Zambian Alliance of Women (ZAW), & Zambian Climate Change Network (ZCCN)	
Tues 1st Sept	AM	TE Briefing - <b>Draft Findings Seminar</b>		
	PM	<b>TE to meet Project Manager</b>	<b>Evaluation Questions - (2 hrs)</b>	
Wed 2nd Sept	AM	<b>UNDP Wrap-up meetings with Prog / Unit Manager &amp; Dep. Res. Rep.</b>		
	PM	RTA skype meeting		
		Hotel Lusaka		
Thur 3rd Sept	AM	<b>Return to Airport for departure</b>		
	PM	Depart	<b>ET 0863 1:35PM</b>	
Fri 4th Sept	AM	Arrive back in UK	2 weeks quarantine begin again	

This mission was completed as written, but with minor changes

## Annex 11: Maps

### Agro-ecological zones of Zambia

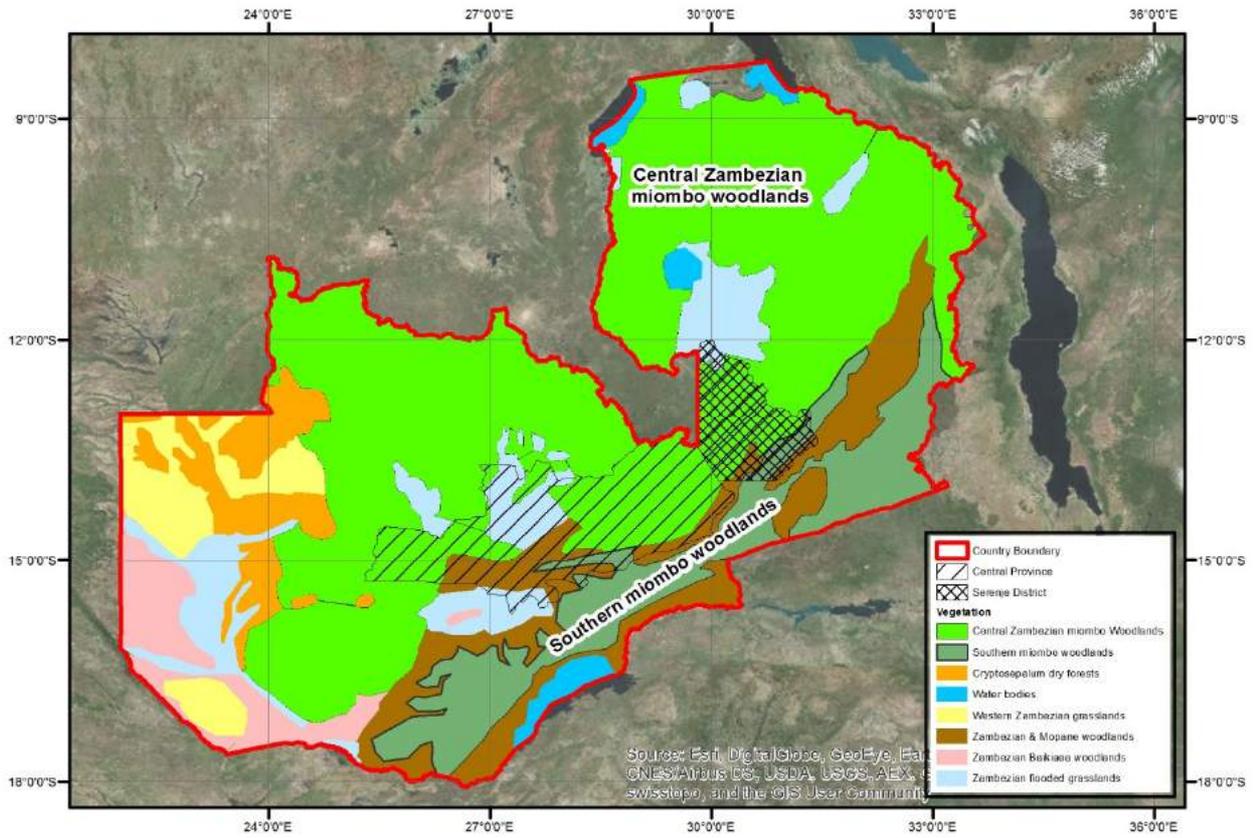


Up to the year 2070, climate change is predicted to have varied effects on the Agro-ecological zones (AEZs) of Zambia. The country is divided into three agro-ecological zones (AEZs), with rainfall being the main climatic factor for this division (see maps – Annex 11)

