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THE CHUNGA TRAINING CENTER – A FEASIBILITY STUDY FOR INVESTMENT IN REHABILITATION

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FINAL EVALUATION REPORT

THE CHUNGA TRAINING CENTER – A FEASIBILITY STUDY FOR INVESTMENT IN REHABILITATION

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ACRONYM LIST

AWF	African Wildlife Foundation
CITES	Convention on International Trade in Endangered Species of Wild Fauna and Flora
CTC	Chunga Training Center
CRB	Community Resources Board
DNPW	Department of National Parks and Wildlife
FZS	Frankfurt Zoological Society
GIZ	Deutsche Gesellschaft für Internationale Zusammenarbeit GmbH
GMA	Game Management Area
GRI	Game Rangers International
GRZ	Government of the Republic of Zambia
IDU	Infrastructure Development Unit
KfW	Kreditanstalt für Wiederaufbau (German Development Bank)
KNP	Kafue National Park (KNP)
MOTA	Zambian Ministry for Tourism and the Arts
NBSAP	National Biodiversity Strategic Action Plan
NP	National Park
NPV	Net Present Value
O&M	Operations and Maintenance
PPP	Public Private Partnership
SADC	Southern Africa Development Community
SAWC	Southern African Wildlife College
TEVETA	Technical Education, Vocational and Entrepreneurship Training Authority
USAID	United States Agency for International Development
WPO	Wildlife Police Officer
WWF	Worldwide Fund for Nature (in the United States, World Wildlife Fund)
ZAWA	Zambia Wildlife Authority

EXECUTIVE SUMMARY

The Government of the Republic of Zambia (GRZ) has requested support for the rehabilitation of the Chunga Training Center (CTC), the training facility used by the Zambian Department of National Parks and Wildlife (DNPW) for basic Wildlife Police Officer (WPO) and community scout[1] training.

This assessment will help to inform USAID decisions concerning potential future support for rehabilitation of the Center. USAID requires that the facility be financially viable and self-sustaining to be eligible for consideration for support. The purpose of the report is therefore to provide a detailed and independent feasibility study of the CTC, describing the business case for the continued operations and sustainability of the Center, and the conditions under which the business case would work.

Although the issue of immediate concern is whether it is cost-effective to invest in improving the physical plant of the CTC, several additional factors need to be considered in determining if CTC can become financially self-sustaining. Given the unmet and growing training demands in Zambia's natural resources sector, sustainability of CTC will depend on governance and management of the center, an overarching training strategy, adequate staffing and funding.

The major ***outcomes of interest to stakeholders*** identified in this study include:

- The need to increase the capacity of the DNPW to protect biodiversity and prevent poaching;
- The need to meet growing demand for training, extending beyond the existing use of the CTC for WPO and community scout training;
- The need for a more structured, evidence-based approach to human and institutional development in the natural resources management sector; and
- The need for a sustainable and financially viable training institution.

For purposes of this report, "capacity building" addresses individual, and indirectly, organizational, performance. It should be understood in the context of information resources and tools, incentives, knowledge and skills, and motivation. A focus on a physical facility built around a single activity is the point of departure. For the CTC to produce real results in terms of performance for the DNPW and the natural resources sector more broadly, it needs to be understood as a component of a *system for performance enhancement*, as well as a repository of information, resources and tools for management effectiveness.

This study finds that there is a need for conservation training, extending well beyond the existing role of the center in basic training for entry-level WPOs and community scouts. However, in its current state, the CTC does not have the capacity to satisfy this demand. An improved facility could effectively recruit and train new WPOs and community scouts and continue the development of existing rangers in a manner that generates revenue. To build this capacity, the CTC needs improvements in two areas: the addition

[1] Community Scout is the official term – often referred to as Game Scouts, Village or Community Game Scouts or Game Guards. Community scouts are employed by community resource boards to protect wildlife in Game Management Areas. They receive 3 months of training from DNPW and are permitted to bear arms under the supervision of a WPO. WPOs receive 6 months of training.

of new trainings, workshops and student exchange programs to enhance the workforce, and new or drastically upgraded infrastructure and training facilities.

Additionally, the assessment team found demand for the creation of a new research station for visiting researchers, and additional engagement to support the tourism sector. The fulfilment of these needs will enhance the quality of the center as well as create additional revenue streams, to provide further support for the necessary trainings and infrastructure improvements.

To assist USAID/Zambia with their investment decision, the team conducted a financial feasibility analysis, which involved modeling four possible scenarios and comparing relevant investment criteria. Scenarios included "business-as-usual" (continue to neglect maintenance), "maintain capacity", "increase capacity", and an optimistic "dream big" scenario (assumes highest demand and largest investment).

Depending on the level of risk, the investment costs can be covered by several stakeholders, including USAID, either through project financing (debt or equity) that would be re-paid from future revenues, or through grant assistance from USAID or other partners.

The financial analysis conducted also highlighted several issues that can inform USAID/Zambia's decisions about the nature and scale of their investment in renovating CTC. These include:

- Given certain requirements are met, the operation of CTC as a financially independent entity is feasible. This finding highlights that a range of financing options can be considered for the renovation and operation of CTC.

- The most relevant parameter to the financial viability of the CTC is the demand for training. WPO training demand is distorted by donor presence, limiting government's long-term budgetary commitment to such training program.

- Since the donors currently subsidize 80% of the fees for training, any financing scenario must consider how reliable the provision of funds from donors are over time.

Moving forward, USAID should consider co-convening, with the Government of Germany, and other donors. Through its development agency, GIZ, and its development finance agency, KfW, the Government of Germany has supported the Southern African Wildlife College for several years. Germany is continuing this support and is considering extending it to Zambia, possibly through the development of a satellite of SAWC in CTC. Given the strong likelihood that the Southern African Wildlife College (SAWC) will begin operating in CTC, and that African Parks will be playing a principal role in the management of Kafue NP, these institutions should be anchors of the partnership. During consultation, it is recommended that commitments to funding enrollment fees for a targeted number of trainings is a priority.

1. INTRODUCTION AND METHODOLOGY

1.1 BACKGROUND

The Chunga Ranger Training Center located in the Kafue National Park is one of the two government owned and run training facilities for wildlife law enforcement. Despite being the oldest training institution for Wildlife Law Enforcement staff in Zambia, Chunga Ranger Training Center has had no modern infrastructure since its inception. One of the mandates of the Department of National Parks and Wildlife (DNPW) is to increase community capacity to manage and benefit from wildlife resources. To achieve this, DNPW plans on introducing short courses for community members on alternative sustainable livelihood activities for community members in protected areas. Furthermore, the Department plans on introducing Conservation Leadership training for Wildlife Managers and Wildlife Police Officers (WPOs) to prepare them for the challenges of managing Protected Areas in the 21st century.

As a result, USAID/Zambia asked the LEAP III team to undertake a detailed and independent feasibility study to determine the commercial viability of the Chunga Ranger Training Center located in the Kafue National Park (KNP). This report herein assesses the feasibility of revitalizing the Chunga Training Center, the training facility used by the Zambian Department of National Parks and Wildlife for basic WPO training. Sustainability and financial viability are preconditions for investment in Chunga. This assessment will help inform USAID/Zambia's decisions concerning potential future support and will serve as a tool to support the vision of the Chunga Training Center as a self-sustaining model training facility and a center of excellence within the Southern African Development Community (SADC) Countries.

The report includes a background on the center, a description of the status of the facility and needs assessment, analysis and discussion regarding potential options for the center going forward, a business case for the continued operations and sustainability of the Center (including a financial analysis), and discussion on the potential scenarios for how the business case could work.

1.2 METHODOLOGY

After receiving the Scope of Work (SOW) and a kick-off call with USAID/Zambia, the LEAP III team provided a detailed technical approach alongside a timeline and budget for Mission approval. The team held consultations with USAID/Zambia throughout the month of April to discuss potential stakeholders, finalize the work plan, and field work schedule. The assessment team consisted of Mr. John Waugh, Team Leader and Conservation Capacity Building Expert (USA), Mr. Beyant Kabwe, Management Consultant (Zambia), and Mr. Peter Scott, Wildlife Law Enforcement Training Expert (South Africa). Dr. Bahman Kashi, Economist (Canada), oversaw the construction of the integrated cost benefit analysis (CBA) model, which is used to inform the financial analysis found later in this document.

The assessment team began their review of the current state of Kafue National Park, as well as similar facilities across Southern Africa through a literature review. The team spent ten days in Zambia from March 11 to 21, 2019, to conduct a physical inspection of the site and interviews with approximately 60

people. The field work consisted of three days at the CTC in Kafue National Park and seven days of key stakeholder interviews in Lusaka.

Interviews were held with stakeholders from a range of diverse backgrounds, including government, civil society, academia and the private sector. Seventy-five percent of those interviewed were Zambian subject matter experts or practitioners; of the remaining interviews, all but three participants actively worked in Zambia.

The aim of the interviews was to determine the goals, interests, and preferred outcomes of the CTC and conservation training in general from multiple perspectives, based on all considered options and trade-offs. This qualitative approach was used to arrive at scenarios for the future management and operation of the CTC. These in turn were evaluated for best fit and realism in meeting the criteria of a sustainable and financially viable rehabilitated training center.