- Zone 1: This southernmost zone is the driest in the country and currently receives less than 800 mm of rainfall annually. Therefore, with an increase in frequency and intensity of droughts and extreme temperatures, this zone is expected to become very vulnerable to climate change.
- Zone 2: Currently, this central zone receives 800–1000 mm of rainfall annually. Under predicted scenarios, Zone 2 will experience similar but less severe climate effects to Zone 1. However, this zone is the most populous in the country. Therefore, these effects will be experienced by the largest number of Zambians.
- Zone 3: This northern zone currently receives over 1000 mm of rain annually. It is predicted that this zone will be less vulnerable than Zones 1 and 2 under climate change scenarios, experiencing a small variation in this annual rainfall.

The project area is in Zones 2 and 3.

### Vegetation zones in Zambia



## Annex 12: Indicative TE Evaluation Matrix

This questionnaire was used as a general aid during the field visit with the results described in section 3. (Note there is no further information to be presented in the blank boxes.)

Evaluation Question	Response / Finding	Conclusion/ Recommend
<b>Relevance: How does the project relate to the main objectives of the GEF FA, and to the environment and development priorities at the local, regional and national levels?</b>		
<b>Effectiveness: To what extent have the expected outcomes and objectives of the project been achieved?</b>		
<b>Efficiency: Was the project implemented efficiently, in-line with international and national norms and standards?</b>		
<b>Sustainability: To what extent are there financial, institutional, social-economic, and/or environmental risks to sustaining long-term project results?</b>		
<b>Impact: Are there indications that the project has contributed to, or enabled progress toward, reduced environmental stress and / or improved ecological status</b>		
<b>Findings discussion – 3 areas - Project formulation, project implementation, and project results.</b>		
<b>Project Strategy</b>		
<b>Project Design:</b>		
To what extent is the project in line with national and local priorities?		
To what extent is the Project aligned to the main objectives of the GEF focal area?		
Have synergies with other projects and initiatives been incorporated in the design?		
Were lessons from other relevant projects properly incorporated into the project design?		
Decision-making processes: were perspectives of those who would be affected by project decisions, those who could affect the outcomes, and those who could contribute information or other resources to the process, taken into account during project design processes?		
Have issues materialized due to incorrect assumptions or changes to the context to achieving the project results as outlined in the Project Document?		
<b>Results Framework:</b>		
Are the project objective / outcomes clear, practicable, & feasible within its time frame?		
Were the project's logframe indicators and targets appropriate? How "SMART" were the midterm and end-of-project targets (Specific, Measurable, Attainable, Relevant, Time-bound)? Any amendments?		
<b>Progress towards Results</b>		
<b>Progress towards Outcomes Analysis:</b>		
Review the logframe indicators against delivery at end-of-project targets using the Results Matrix (see Annex).		
Compare and analyse the GEF Tracking Tool at the Baseline, MTR and End.		
Which barriers hindered achievement of the project objective		
<b>PROJECT FORMULATION</b>		
Were the project's objectives and components clear, practicable and feasible within its time frame?		
Were the capacities of the executing institution(s) and its counterparts properly considered when the project was designed?		
Were lessons from other relevant projects properly incorporated in the project design?		
Were the partnership arrangements properly identified and roles and responsibilities negotiated prior to project approval?		
Were counterpart resources (funding, staff, and facilities), enabling legislation, and adequate project management arrangements in place at project entry?		
Were the project assumptions and risks articulated in the PIF and project document?		
Whether the planned outcomes were SMART		
<b>ASSUMPTIONS AND RISKS</b>		
As per logframe - Logical and robust, and have helped to determine activities and planned outputs.		
Externalities (i.e. effects of climate change, global economic crisis, etc.) which are relevant to the findings.		
<b>Project Implementation &amp; Adaptive Management</b>		
<b>GEF Partner Agency / Implementing Entity – UNDP</b>		
Has there been an appropriate focus on results?		
Has the UNDP support to the Executing Agency/Implementing Partner and Project Team been adequate?		
Has the quality and timeliness of technical support to the Executing Agency/ Implementing Partner and Project Team been adequate?		
How has the responsiveness of the managing parties to significant implementation problems (if any) been?		
Has overall risk management been proactive, participatory, and effective?		
Are there salient issues regarding project duration, for instance to note project delays? And, how have they affected project outcomes and sustainability?		
Candor and realism in annual reporting		
<b>Executing Agency/ Implementing Partner Execution</b>		
Were the capacities of the executing institution(s) and its counterparts properly considered when the Project was designed?		
Were partnership arrangements properly identified and roles and responsibilities negotiated prior to Project approval?		
Were counterpart resources, enabling legislation, and adequate project management arrangements in place at Project entry?		
Have management inputs and processes, including budgeting and procurement been adequate?		

Has there been adequate mitigation and management of environmental and social risks as identified through the UNDP Environmental and Social screening procedure?		
Whether there was an appropriate focus on results and timeliness? Quality of risk management? Candor and realism in reporting?		
Government ownership (when NEX) or level of support if 'in cooperation with' the IP.		
<b>Work Planning / PROJECT IMPLEMENTATION</b>		
Effective partnerships arrangements established for implementation of the project with relevant stakeholders involved in the country/region, including the formation of a Project Board. Lessons from other relevant projects incorporated into project implementation.		
Feedback from M&E activities used for adaptive management.		
Has the project experienced delays in start-up and/or implementation? What were the causes of the delays? And, have the issues been resolved?		
Were work-planning processes results-based?		
Did the project team use the results framework/ logframe as an M&E and a management tool?		
Were there any changes to the logframe since project start, and have these changes been documented and approved by the project board?		
<b>FINANCE &amp; CO-FINANCE</b>		
<b>Prodoc</b> Did the prodoc identify potential sources of co-financing as well as leveraged and associated financing? Prodoc include strong financial controls that allowed the project management to make informed decisions regarding the budget, allow for the timely flow of funds and for the payment of project deliverables Did the prodoc demonstrate due diligence in the management of funds, including periodic audits.		
Sufficient clarity in the reported co-financing to substantiate in-kind and cash co-financing from all listed sources. The reasons for differences in the level of expected and actual co-financing. The extent to which project components supported by external funders were integrated into the overall project. Effect on project outcomes and/or sustainability from the extent of materialization of co-financing. Evidence of additional, leveraged resources that have been committed as a result of the project. (Leveraged resources can be financial or in-kind and may be from other donors, NGOs, foundations, governments, communities or the private sector)		
<b>Cost-effective factors</b> Compliance with the incremental cost criteria and securing co-funding and associated funding. Project completed the planned activities and met or exceeded the expected outcomes in terms of achievement of Global Environmental and Development Objectives according to schedule, and as cost-effective as initially planned. The project used either a benchmark approach or a comparison approach (did not exceed the costs levels of similar projects in similar contexts)?		
<b>Standard Finance questions</b> (see MTR) Have strong financial controls been established allow the project management to make informed decisions regarding the budget at any time, and allow for the timely flow of funds and the payment of satisfactory project deliverables? Are there variances between planned and actual expenditures? If yes, what are the reasons behind these variances? Has the project demonstrated due diligence in the management of funds, including annual audits? Have there been any changes made to the fund allocations as a result of budget revisions? Assess the appropriateness and relevance of such revisions. Has pledged cofinancing materialized? If not, what are the reasons behind the cofinancing not materializing or falling short of targets?		
<b>Project-level Monitoring and Evaluation Systems</b>		
The quality of the Monitoring and Evaluation (M&E) plan's design and implementation: An M&E plan should include a baseline (including data, methodology, etc.), SMART indicators and data analysis systems, MTR, TE, and adequate funding for M&E activities.		
M&E plan at project start up, considering whether baseline conditions, methodology and roles and responsibilities are well articulated. Is the M&E plan appreciated? Is it articulated sufficiently to monitor results and track progress toward achieving objectives?		
Were sufficient resources allocated effectively to M&E?		
Were there changes to project implementation / M&E as a result of the MTR recommendations?		
Are the M&E systems appropriate to the project's specific context? - effectiveness of monitoring indicators from the project document for measuring progress and performance		
Do the monitoring tools provide the necessary information? Do they involve key partners? Are they aligned or mainstreamed with national systems? Do they use existing information? Are they efficient? Are they cost-effective?		
To what extent has the Project Team been using inclusive, innovative, and participatory monitoring systems?		
To what extent have follow-up actions, and/or adaptive management measures, been taken in response to the PIRs? Check to see whether APR/PIR self-evaluation ratings were consistent with the MTR and TE findings. If not, were these discrepancies identified by the project steering committee and addressed?		
Compliance with the progress and financial reporting requirements/ schedule, including quality and timeliness of reports		
The value and effectiveness of the monitoring reports and evidence that these were discussed with stakeholders and project staff		
The extent to which development objectives are built into monitoring systems: How are perspectives of women and men involved and affected by the project monitored and assessed?		