A summary of preliminary findings and outcomes of interest were then presented to USAID/Zambia and its partners from the wildlife and forestry sectors on March 20, 2019 at the closing of the fieldwork.

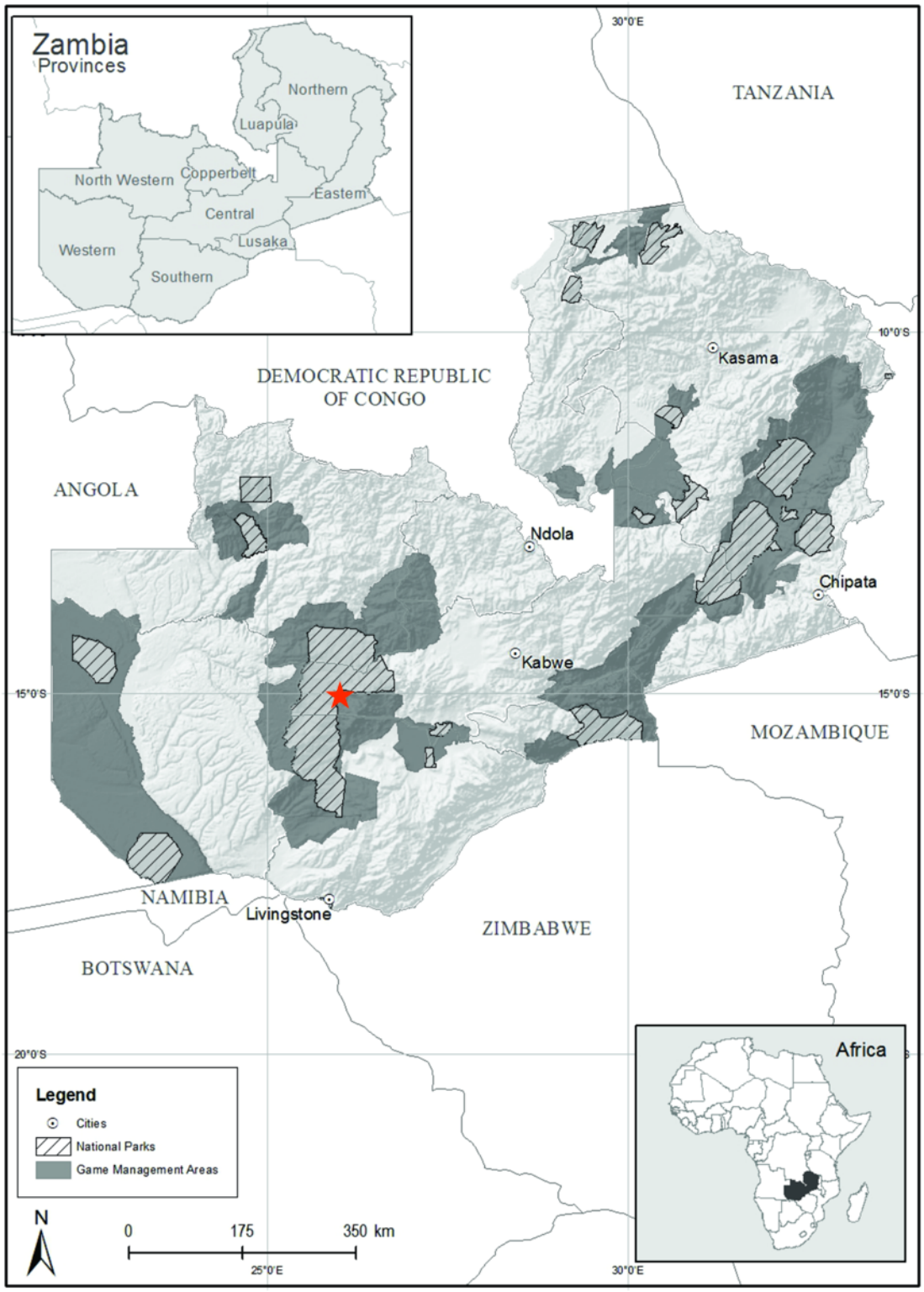
1.3 LIMITATIONS AND ASSUMPTIONS

Due to the current situation of the training center, preferred outcomes, and economic realities, key assumptions were identified to make note of the limits of information available for this assessment. The assumptions are as follows:

- Biodiversity conservation and sustainable development will remain priorities for the GRZ. This is a "load-bearing assumption" that if wrong would cause the recommended option to fail;
- Existing threats to biodiversity including encroachment on protected areas and illegal harvesting of wildlife and forest resources will continue for the foreseeable future;
- Zambia will continue to enjoy robust donor relations; and
- Bilateral and multilateral donors, and international civil society organizations, will remain committed to biodiversity conservation in Zambia.

The financial model behind our analysis includes several assumptions about future demand, costs, depreciation, financing, etc. We try to be conservative and transparent with these assumptions and have conducted sensitivity analyses to predict which inputs may have a disproportionate impact on the conclusions.

Figure 1 Zambia, Kafue Park, and CTC



2. BACKGROUND

This section provides an overview of the key institutions and policies in Zambia. It provides background about Zambia's biodiversity goals and the DNPW, the primary entity responsible for Zambia's wildlife.

2.1 RELEVANCE OF CONSERVATION TRAINING FOR ZAMBIA'S NATIONAL DEVELOPMENT

The Fifth National Report of Zambia to the UN Convention on Biological Diversity (CBD) began by stating the following:

> *"The importance of biodiversity for Zambia lies mainly in its contribution to the provision of ecosystem goods and services for national economic development and livelihoods. At the ecosystem level, forests, agro-ecosystems and wetlands can be distinguished as the key ecosystem components that have a relatively greater bearing on the country's natural system integrity upon which the national economy and the livelihoods of the population depends."*

Zambia's Second National Biodiversity Strategy and Action Plan, 2015-2025 (NBSAP-2) commits Zambia to mainstream biodiversity conservation across government and society, and commits to reduce direct pressures on biodiversity, safeguard ecosystems and species, and enhance the benefits from biodiversity and ecosystem services. Notably, the last goal is to enhance implementation through participatory planning, knowledge management, and capacity building. This addresses the policy aspiration expressed in the Fifth National Report to the CBD that "knowledge, the science base and technologies relating to biodiversity, its functioning, status and trends, and the consequences of its loss, are improved, widely shared and transferred, and applied." Specifically, NBSAP-2 singles out the need to develop capacity in biodiversity monitoring and analysis through training of personnel and the establishment of biodiversity observatories in representative ecosystems/habitats in the country, and the need to build capacity in integrated land use planning.

Environmental assets generate 90 percent of the resources used by the poor in low-income countries. The development of sustainable natural resource value chains and diversification of income generation opportunities in Game Management Areas (GMAs) should therefore be a central tenet of a comprehensive biodiversity conservation strategy for Zambia. There is, however, an unmeasured capacity deficit that must be addressed for this to happen. New nature-based value chains, such as game ranching, will require changes in the enabling policy environment to legalize community management and ownership of wildlife in the GMAs. Lessons from previous donor experiences, such as the USAID Community Forest Program, could illuminate possible pathways to capacity building for sustainable forest landscape management.

As early as 2005, the World Tourism Organization estimated that nature-based tourism in Zambia realized an export value of $194 million USD, contributing 6.5 percent to the national gross domestic product GDP, and nearly 10 percent of formal sector employment. Fiscal revenues were estimated at 5 to 8 times the annual national parks budget allocation.[2]

[2] World Tourism Organization, 2014, Towards Measuring the Economic Value of Wildlife Watching Tourism in Africa – Briefing Paper, UNWTO, Madrid.

2.2 ZAMBIA DEPARTMENT OF NATIONAL PARKS AND WILDLIFE

The Department of National Parks & Wildlife (DNPW) is mandated under the Zambia Wildlife Act No. 14 of 2015 to manage and conserve Zambia's wildlife, which covers 31 percent of the country's land mass. DNPW hopes to integrate wildlife policy with economic, environmental and social policies to ensure effective contribution to sustainable national development. DNPW protects, conserves and manages Zambia's wildlife estates and works to continuously improve the quality of life among communities and the maintenance of biodiversity. Zambia's wildlife estate comprises 20 National Parks, 34 Game Management Areas and one bird sanctuary. DNPW is committed to promoting integrated and participatory approaches to wildlife resource management especially in the Game Management Areas to reduce conflicts between humans and wildlife.

The DNPW operates under five main objectives:

1. Protect and conserve Zambia's wildlife and improve the quality of life among communities in GMAs;
2. Maintain biodiversity in national parks and game management areas;
3. Reverse the decline in wildlife resources;
4. Improve wildlife resource management to a level which will secure sustainable flow of benefits from the resources; and
5. Considerably improve investments in wildlife areas in cooperation with the private sector and local communities.