How are relevant groups' (including women, indigenous peoples, children, elderly, disabled, and poor) involvement with the project and the impact on them monitored?		
Has there been adequate mitigation and management of environmental and social risks as identified through the UNDP Environmental and Social screening procedure?		
<b>STAKEHOLDER ENGAGEMENT</b>		
Are the interactions as per the prodoc? Stakeholder interactions include information dissemination, consultation, and active participation in the project.		
Project management: Has the project developed and leveraged the necessary and appropriate partnerships with direct and tangential stakeholders?		
Participation and country-driven processes: Do local and national government stakeholders support the objectives of the project? Do they continue to have an active role in project decision-making that supports efficient and effective project implementation?		
Participation and public awareness: How has stakeholder involvement and public awareness contributed to the progress towards achievement of project objectives?		
Are there any limitations to stakeholder awareness of project outcomes or to stakeholder participation in project activities? Is there invested interest of stakeholders in the project's long-term success and sustainability?		
<b>Reporting:</b>		
How have adaptive management changes been reported by the Project Team and shared with the Project Board?		
How well have the Project Team and partners undertaken and fulfil GEF reporting requirements (i.e. how have they addressed poorly-rated PIRs?), and suggest trainings etc. if needed?		
How have PIRs been shared with the Project Board and other key stakeholders?		
How have lessons derived from the adaptive management process been documented, shared with key partners and internalized by partners, and incorporated into project implementation?		
<b>Communication:</b>		
Internal project communication with stakeholders: Is communication regular and effective? Are there key stakeholders left out of communication? Are there feedback mechanisms when communication is received? Does this communication with stakeholders contribute to their awareness of project outcomes and activities and long-term investment in the sustainability of project results?		
External project communication: Are proper means of communication established or being established to express the project progress and intended impact to the public (is there a web presence, for example? Or did the project implement appropriate outreach and public awareness campaigns?)		
Are there possibilities for expansion of educational or awareness aspects of the project to solidify a communications program, with mention of proper funding for education and awareness activities? What aspects of the project might yield excellent communications material, if applicable?		
<b>ADAPTIVE MANAGEMENT</b>		
Changes in the environmental and development objectives of the project during implementation, why these changes were made and what was the approval process. Causes for adaptive management: a) original objectives were not sufficiently articulated; b) exogenous conditions changed, due to which a change in objectives was needed; c) project was restructured because original objectives were overambitious; d) project was restructured because of a lack of progress;		
How these changes were instigated and how these changes affected project results: - Did the project undergo significant changes as a result of recommendations from the MTR? Or as a result of other review procedures? Explain the process and implications. - If the changes were extensive, did they materially change the expected project outcomes? - Were the project changes articulated in writing and then considered and approved by the project steering committee?		
<b>PROJECT RESULTS</b>		
A 'result' is defined as a describable or measurable development change resulting from a cause-and-effect relationship. In GEF terms, results include direct project outputs, short- to medium-term outcomes, and longer-term impact including global environmental benefits, replication effects, and other local effects. Assess the results based management (RBM) chain, from inputs to activities, to outputs, outcomes and impacts.		
Assess the project results using indicators and relevant tracking tools		
<b>BROADER ASPECTS OF PROJECT OUTCOMES</b>		
<b>Country Ownership</b>		
Project concept had its origin within the national sectoral and development plans?		
Have Outcomes (or potential outcomes) from the project have been incorporated into the national sectoral and development plans? Has the government enacted legislation and/or developed policies and regulations in line with the project's objectives?		
Relevant country representatives (e.g., governmental official, civil society, etc.) were actively involved in project identification, planning and/or implementation, part of steering committee?		
Was an intergovernmental committee given responsibility to liaise with the project team, recognizing that more than one ministry should be involved?		
The recipient government has maintained financial commitment to the project?		
<b>Mainstreaming (Broader Development and Gender)</b>		
Whether broader development and gender issues had been taken into account in project design and implementation?		
In what way has the project contributed to greater consideration of gender aspects, (i.e. project team composition, gender-related aspects of environmental impacts, stakeholder outreach to women's groups, etc). If so, indicate how.		
Did the MTR recommend improvements to the logframe with SMART 'development' indicators, including sex-disaggregated indicators and indicators that capture development benefits? - Were these taken up?		