The DNPW has an annual operating budget of approximately 55-60 million Zambian Kwacha (approximately 4.6 - 4.9 million US dollars) covering an estate of approximately 230,000 km^2. This translates to only an annual investment of only US$20 per square kilometer. The DNPW currently employs 1,525 WPOs, a further 850 community scouts are employed by CRBs, though the approved staffing structure allows for 2,700 WPOs. If the full complement of staff is fit for duty and in the field, everyone would have to cover more than 100km^2 to have full coverage.[3]

Of the 20 National Parks under DNPW, Kafue National Park is the oldest and largest. It covers a massive 22,400 km^2. Within Kafue, the Chunga Ranger Training Center was opened in 1976 and is accredited with the Technical Education, Vocational and Entrepreneurship Training Authority (TEVETA), classified as grade three training institution. The CTC has trained over 9,000 Wildlife Police Officers and Community Scouts in skills such as basic botany, general ecology and mammalogy, tour guiding and natural resource interpretation, fire management, hunting techniques and hunting monitoring, wildlife crime prosecution, investigation and intelligence, tracking skills, paramilitary training involving anti-poaching tactics, military tactics and weapons training (including ballistics), navigation, and leadership. Other skills taught include first aid, human rights and Community Based Natural Resource Management (CBNRM). These skills

[3] There is no universal "optimal" ranger density; most estimates range between 10-50 km^2.

enhance the capacity of Wildlife Police Officers and Community Scouts to combat wildlife crime and conserve biodiversity for national sustainable development.[4]

While this training center exists, there is little opportunity for overall professional development for the DNPW. There is a major gap in access to management trainings. The transition from a Field Ranger position to manager is typically learned on the job, although senior management positions require university training. Rehabilitation presents an opportunity to establish the Chunga Training Center as a self-sustaining model training facility for the ranger community.

Figure 2 CTC Mess Hall and Makeshift Classroom

[4] Stakeholder interviews.

3. ASSESSMENT OF STATE OF CHUNGA TRAINING CENTER

This section provides an analysis of the current state of the CTC, including a status of the center, current training usage, a SWOT analysis and an overview of the main stakeholders involved in wildlife estate and conservation.

3.1 THE STATUS OF THE CHUNGA TRAINING CENTER

The Chunga Training Center (CTC) was established as a training center under the Department of National Parks and Wildlife Service in 1976. During its early decades of operation, the CTC had a resident Principal and senior staff. Anecdotally, it appears that the CTC status changed with the reorganizations from the Department of National Parks and Wildlife Service to the Zambia Wildlife Authority (ZAWA) in 1999, and the change from an independent agency to a ministerial department under the Ministry of Tourism and Arts (MoTA) as the DNPW in 2015.[5]

The DNPW has the exclusive mandate for training of WPOs. Private law enforcement training is not permitted under Zambian law.

The CTC is centrally located on an approximately 150-hectare (ha) campus on the western side of Kafue National Park (NP), approximately five km away from the Kafue NP Headquarters at Chunga. It is 21 km by gravel road from the paved M9 highway, a major east-west corridor linking Lusaka and Mongu, the capital of the Western Province. It lies approximately 310 km west of Lusaka (a four to five-hour drive), with regular intercity bus service at the Hook Bridge.

The facility itself is in an advanced state of disrepair. Several staff residences have been demolished due to their unsafe condition; those remaining have suffered storm damage and have severe roof damage. When the CTC is in use, the Principal's house, one of two staff houses remaining, doubles as the office.

There are three dormitories, built in the late 1970s. They are structurally sound, of cement-block construction. Door and window frames are rusted out. Glass is broken, and the furniture is unusable and must be replaced. Together they hold 90 people, yet the last WPO class was more than twice that size. Communal showers and toilet stalls, as well as bedrooms, are inadequate for current needs.

There is no functional kitchen with work surfaces for food preparation, no sanitary food storage or refrigeration, and no functional tables and chairs. Food is presently prepared in an outdoor kitchen over a wood fire. Water is pumped out of the river and used untreated. All electrical generating units are broken.

There are no training aids, such as projectors, whiteboards, photocopying and printing facilities, or binding equipment (to produce training manuals). Additionally, there is no armory, quartermaster facilities, or

[5] Stakeholder interviews.

functional shooting range. There is an unimproved flat area which doubles as a physical training site and parade ground.

Figure 3 Makeshift Training Aid and Broken Generator, CTC classroom

3.2 CURRENT TRAINING USAGE OF THE CTC

Presently (2019) the CTC is used intermittently for the WPO basic course. The WPO is the entry level professional staff position in the DNPW. The WPO course is six months in duration, and is held, on average, approximately every two years, depending upon demand and the availability of funding. Presently, DNPW does not receive a budget allocation for the WPO course but receives financial support from international conservation organizations for the course.[6] There are no permanent staff assigned to the facility, including maintenance staff. Instead the candidates are trained by DNPW senior staff who are graduates of the course, and who are assigned to a temporary tour of duty at CTC for the duration of the course.

[6] Stakeholder interviews.

There are advantages to using senior staff for training. The first is indoctrination of the mission and heritage of the DNPW. The presence of senior staff also helps DNPW to assess the strengths and weaknesses of candidates, and their ultimate suitability for service with the DNPW. DNPW trainers bring direct first-hand knowledge of field conditions and the corresponding skill sets.

On the other hand, there is no prescribed in-service or refresher training in the DNPW, except for the fortunate few who receive support for advanced training in Tanzania or South Africa, or a one-off advanced course given by an NGO or donor. In practice, this means that the skills passed down from cohort to cohort of WPOs are relatively static, and do not benefit from systematic updating with current law enforcement or nature conservation theory and practice. This means, in turn, that new WPOs may not be optimally equipped for the realities that they will face in the field.

No recent comprehensive protected areas training needs assessment could be identified for Zambia or for the region.

Figure 4 Instructor's Quarters (in Kitchen Storeroom)

3.3 SWOT ANALYSIS OF THE CTC

Strengths: The greatest strength of the CTC is its location and the fact that it is the only place in the country to offer such trainings. As such, its influence is felt throughout the country through the WPO and community scout programs. It provides a solid core for a more comprehensive capacity development approach in the conservation sector. It is essential to secure the biodiversity of Zambia, which is the foundation of its tourism industry, with the potential for significant growth, including job creation. Conservation is strategically important to Zambia and will remain so for the foreseeable future. Other strengths include the high demand for services, and a strong base of support from NGOs and the tourism sector.

Weaknesses: A weakness of the DNPW in general, and the CTC in particular, is a debilitating dependence on external support for human and institutional capacity development. As a result, the global response to the near-term contingency has unintentionally produced a perverse disincentive on the part

of the GRZ to investment in conservation capacity development. Additional weaknesses include the absence of infrastructure, a crumbling physical plant, inadequate budgetary allocation, the absence of permanent staff, and the absence of features essential to a ranger training facility, such as an armory, formal firing range, and library.

Opportunities: Potential partnerships present an opportunity to strengthen engagement with the conservation community and have helped the DNPW to train WPOs. The DNPW will continue to need and will benefit from partnerships. These partnerships must however result in a stronger conservation sector, in which all parties bear a degree of risk ("skin in the game"), through financial and in-kind contributions; otherwise the cycle of dependency will ultimately undermine the agency and capacity of the DNPW. A more strategic approach to institutional performance will help to transform the major weakness of the current situation, which is one of chronic dependency, into one of common vision and purpose.

Additionally, restructuring biodiversity conservation and protected area management training efforts across the board for DNPW and the conservation sector as a whole would relieve dependency. An independent CTC, operating as a PPP, or through other financing models, can provide the leverage necessary for the development of a long-term strategy. That opportunity is reflected in the strong support afforded by the conservation community. A driver of additional opportunity is evolving government policy, including certification of tour operators and support for game ranching. Such an arrangement has the potential to evolve into a comprehensive conservation training system with buy-in from both government and the conservation community, and in time, the private sector.

Threats: The CTC's decline may have been, inadvertently, abetted by the conservation NGOs that relieve the GRZ of its core responsibility for training law enforcement officers, through the provision of financial support to counter the poaching crisis. The availability of external support relieves the GRZ of any sense of urgency in adequately funding wildlife conservation, despite its importance to the national economy. Another major threat is the lack of political will power. If the development of the tourism sector is a national priority, then the security of the natural resources that underpin it must also be a national priority, reflected in government commitment to the CTC, both in terms of matching financial support and in terms of a new management structure, including fee retention at CTC.

3.4 DESCRIPTION OF KEY STAKEHOLDERS IN THE CENTER

Technical Education, Vocational and Entrepreneurship Training Authority (TEVETA) - In 1998, the Zambian Government established TEVETA to regulate, monitor, and coordinate technical, vocational and entrepreneurship training in Zambia in consultation with industry, employers, workers and other stakeholders. TEVETA provides for the accreditation of programs, trainers, assessors and examiners to ensure the delivery of quality training. TEVETA also has the responsibility of granting legal status to technical and vocational training institutions that meet their minimum training standards. To achieve legitimacy, the CTC and its core offerings (certifications) require TEVETA accreditation. Annex III provides TEVETA minimum requirements for facilities, which would be important for any independent center.

Other Zambian Government Agencies - The Forestry Department of the Ministry of Lands and Natural Resources has the mandate of managing state forest reserves and enforcing the use and harvest of forest resources on state and customary lands. The department has its own training center and provides law enforcement, but not firearms training. With growing concerns about illegal logging, the Forestry Department is making the case that its enforcement personnel should be armed. It would make sense to develop a forest law enforcement training course at CTC adapted to the Forestry Department's mandate and the laws that it enforces. This provides a useful opportunity for cross-training, as well.

The Southern African Wildlife College (SAWC) - Established in 1996, the SAWC is a regional non-profit training organization recognized by the Southern African Development Community (SADC), based in Kruger NP in South Africa. It offers field ranger training and advanced certificates as well as short courses in various aspects of natural resource management, wildlife guardianship, sustainable use and field guiding, and community and youth development. It has trained more than 15,000 managers from 26 African countries. In 2019 SAWC entered a Memorandum of Understanding with the Ministry of Tourism and Arts in Zambia to collaborate on training at CTC. Under this arrangement, CTC will become a satellite of SAWC for selected courses.[7]

The Zambian Conservation Community - Several Zambian organizations are engaged in wildlife conservation and support for protected area management effectiveness, including Conservation Lower Zambezi, Conservation South Luangwa and Game Ranger International. These organizations should be expected to play an increasingly important role in capacity building for conservation and should themselves benefit from a national capacity building strategy.

The International Conservation Community - Substantial support for capacity building in Zambia is provided by international and local conservation organizations, including the World Wildlife Fund (WWF), Panthera, the Nature Conservancy, TRAFFIC, the Frankfurt Zoological Society, and African Parks. Currently, training approaches among these organizations are only informally coordinated, with limited leverage, usually around specific protected areas. Most of these organizations have supported the CTC in the past and expressed an interest in making use of a rehabilitated CTC. Most embraced the idea of independent management of CTC under a PPP framework, and the idea of a coordinated system of training offerings that can leverage the specific expertise of the different organizations.[8]

Industry Groups - From industry, two groups stood out as particularly interested in the development of a training facility. The first is the tourism industry, represented by Bedrock Africa, which provides TEVETA-certified field guide training, the only of its kind in Zambia, and the Kafue NP Operators Association, representing lodge operators in the Kafue NP region. The other is the Wildlife Producers Association, representing game ranchers. In all cases, demand will be to some extent driven by government policies and standards. For example, enforcement of requirements stipulating that all field guides in Zambia must have been trained by a TEVETA-certified trainer will drive demand for additional field guide training and create opportunities for engagement with Bedrock Africa. Likewise, reforms in enforcement

[7] Stakeholder interviews.

[8] Stakeholder interviews

procedures that permit game ranchers to have anti-poaching staff would drive requirements for certification that can best be met at the CTC.

Donors - Among the international development donor community, the Governments of Germany and the United Kingdom are actively considering conservation capacity building support at the present.

Through its development agency, GIZ, and its development finance agency, KfW, the Government of Germany has supported the Southern African Wildlife College for several years. Germany is continuing this support and is considering extending it to Zambia, possibly through the development of a satellite of SAWC in CTC.

The United Kingdom Ministry of Defense is considering support to counter poaching in Zambia, including the possibility of supplying a military detachment to CTC[9] to assist in ranger field skills training to strengthen counter-poaching capabilities of WPOs. In addition to the training that this detachment would provide, it could potentially provide valuable advice on some design aspects of the WPO training facility, including an assault (obstacle) course and improvements to the shooting range, among other things.

[9] Personal communications with Captain Michael Geldard RM, Defence Attaché, British Embassy Harare, and Ian Hoad, Game Rangers International

4. MULTI-STAKEHOLDER NEEDS ASSESSMENT

This section discusses training needs and resources in Kafue National Park (KNP) and the surrounding region. We address training needs in protected area management, law enforcement and anti-poaching operations, anti-poaching technologies, human/wildlife conflict, and community-based management.

The assessment team met with Mr. Paul Zyambo, the Director of DNPW, who provided an overview and history of the Center. Mr. Zyambo described the establishment in 1976, describing its training of village game scouts and entry level ZAWA field staff, once called 'game scouts' and assistant rangers. At that time, a Principal oversaw the facility and was supported by instructors. CTC received minimal support from Government and only from a few NGOs. Only in 2016 did the CTC start receiving funds on an ad hoc basis to manage ad hoc training events. Courses were endorsed or accredited by TEVETA.

Through key stakeholder interviews in Kafue National Park, the study team found robust demand for conservation training facilities and services in Zambia. This extends beyond wildlife law enforcement and anti-poaching to encompass a wide range of training needs. The team also identified four ways that the CTC could be fully utilized and ultimately expanded beyond the basic law enforcement training currently offered:

1. Certification-based training, workshops and student exchange programs;
2. Improved infrastructure and training facilities;
3. The creation of a new research station; and
4. Support for the tourism sector.

Table 1 provides a summary of the identified needs, which are then detailed later in this section.

Table 1 Area of Need, Organization and Specific Needs

Area of Need	Organization(s)	Specific Needs
Trainings, Workshops and Student Exchange Programs	NGOs (Panthera, GRI, Wildlife Crime Prevention)	Training kits; Bookkeeping; First Aid training; Wildlife monitoring and carrying capacity (off take); Hunting associated training; Crime scene Investigations; Advanced ranger training; SMART training; Short courses in hospitality such as; hygiene, housekeeping, cleanliness, cooking and running a camp/lodge; Bush craft; community led enforcement training; Courses associated with private wildlife estates such as animal health. Understanding of legal procedures, intelligence and investigations, crime scene management, evidence security/chain of custody; Informant management.
Infrastructure and Training Facilities	DNPW	3 Hostels with 30 beds each; 1 X 2 classroom block; 1 X Dining area; Principals house; Instructor house; Ablution facilities; Library; Administration office; Quartermaster office; Armory; Showers and toilets; Lighting; Potable water; Legislative Support; Enabling Platform to move forward; Shooting range; Training obstacle or assault course; Conference facility. Vocational training; fencing, road construction, plumbing, water provisioning, bricklaying, electricity
Research	Copperbelt University, the University of Zambia, Mulungushi University	Laboratory space for visiting scientists; lecture halls
Tourism	TEVETA, Bedrock Africa	Community management of tourism facilities in GMAs such as self-catering campgrounds, additional facility for the training of guides by established programs

4.1 Training, Workshops and Student Exchange Programs

Presently, there are two training facilities in use, 1) Nyamaluma in eastern Zambia, which provides community scout training, and 2) Chunga, in the west providing both WPO and Community Scout training. The emphasis at Chunga is WPO training. Advancement beyond WPO requires a degree. Other DNPW positions include support staff, which are sourced from government-funded vocational skills training.

Improved capacity building and development training for existing managers and officers are drastically needed. Ideally, ranger training should consist of a Basic and an Advanced component. The Basic component should provide the foundation and the most basic skill set for an individual to transform him/her into an effective ranger to conduct the most basic law enforcement operations. The Advanced component should be designed to build on the basic concepts and to build capacity of a ranger with specialist and contemporary training skills to operate at a much higher level. There should also be specialized, industry appropriate courses presented by the CTC, covering hunting industry, ecology, fire training, game ranch management and community management and ranging from certificate to courses eligible for university credit, in the hopes of reducing the large gap between rangers and managers, expanding the capabilities of the communities, and enabling them to enter new fields.

There are currently more than 1,300 law enforcement officers in Zambia without any refresher training. It is too costly to send rangers away for training; thus, the envisaged college must cover all conservation related fields, including the hunting and field/nature guiding disciplines. Community Resource Boards should be approached as well since they are involved with the training of village scouts.

Training, workshops and student exchange programs should address risks and threats associated with the work. The assessment team found constraints such as a lack of duty compensation for work-related injuries; dangers related to encounters with poachers; lack of access to emergency medical services, declining household incomes that incentivize alternate professions such as poaching or charcoal production; a negative community view of trained scouts; and a lack of value placed on GMAs. Refresher courses are also needed for prosecutors.

WILDLIFE PROTECTION TRAINING

Around wildlife protection, the assessment found strong support for advanced and supplemental conservation training. Of approximately 60 people interviewed for this study from government, the private sector, NGOs and donors, there was unanimous agreement to the proposition that CTC should be restructured to provide improved services through a partnership arrangement and the creation of a more formal conservation sector training regime.

The WPO training at CTC is not accredited by the national accreditation authority, TEVETA, largely due to the substandard condition of the facilities. If the facilities could be upgraded, faculty augmented, and the curriculum modernized, certification would help to establish the basis for a center of excellence in conservation training.

DNPW envisions training that is certified at levels sufficient for CTC to become a hub for advanced training for the SADC region. This accomplishment will take time but could ultimately provide important validation of the efforts to create a center of excellence for conservation training in Zambia.

Advanced wildlife management and protected area training is also desirable. Through the emerging partnership with the Southern African Wildlife College (SAWC), CTC will effectively become a satellite of the SAWC and able to offer both practical and advanced courses in protected area management and wildlife law enforcement, including badly needed planning, management, and leadership training. Among other things, this will result in having direct funding now spent on sending staff to The College of African Wildlife Management in Mweka, Tanzania, or to SAWC, for training at CTC.