1. Whether it is possible to identify and define positive or negative effects of the project on local populations (e.g. income generation/ job creation, improved natural resource management arrangements with local groups, improvement in policy frameworks for resource allocation and distribution, regeneration of natural resources for long term sustainability).		
2. If the project objectives conform to agreed priorities in the UNDP country programme document (CPD) and country programme action plan (CPAP).		
3. Whether there is evidence that the project outcomes have contributed to better preparations to cope with natural disasters.		
The mainstreaming assessment should take note of the points of convergence between UNDP environment-related and other development programming.		
<b>Sustainability</b>		
<b>Risk Management</b>		
Are the risks identified in the Project Document, Annual Project Review/PIRs and the ATLAS Risk Management Module the most important? And, are the risk ratings applied appropriate and up to date? If not, explain why.		
<b>Financial Risks to Sustainability (of the project outcomes)</b>		
What is the likelihood of financial and economic resources not being available once the GEF assistance ends? (This might include funding through government - in the form of direct subsidies, or tax incentives, it may involve support from other donors, and also the private sector. The analysis could also point to macroeconomic factors.)		
What opportunities for financial sustainability exist?		
What additional factors are needed to create an enabling environment for continued financing?		
Has there been the establishment of financial and economic instruments and mechanisms to ensure the ongoing flow of benefits once the GEF assistance ends (i.e. from the public and private sectors, income generating activities, and market transformations to promote the project's objectives)?		
<b>Socio-Economic Risks to Sustainability:</b>		
Are there social or political risks that may threaten the sustainability of project outcomes?		
What is the risk that the level of stakeholder ownership (including ownership by governments and other key stakeholders) will be insufficient to allow for the project outcomes/benefits to be sustained?		
Do the various key stakeholders see that it is in their interest that the project benefits continue to flow?		
Is there sufficient public/ stakeholder awareness in support of the project's long-term objectives?		
Have lessons learned been documented by the Project Team on a continual basis?		
Are the project's successful aspects being transferred to appropriate parties, potential future beneficiaries, and others who could learn from the project and potentially replicate and/or scale it in the future?		
<b>Institutional Framework and Governance Risks to Sustainability:</b>		
Do the legal frameworks, policies, governance structures and processes pose risks that may jeopardize project benefits?		
Has the project put in place frameworks, policies, governance structures and processes that will create mechanisms for accountability, transparency, and technical knowledge transfer after the project's closure?		
How has the project developed appropriate institutional capacity (systems, structures, staff, expertise, etc.) that will be self-sufficient after the project closure date?		
How has the project identified and involved champions (i.e. individuals in government and civil society) who can promote sustainability of project outcomes?		
Has the project achieved stakeholders' (including government stakeholders') consensus regarding courses of action on project activities after the project's closure date?		
Does the project leadership have the ability to respond to future institutional and governance changes (i.e. foreseeable changes to local or national political leadership)? Can the project strategies effectively be incorporated/mainstreamed into future planning?		
<b>Environmental Risks to Sustainability:</b>		
Are there environmental factors that could undermine and reverse the project's outcomes and results, including factors that have been identified by project stakeholders? E.g. climate change risk to biodiversity		
<b>Impact - Progress towards the achievement of impacts</b>		
Verifiable improvements in ecological status (or via process indicators to show it is likely in the future)?		
Verifiable reductions in stress on ecological systems (via process indicators)?		
E.g. as a result of the project, there have been regulatory and policy changes at regional, national and/or local levels? (Use tracking tools and indications from baseline to target)		
Identify the mechanisms at work (i.e. the causal links to project outputs and outcomes);		
Assess the extent to which changes are taking place at scales commensurate to natural system boundaries; and		
Assess the likely permanence (long lasting nature) of the impacts.		
On the basis of the outcome and sustainability analyses, identify key missing elements as that are likely to obstruct further progress.		
<b>Theory of Change</b> – Identify project intended impacts – verify logic – analyse project outcome to impact pathway		
Based on the theory of change (building blocks, catalysts etc), has the progress towards impact has been significant, minimal or negligible.		
<b>Catalytic role</b>		
Scaling up - Approaches developed through the project are taken up on a regional / national scale, becoming widely accepted, and perhaps legally required		
Replication - Activities, demonstrations, and/or techniques are repeated within or outside the project, nationally or internationally		
Demonstration - Steps have been taken to catalyze the public good, for instance through the development of demonstration sites, successful information dissemination and training		
Producing a public good –		
(a) The lowest level of catalytic result, including for instance development of new technologies and approaches.		
(b) No significant actions were taken to build on this achievement, so the catalytic effect is left to 'market forces'		