NGO Support for Training

NGOs such as Panthera, WWF Zambia, and Game Rangers International (GRI) already provide direct financial support to DNPW for training, including training of community scouts and WPOs. In addition, both GRI and Panthera provide support for rapid response units, including advanced anti-poaching training. Panthera also provides training and financial support for the deployment of the SMART reporting system. However, the assessment team found that in order to more effectively contribute, these NGOs need to improve their skills and capacities in SMART reporting, bush craft, community-led enforcement, firearm proficiency, private wildlife estates, legal procedures, crime scene management and intelligence and investigations, as well as a meeting or conference facility, and proper shooting ranges and practicing training initiatives such as an assault/obstacle course. Panthera, like other agencies, have spent significant amounts of money on hosting workshops at other venues where they could have been hosted at CTC, if the facilities were adequate. GRI, Panthera, and WWF Zambia all indicated that they would willingly make use of improved training facilities at Chunga for their own specialized training, but expressed concern that in its existing state, CTC would not be well suited to training courses.

Spatial Monitoring and Reporting Tool (SMART)

An example of supplemental training offered by NGO partners that could be provided at a rehabilitated CTC is Panthera's work to deploy the Spatial Monitoring and Reporting Tool (SMART) to Kafue NP. SMART is a free, open source software system that runs on Android handsets. While on patrol, rangers can document their progress, and record significant observations, such as evidence of poaching. The digital data can be uploaded into a database at the protected area operations center and aggregated with historic data and data from other teams to produce a comprehensive overview of illegal activity, allowing park management to deploy its resources more effectively. Eventually, national deployment of SMART will allow authorities to identify wildlife crime hotspots and detect patterns critical for interdiction across the entire nation. More information on SMART is available online at www.smartconservationtools.org.

Panthera: Panthera's primary objective is to support KNP through various initiatives. They are currently very supportive of Law Enforcement in the northern parts of KNP through an improved reporting system based at a control room at Chunga HQ. SMART technology is used, supported through the establishment of a good radio network and repeaters. Panthera is also looking to expand to the southern parts of KNP.

Panthera's key focus areas are reducing human wildlife conflict, supporting law enforcement, improving ecological connectivity, community upliftment, and monitoring and Research. The Panthera Claws project is aimed at support by deploying up to 14 teams in central and northern KNP and to help make the borders of KNP less porous. Their programs are based on evidence adaptive management information.

They also have links with the Zambia Carnivore Program. They aim to give predators a better chance of survival and focus on areas with snaring incidence, using SMART system to its fullest.

Panthera supports the establishment of a CTC that, using a PPP model, can operate independently from wildlife or ranger training, with an administrative team disassociated from the DNPW and excellent business acumen. The CTC should have a facility that accommodates approximately 50 students and can host events and teach courses, with a Board of Trustees, autonomous decision-making powers, and the ability to raise money (with a percentage contributed back to the DNPW.) In this structure, the CTC should mitigate risks such as excessive bureaucracy attempts from government departments to exert control.

Figure 5 Panthera supported Rapid Response Unit, Kafue NP

Game Rangers International (GRI): GRI's primary role is to support the ranger efforts in KNP at ground level. They are currently in advanced discussions with the British High Commission regarding the possibility of having the British armed forces in KNP to assist with training and training of trainers (TOT). GRI believes if the Center was managed at a more professional level it might attract the attention of the British armed forces and maybe surrounding countries for training and education of their rangers.

GRI currently supports 22-35 community scouts, which are under the command of DNPW. WWF supports a basic training program in the southern part of KNP at Lake Itezhi Tezhi and GRI supports fuel, food and materials.

African Parks' (AP) Co-management Agreement with DNPW for KNP is imminent. An initial proposal and business plan have been submitted to the government. This partnership between AP and DNPW will focus on law enforcement and infrastructure development.

GAME GUIDE TRAINING

DNPW has mandated that all game (safari) guides operating in national parks must be certified according to TEVETA standards by 2020. Presently, there is one certified program, through the private firm Bedrock Africa, that provides TEVETA accredited training in Zambia. Bedrock Africa does not use a single training venue; it uses mobile training units and takes training to regions where there is demand. Bedrock Africa has used CTC in the past but has concluded that it is unsuitable in its present state for use as a training location. It has indicated however that it would return if upgrades were made to the CTC to provide basic amenities, including clean water, sanitation, and electricity, and if there is sufficient demand for training from the Kafue region lodges. If the DNPW enforces its policy for certification of game guides, they anticipate robust demand for training, and would use CTC if its facilities are improved.

GAME RANCHING TRAINING

The President of Zambia issued a policy directive in 2017 to support game ranching as an environmentally appropriate economic development strategy. However, the industry is in its very early stages, and does not have set standards for management, including veterinary care, stock management, breeding, and harvesting. The most urgent need in the near term is in protection of stocks.

The participants in the nascent game ranching industry are private landowners with the same challenges in combating poaching as the DNPW. To be economically sustainable, game ranchers in Zambia need to be able to combat poaching and protect their stock. However, Zambian law does not generally allow armed private security, with some limited exceptions.[10] Currently, private lodge and ranch owners are known to hire WPOs and community scouts to provide protection informally. This arrangement undermines the conservation mandate of DNPW and is counterproductive from a capacity-building perspective. Legalizing armed private security will create a demand for qualified personnel, which poses a risk and an opportunity.

If Zambian law is modified to allow game ranchers to arm their personnel to defend their ranches, it is reasonable to expect that certification will be required. This certification should be expected to track closely with the law enforcement training provided to WPOs. If changes to policy permit the certification and licensing of game ranch guards, CTC, with its existing law enforcement training, would be a logical solution to meet emerging training requirements.

However, there is also a risk that private operators can offer a higher salary, resulting in competition for trained WPOs, and a drain on existing capacity. A possible solution would be the regularization of

[10] An exception has recently been given to the national prohibition on armed private security has, according to some informants, for rapid response units of private security firms. If true, this may provide a model for game ranchers in the near term. A private rapid response firm organized by and for game ranchers could potentially provide the required security with trained personnel.

outsourced wildlife protection, with fees assessed for private landowners to participate in a cooperative protection scheme with DNPW, with assessed fees earmarked for training additional WPOs.

Additionally, if one were to get involved in game ranching, there is perceived perception that only the elites are involved in this sector. Thus, there is a need for communities to become involved in this industry as well.

Specialized training for game ranching is another area where growth can be expected. Syllabuses for game ranching must be developed and must stem from the industry. The Wildlife Producers Association of Zambia is the trade group representing the nascent industry. Expanded facilities at CTC could provide training and host courses developed with and approved by TEVETA to support this sector. Elements may include wildlife product value chains, CITES (Convention on International Trade in Endangered Species of Wild Fauna and Flora) management certification, wildlife health and population dynamics, and harvesting practices. The proximity of Game Management Areas to the CTC may afford a readily accessible space for experimentation in community for wildlife ranching.

Ironically, game ranching cannot legally take place in Game Management Areas (GMAs) because wildlife is presently property of the State. This sets up a perverse incentive countering wildlife conservation on GMAs because farming, the major alternative land use, is legal. It would be in the interests of the wildlife estate to legalize community game ranching in GMAs through co-management arrangements with the DNPW. This would also create demand for specialized training from CTC.

FOREST LAW ENFORCEMENT TRAINING

Illegal logging is a major natural resource management problem in Zambia, with high value timber, such as teak, being exported west into ports in Namibia. The Forestry Department has recently re-introduced the position of forest guards and have obtained Treasury Authority for the recruitment of 90 Forest Guards who have so far been deployed across various forest reserves, depending on the need. The Department of Forestry has long argued for law enforcement qualifications for forest guards. There would however be little sense in the duplication of training services with the CTC. This is because the WPO training at CTC can easily be modified to encompass Zambian forest laws, and additional training accommodated in an improved training facility. An additional benefit could be the cooperation between forestry and wildlife law enforcement personnel for mutual support.

Forestry officers are mainly trained from the Copperbelt University and the Zambia Forestry College in Kitwe. This college offers a certificate in law enforcement and covers issues related to policies and laws related to forestry management. But this is not a detailed law enforcement course like the one offered by DNPW. There are also no patrols and deployment in the forests once the course is completed. The environment is like WPO training although there is no use of firearms during training. However, there are ongoing discussions to see if the use of firearm can be integrated in the training syllabus. This implies retraining of all the previously trained forestry officers.

The Zambia Forestry College currently offers a diploma in Natural Resource Management (NRM), which has a wildlife management component built into the course. For practical and experiential training, they normally make use of the CTC. The Department of Forestry is pressing for law enforcement authority

for personnel that combat illegal logging; should this transpire, they will require a training facility. The use of the CTC for training would prevent any duplication of effort.

4.2 INFRASTRUCTURE AND TRAINING FACILITIES

The existing infrastructure is not adequate either for academic, physical training, firearms training, or accommodation. It can be regarded as temporary and it compares unfavorably with the international training standards such as ILEA center in Botswana, the SAWC and the Mweka Wildlife College in Tanzania. If the training center is well maintained, it can absorb people from other countries like Democratic Republic of Congo (DRC), Rwanda or Malawi who currently lack training centers.

The CTC needs to either be replaced or upgraded significantly to fulfil the demands of a training center, including lecture halls, staff accommodation, dormitories for students, kitchen, electricity and water supply. More specifically, it needs 3 hostels with 30 beds each, a 1x2 classroom block, one dining area, a principal's house, instructor house, library, administration office, quartermaster office, and armory. Most pressingly, it needs showers and toilets, lighting and electricity, potable water, and a radio base system.

Additionally, it lacks a shooting range, training obstacle or assault course, and training kits such as those issued at the SAWC (which include backpacks, boots, water bottles, and other ranger-related equipment).

4.3 RESEARCH

Three Zambian universities with natural resource management offerings have expressed the desire to have a biological research station.[11] Such a facility could easily be integrated into the CTC system. A partnership between Zambian and international research institutions that provides laboratory space for visiting scientists would also provide academic exchange; moreover, visiting conservation biologists and experts from allied disciplines could, as terms of their access, provide lectures for courses being offered at CTC, expanding and deepening the offerings available through the CTC.

[11] Copperbelt University, the University of Zambia, and Mulungushi University

Opportunities to Address Gaps in Training at the Regional Level

Two major and related areas emerged from interviews as wildlife conservation topics understudied in the region, for which more research and training is required. They address the motivations and incentives for wildlife crime.

The first is to provide a proactive approach to the prevention of wildlife crime, as a necessary counterbalance to reactive and kinetic anti-poaching law enforcement. This proactive approach, based on rational choice theory, is characterized in the sociology literature as "situational crime prevention." The approaches are organized along five themes:

Increasing the effort necessary to commit a crime
Increase the risks
Reduce the rewards
Reduce provocations
Remove excuses

The first three themes are central pillars of strategies to defeat illegal wildlife trafficking and wildlife crime. The latter two themes require skills less commonly associated with wildlife law enforcement training and are more closely associated with social relations and governance in rural development contexts. Dr. Meredith Gore's Conservation Criminology Lab at Michigan State University in the USA (www.conservationcriminology.com) is developing approaches to community conservation informed by these principles. Given the prominent role of communities in conservation in Zambia through the GMAs, Zambia may be a useful testing ground for new applications of social science for conservation in a community development context.

Human/wildlife conflict is an area that is a serious problem in the region and is relatively neglected relative to combating poaching. Human/wildlife conflict is a substantial source of provocation and an excuse for poaching. Protecting humans and wildlife from one another could become an important strategy for the prevention of wildlife crime in some cases. Additional research and training will be required.

These two subjects represent examples of areas where partnerships between Zambia and the international community could yield internationally important conservation results and could provide a cornerstone of a Center of Excellence, for example in the SADC context.

4.4 TOURISM

CTC should not attempt to compete with established programs, such as those in Zambia for hospitality training and for nature guide certification. It should however engage as a partner with government and private sector entities, including safari lodges, to extend and enhance training opportunities.

There is an expressed need for hospitality training for community-based tourism. The CTC is not well positioned to provide this kind of training but could potentially support a satellite training site in a GMA or under the auspices of a safari lodge. Within a partnership-based system for conservation training, courses can be optimized for best impact. For tourism and hospitality, a franchise arrangement with partners may provide the most effective service delivery.

5. BENCHMARK ANALYSIS

The following sections describes three institutions that were identified as potential role models for the CTC because they offer quality, highly-demanded trainings, both inside and outside of Zambia. Through examination of their operations, it is easier to define what additional capacities, program offerings, infrastructure and other investments are required if Chunga is to be considered a center of excellence.

Table 2 Benchmarking Institution Comparison

Institution	The College of African Wildlife Management	Southern African Wildlife College	Bedrock Africa Wildlife Safari Guide Training
Location	Mweka, Tanzania	Hoedspruit, South Africa	Masuku Lodge, Zambia
Specialist training field	Management & Tourism	Field Ranger, Vocational & Higher Education	Tourism - Nature Guiding
Established	1963	1997	2015
Annual operating budget	$4,000,000	$3,639,812	$36,000
Average cost/ student	$3,500	$360 (2/3-day course) $11,500 (1-year course)	550
Number of students	650	1,050 [12]	150
Fee charged	$1500-6000	$1800-2800	$450-650
Hiring rate (1-year)	35%	No info available	80%
Highest level offered	Post Graduate	Advanced Certificate	Wildlife Walking Guide
Acceptance rate	70%	40%	100%
Language	English	English	English
Number of faculty	35	23	NA
Point of contact	Prof Jafari R. Kideghesho	Miss Anelle Rautenbach	Miss Doris McDougall
Telephone	+250 0 27 2974 128 32	+27 0 15 7937300	+26 0 966763172
Email	mweka@mwekawildlife.ac.tz	arautenbach@sawc.org.za	bedrockafrica@gmail.com

[12] 800 Field Rangers & 250 Tertiary or Short Courses

5.1 Southern African Wildlife College

The SAWC is accredited with the South African Culture, Arts, Tourism, Hospitality and Sports Sector Education and Training Authority (CATHSSETA). SAWC is one of the biggest and most reputable field ranger service providers in the SADC region. The SAWC attracts students from the SADC region and elsewhere.

African Field Ranger Training Services (AFRTS), a previously independent field ranger service provider, has forged links with the SAWC and has been accepted as the official field ranger training arm of the SAWC. They render a specialist training service to field rangers across a major part of the south African sub region with a focus on rhino poaching. All students must have the demonstrated capacity upon completion, not only academic knowledge.

Figure 6 The Southern African Wildlife College

The following courses are currently offered by the SAWC:

- **Higher Education & Training:** 1) Higher Certificate: Nature Conservation – Conservation Implementation and Leadership; 2) Advanced Certificate: Nature Conservation – Trans-Frontier Conservation Management

- **National Certificates:** 1) National Certificate: Natural Resource Management: Terrestrial; 2) Further Education and Training Certificate: Professional Hunting, and 3) National Certificate: Nature Conservation: Resource Guardianship;

- **Skills Programs (designed to be occupationally relevant to the situation):** 1) Dangerous Game Site Guide, 2) Field Ranger Law Enforcement- Unarmed or Armed, 3) Field Ranger Protected Area (Unarmed), and 4) Conservation General Assistant.

Other offerings include specialized short courses covering a wide spectrum of wildlife management topics, such as nature-based tourism, community-based natural resource management, and other environmental-related topics. In addition, SAWC also offers a six-month Youth Access Bridging Programme aimed at school-leavers interested in a career in conservation.

Facilities: The training infrastructure includes several lecture rooms, a laboratory and research center, conference facilities, library, clinic, multiple offices, and a seminar room. The underlying 'green building' principle was applied during construction and renovations. All necessary IT equipment is on-site and most the rooms have Wi-Fi reception with hotspot areas placed at strategic places on campus. SAWC has its own vehicle and maintenance workshop as well as a fleet of vehicles including safari game viewers and two buses. Accommodations include 58 twin en-suite rooms and 17 safari tents. Campus facilities also include a fully equipped kitchen. Recreational facilities include a bush pub, swimming pool, pool table, gym equipment, dartboard, volleyball field, soccer field and an outdoor fitness obstacle course.

The Field Ranger camp is managed as a distinct unit and is separate from the main campus with all the amenities of a modern training camp. Trainers/would-be rangers stay in tents with shared facilities. A 100m, fully accredited shooting range is also available for musketry training.

5.2 COLLEGE OF AFRICAN WILDLIFE MANAGEMENT, MWEKA

CAWM is located on the southern slopes of Mount Kilimanjaro in Tanzania, above the city of Moshi. Following the independence of Tanganyika in 1961, the College of African Wildlife Management was established in 1963 for the training of African wildlife managers. Initial funding for Mweka was sourced from the African Wildlife Leadership Foundation, USAID, and the Frankfurt Zoological Society, with facilities donated by the government of Tanganyika. The College has trained over 5,000 wildlife managers from 52 countries worldwide (28 African countries and 24 other countries abroad). Many of these trainees, originally from the SADC region, work in protected areas throughout sub-Saharan Africa. The college serves two main purposes:

1. To prepare both local and international students for work within the national parks and reserves of Tanzania and whole Africa; and

   To prepare students for work within the safari industries (photography and hunting) within Tanzania and whole Africa.

Courses: The CAWM trains quality Wildlife managers and Wildlife tourism professionals. Students enroll at a certificate level or progress to an advanced postgraduate course. Courses provide theoretical knowledge and field practical skills. Ranger training is not presented at CAWM.

Facilities: Campus facilities include dormitories, catering services, medical services, banking and communications, and other amenities to be found in an institution of this nature.

Figure 7 MWEKA College

5.3 BEDROCK AFRICA TRAINING LIMITED

Bedrock is a relatively new conservation and nature guiding training facility and a first for Zambia, as it focuses on training of nature guides. Bedrock has developed its own curriculum, which was endorsed by TEVETA, looking to the Bureau of Standards as the ultimate regulatory authority.