### Annex 13: Signed UNDP Code of Conduct Agreement Form

#### Evaluators:

1. Must present information that is complete and fair in its assessment of strengths and weaknesses so that decisions or actions taken are well founded.
2. Must disclose the full set of evaluation findings along with information on their limitations and have this accessible to all affected by the evaluation with expressed legal rights to receive results.
3. Should protect the anonymity and confidentiality of individual informants. They should provide maximum notice, minimize demands on time, and: respect people's right not to engage. Evaluators must respect people's right to provide information in confidence, and must ensure that sensitive information cannot be traced to its source. Evaluators are not expected to evaluate individuals, and must balance an evaluation of management functions with this general principle.
4. Sometimes uncover evidence of wrongdoing while conducting evaluations. Such cases must be reported discreetly to the appropriate investigative body. Evaluators should consult with other relevant oversight entities when there is any doubt about if and how issues should be reported.
5. Should be sensitive to beliefs, manners and customs and act with integrity and honesty in their relations with all stakeholders. In line with the UN Universal Declaration of Human Rights, evaluators must be sensitive to and address issues of discrimination and gender equality. They should avoid offending the dignity and self-respect of those persons with whom they come in contact in the course of the evaluation. Knowing that evaluation might negatively affect the interests of some stakeholders, evaluators should conduct the evaluation and communicate its purpose and results in a way that clearly respects the stakeholders' dignity and self-worth.
6. Are responsible for their performance and their product(s). They are responsible for the clear, accurate and fair written and/ or oral presentation of study limitations, findings and recommendations.
7. Should reflect sound accounting procedures and be prudent in using the resources of the evaluation.

Evaluation Consultant Agreement Form	
Agreement to abide by the Code of Conduct for Evaluation in the UN System	
Name of Consultants: Richard Sobey	
We confirm that we have received and understood and will abide by the United Nations Code of Conduct for Evaluation.	
Signed on 1 <sup>st</sup> August 2020	Signed 1 <sup>st</sup> August 2020
n/a	
National Consultant / Team Specialist	Richard Sobey International Consultant, Team Leader

**Annex 14: Signed TE Final Report Clearance Form**

<b>Terminal Evaluation Report Reviewed and Cleared By:</b>	
<b>Commissioning Unit</b>	
Name:	
Signature:	Date:
<b>UNDP-GEF Regional Technical Advisor</b>	
Name:	
Signature:	Date:

### **Annex 15: Terms of Reference**

To be presented on the UNDP ERC webpage - <https://erc.undp.org/evaluation/units/130>