Courses: Bedrock currently facilitates the training of 150 students per year. Another unique quality of Bedrock is the fact that they pursue/invite students without that wouldn't meet minimum entry qualifications but have potential. The following modular-based course is currently offered at Bedrock providing the following certifications:

- Transfer guide, (minimum of 3 months);
- Driving guide (1-year course);
- Walking and/or Canoe guide (1-year course)

Facilities: At Conservation Lower Zambezi, a preferred training site of Bedrock Africa, facilities consist of 3 classrooms and 6 chalets (en-suite), accommodating 4 students each or a total of 24 students.

Figure 8 Bedrock Classroom at Conservation Lower Zambezi

6. FEASIBILITY ANALYSIS OF DIFFERENT CTC SCENARIOS

This section provides a summary of different potential scenarios for the operation of the center going forward and an assessment of the financial feasibility of each alternative. By examining different operational strategies and financial scenarios, we provide guidance for any future decision making.

We have constructed a financial model ("model") that ties together some of the most relevant financial indicators related to investments in, and operation of, the Chunga training center. This model is a system of equations, programmed into a spreadsheet, which allows us to analyze how key indicators of financial viability change in response to different combinations of assumptions representing different possible scenarios. The model is a powerful tool that provides answers to many questions, including, but not limited to:

- Could the center be financially viable under different scenarios?
- What amount of support is required from donors to ensure financial sustainability?
- How much revenue is generated under different pricing structures and enrollment scenarios?
- What is the break-even training fee to financially sustain the operation?
- What do cash flows look like over time?
- Is debt/equity financing useful/necessary if the center operates independently through private participation?

We have employed methodology standard to Cost Benefit Analysis when constructing this model. For the sake of brevity and narrative structure, we chose to summarize key inputs, outputs, and calculations briefly and with an emphasis on the rationale underlying their inclusion as opposed to in-depth description of the equations used in the model. [13]

The model, programmed as a spreadsheet, is made available as an accompanying annex to this report.

6.1 Model Structure

Our financial analysis considers the CTC as a financially independent unit, which allows us to easily model a range of scenarios including public management, private ownership or management, or a hybrid PPP modality. Our model includes two other financial perspectives. The first is donors, who we assume will continue to directly subsidize training fees; the second is USAID who we assume could provide a onetime

[13] However, if there are any specific questions or concerns about the actual coding of the model, or any auditing is required, our financial modeling team members are happy to answer follow up questions and offer additional explanation.

grant to help cover the upfront costs of investment in the center. We have included several financing scenarios for discussion at the end of this analysis with comments about potential risk mitigation strategies.

The model calculates revenues for course delivery, which is presumed to be the main source of revenue for the Chunga center. The assessment team has listed the possibility of consulting revenue as an additional source of revenue but chose to omit it from the analysis to keep estimates conservative and because forecasts of such potential revenue would have high variance.

The assessment team split the calculation of costs into several distinct categories. Faculty costs are costs associated with teaching staff, and are allowed to vary with the number of students expected annually. Fixed admin and operations costs are the costs of maintaining the center's operations, which barring any major change to the necessary functions of the on-site team, should not change subject to the fluctuations in enrollment numbers over time. We consider the possibility of hiring grounds keeping staff and administrators to work on the site year-round. Variable administration and operations include the non-faculty costs associated with offering courses to additional students, which includes room and board, the cost of training kits, etc. The investment costs cover infrastructure upgrades and additions. Changes in working capital represents an estimate of the cost of working capital requirements in each period. The calculation of this cost is based on a percentage of operating expenditures in each period.

We also consider the one-time transfer of a grant from USAID to the training center, and the impact this might have on the finances of the center. Since this analysis is used to inform USAID's decisions regarding investment in the center, this transfer can be equal to the investment cost, or calculated as the minimum value necessary for the center to be financially.

The structure of the financial model is summarized in Table 3.

Table 3 Benefits, Costs, and Stakeholders Affected in the Financial Analysis

	Impacts	Donors	CTC	USAID
Benefits	B1 Training revenue	✓*	✓	
	B2 Consulting revenue (Excluded)		✓	
Costs	C1 Faculty		✓	
	C2 Fixed admin & operations		✓	
	C3 Variable admin & operations		✓	
	C4 Investment cost		✓	
	C5 Change in working capital		✓	
Transfers	T1 Grants		✓	✓

*A cost for donors, if subsidizing the fee

6.2 Scenarios

To assist USAID/Zambia with their investment decision, the financial analysis considers four scenarios for reporting the investment criteria: business-as-usual (poor maintenance), basic (maintained capacity), investment in increased capacity, and an optimistic "dream big" scenario. These scenarios build upon each other by adjusting one or two of the key assumptions. Although simplified, these changes, and the resulting outcomes, help in constructing a storyline to inform decision. Each scenario is briefly explained below.

1. **Business-as-Usual (Poor Maintenance):** This scenario reflects the realities of how the center is currently managed. We assume the investment in the center will revive the center to its capacity and that it would continue to operate at a minimum standard that allows at least personnel to receive adequate training. The current practice is to neglect maintenance and allow the facilities to deteriorate while not in use. Because of poor maintenance, the average lifespan of investments is limited in this scenario.

   We briefly discuss this scenario and have included it in the model. However, given that the outcomes of this scenario are not desirable and can be significantly improved with proper maintenance, we do not explore this scenario in significant detail in this report.

2. **Maintain Capacity (Basic):** This second scenario assumes that, upon investment to revive the capacity, the center will properly maintain the assets through improved staffing and management. This scenario provides the basis for illustrative sensitivity analysis as well. Proper maintenance can be an outcome of privatization, public-private partnership, or other financial or non-financial mechanisms to incentivize better maintenance. Alternative financing options and private participation models can incentivize improved management, which are discussed at the end of this section.

3. **Increase Capacity:** The third scenario considered is one where greater investment occurs in the facility, improving its quality, adding capacity for more students, and generating additional demand. In this scenario, we allow for a larger upfront investment in the facilities, and assume higher operating costs linked to full time staff, administration and maintenance. Since we assume that the enrollment numbers will increase, and that the center could offer additional trainings like refresher trainings, the revenue is expected to be higher for this scenario as compared to the previous ones.

4. **"Dream-Big" (Optimistic Scenario):** The fourth scenario to consider is an optimistic "dream-big" scenario, where the center is provided a large pool of funding to invest in delivering a state of the art, high quality product and the demand for training rises significantly as a result. In this scenario, we consider an even larger upfront investment, higher operating budget, and higher demand for trainings.

It is important to acknowledge that the team has not conducted an engineering study or negotiated with contractors to inform the assumptions behind these scenarios. The model, specifically for scenarios 3 and 4, is constructed by the team to facilitate a more insightful discussion and provide an analytical framework for future negotiations. These scenarios help us quantify and understand the effect of poor maintenance, financial commitment required from other stakeholders, potential gains from private participation and the scale of costs and revenues.

6.3 Model Assumptions

This following section describes the key parameters in the model used throughout all scenarios, provides a rationale for the values we have chosen to use in the most "basic" scenarios (1 and 2), where the CTC is able to update its facilities and delivers WPO courses at a level that is slightly above current levels and approaches the upper limit of what its current capacity could support.

- **WPO Training Fees:** This is a parameter with some degree of flexibility and can be chosen by relevant stakeholders based on the scenario. Course fees are one of the most important factors that will determine the financial viability of the CTC. To ensure some minimum level of financial sustainability the center would need to collect fees that are at least equal to the average cost per participant. Course fees are one of the most difficult inputs to accurately estimate until some firm commitments are made by GRZ, DNPW, donors, or some other stakeholder. Course fees must be chosen to satisfy the needs of multiple stakeholders, given that this price will determine the revenue of the center, but also the costs of trainings for the GRZ. Fees should be compared with the cost of similar courses offered by other training centers outside Zambia, as is done in the benchmarking section of this report.

  Given the importance of this parameter, we will examine the results of different fee values when evaluating the financial viability of the center. We begin with a baseline value of $2,000, which is slightly less than the average optimal cost per student estimated by a DNPW Engineer for this assessment.

  This estimate might be low when compared to the $9,500 cost of attending SAWC for a year of training, but such a comparison is imperfect as SAWC is a well maintained and highly regarded institution offering advanced skills, beyond what is currently taught at the Chunga center. This assumed cost might also be considered too high if GRZ is unwilling/unable to pay such fees. Most of the recent training costs (80 percent) have been paid by donors. To provide some context as to whether a $2000 tuition price is reasonable, consider that this cost is roughly 20 percent of the estimated annual wage of a WPO. This means that, relative to the potential multiple years of employment for each WPO trained, fees could be considered relatively low. This price is likely a reasonable approximation for the purposes of this basic scenario analysis but can be considered discussion point amongst stakeholder when planning any actual investment. We conduct sensitivity analysis on this and other parameters to show how financial feasibility is impacted by different choices.

- **Community Scout Training Fees:** Determined by the school. Much like the WPO fee, selection of this fee will need to balance the considerations of multiple stakeholders. We have considered the Bedrock center as evidence that demand exists for trainings, at similar tuition to prices they charge. We choose a baseline tuition of $700, but much like WPO fees this is a parameter which one can tinker with, based on different demand projections.

- **Number of Participants per Year, WPOs:** The number of Wildlife Police Officer (WPO) training participants per year will be a function of both demand and capacity. As part of the site analysis, our team estimated the CTC only has the capacity for 90 students to sleep in beds at a time, which would suggest an upper bound of 180 students enrolled per year in the six-month course, although the center has apparently been operating intermittently at nearly twice that capacity in recent years.

We assume that demand exists at a level to satisfy capacity in the baseline scenario, given that in 2018, Chunga's six-month WPO training received more than 1,500 applications. For the basic scenario which includes some basic maintenance and restoration, we consider a value of 200 participants per year to be a reasonable scenario. This might look like two cohorts of 100 students each year.

Depending on how the center is used in the future, we could imagine the long run average number of participants decreasing, if DNPW fails to enroll WPOs, while we might also imagine an optimistic scenario where enrollment increases to the point where the number of graduates is enough for Zambia to sustain a healthy pool of WPOs over the long term. Given that some estimates for optimal ranger density suggest that Zambia could benefit from 6,000 rangers or more and that the DNPW employs less than 2,000 currently, one could imagine a scenario where the center trains 400 per year for the next decade as a possible scenario. However, this will be constrained by government buy in and support.

- **Community Scouts:** The number of community scouts training participants enrolled per year is a function of demand for the course and the capacity of the CTC. These courses are currently offered, both in the CTC and in other comparable institutions identified in the benchmarking study. Zambia has certification requirements for scouts that make such programs a necessity for the private sector. If demand for scouts exists, so will for certification and training. Capacity constraints are like those discussed for WPO courses, except the scout course's 3-month span means more participants could conceivably attend per year. In our basic scenario, we assume 100 community scout enrollments per year, since enrollment numbers in recent years have been between 50 and 130. However, higher numbers, or zero participants are both conceivable depending on the scenario.

- **Subsidy for Training Course Fees:** Currently, WPO training costs are subsidized by NGOs at 80 percent. We report 80 percent of the tuition fees under each scenario to highlight the magnitude of donor commitment if the subsidy regime continues. This analysis can inform USAID's decision about the institutional and private participation aspects of this opportunity. The operation of the center can become an attractive investment if donors agree to sustain the subsidy for a minimum number of participants and years. This argument is valid for any arrangement that can reduce the demand risk for the center.

- **Refresher Training Fees:** As with other fees, this will need to satisfy the preferences of multiple stakeholders. In the model, we assume the refresher course could be offered as a 1-month course costing $200 but acknowledge that further discussions are necessary to refine the details of such a course.

- **Annual Enrollment for Alternative Courses (Refresher):** Advanced and refresher courses are not currently offered, so we cannot build baseline scenarios using current enrollment numbers. However, we could imagine a scenario where the government demanded that employees take refresher courses on a regular basis. One senior bureaucrat interviewed noted "there is currently more than 1300 LE officers in Zambia without any refresher training. It is too costly to send rangers away for training." Assuming a refresher every 5 years, an average demand of 200 a year might be reasonable. In the basic scenario, we will assume no participants in these courses.

- **Number of Faculty Teachers:** Our model calculates a simplified estimate for the number of faculty employed a linear function of enrollment numbers in each course. This assumption may not adequately capture economies of scale but provides reasonable conservative cost estimates that can later be refined as it becomes clearer how many students and what types of classes the CTC will need to accommodate. One estimate from the DPNW claimed 8 instructors were optimally required in per hundred student class. Another source indicated that current staffing was 9 senior scouts and one ranger. We attempt to maintain conservative estimates, and therefore assume that one instructor is required per 12 students in the baseline scenario, and that one higher level ranger is needed, with additional rangers added every 100 students. As a plan for the center is established, these numbers can be updated.

- **Faculty Monthly Wages:** Wages estimates may vary slightly depending on the source. One source from the DNPW told us that the annual wage was equivalent to $12,500 for rangers and $10,500 for Senior Scouts. Estimates from a DNPW Engineer suggested an optimal cost of $44,538 for 8 instructors teaching a six-month course, which would imply a monthly wage of $927. To remain conservative with our assumptions, we use a monthly wage of $1,000 for all instructors.

- **The Number of Non-faculty Employees:** Regular maintenance, administration, and housekeeping will be necessary to maintain the operations of the facility. We assume that at least four staff will be hired to keep the center running (two full-time maintenance staff and two full-time administrators) for the basic scenario. The number of employees hired could change based on the desired maintenance of the facility and the programming needs.

- **Non-Faculty Employee Wages:** In our model, we use an annual salary of $9,000 for non-faculty employees. This is chosen with the understanding that it is likely to be an overestimate to keep cost assumptions conservative.

- **Fixed Annual Maintenance Costs:** Fixed annual maintenance costs would be the basic repairs necessary to keep the facility in a functional condition. These could include plumbing, painting, system repair, vehicle maintenance, etc. We have assumed that the cost of maintenance will be roughly 2-4% of the investment cost as is standard, and since labor is already accounted for in our model for, we choose from the lower end of this range. We assume a baseline value of $5,000, though this could vary considerably depending on conditions.

- **Fixed Annual Admin Costs:** These costs might include things like internet subscriptions, computer programs, computers for staff, etc. We assume a baseline value of $5,000.

- **Room and Board:** Each student attending a class will require food and accommodations. The food cost has already been estimated by the DNPW engineer for a 100-person WPO course (6 months) as $33,613, so if we assume that the cost structures are somewhat constant, we can calculate a monthly per person cost of approximately $56. Keeping our estimates conservative, we use a baseline value of $60.

- **Investment Cost:** There are several repairs and upgrades to basic infrastructure that will be necessary for the facility to operate as intended. Estimation of this cost is highly dependent on the

goals for the facility. In one unfinished document shared with us, DPNW and Infrastructure Development Unit (IDU) engineers estimated a cost of roughly $90,000 for the "refurbishment" of the facility[14]. However, in some of our scenarios additional capacity is added, the investment cost may be much larger. For example, the addition of a solar-powered water and electricity system might cost up to $250,000, which would require investment of a much larger magnitude. We assume an initial investment of $200,000 would be enough to maintain capacity in the basic scenario. This amount covers the basic refurbishment costs with significant allowance for cost overrun, and allows for the purchase of some other needed supplies/equipment/etc. This value is highly variable across scenarios since it reflects the desired capacities of the CTC going forwards, which is something that will need to be negotiated among the relevant stakeholders. The investment cost will also depend on private sector bids and other market factors.

- **Working Capital:** Working capital is estimated as a percentage of operating costs (all except investment cost). It consists of the funds needed to cover the time gaps between inflow and outflow of cash. The working capital may be 0 or negative if all training fees are paid upfront. In our basic scenario, we have assumed working capital is 10 percent of operating costs.

- **Average Life of Assets & Maintenance Quality:** In our analysis, we consider future revenue streams and costs. However, we do not know what will happen to the center in the future. There are several possible reasons the center may cease to operate in the future including lack of government support, DNPW restructuring, natural disasters, economic or political instability, etc. There is also basic wear and tear on the facilities that will require main assets to be repurchased or rebuilt beyond a certain point in time. To limit our analysis to a time frame where estimates might have some level of accuracy, our analysis assumes the center will operate for a ten-year period. This number should be considered a conservative estimate that prevents the need to forecast excessively far into the future. We also include a maintenance quality estimate, which is a percentage variable that allows lifespan to vary in scenarios where inadequate maintenance is conducted. In the basic scenario, this is set to 100 percent but can decrease to reflect scenarios with facility neglect.

- **USAID Grant:** The model allows for the center to receive a one-time grant, paid for by USAID or other partners. This grant is a transfer to the center, which can improve cash flows from the CTC perspective. We assume no grant in the Basic Scenario.

[14] Draft Report on Assessment of Chunga Wildlife Training College, Shared June 2018

6.3 Scenario 1: "Business-as-Usual" (Poor Maintenance)

6.3.1 "Business-as-Usual" Scenario Description

Note: This scenario is described only briefly as it does not satisfy the needs of key stakeholders and is therefore not recommended. It will not promote the necessary functions of the center, regardless of financial feasibility.

In this scenario, an investment is made in the center to keep it operational at a minimal standard and allow for the delivery of a low number of trainings. One of the main differences between this scenario and others described in this chapter is that we assume subpar maintenance will reduce the usable life of the assets. We assume the lifespan of the assets purchased for the center might only be five years instead of the ten considered in other scenarios. Reduced life of assets translates to reduced service provision, meaning that the output of the center will be significantly less than in other scenarios. Given the need for trainings already established previously, this is unacceptable.

Our study assumes that donor organizations continue to subsidize 80 percent of the training fees of participants. It may be unreasonable to expect such an arrangement to remain sustainable indefinitely, and if the center is in a dilapidated state, donors may redirect the funds towards other national or international centers. From an operational perspective, who pays course fees is not of great significance to a financially independent CTC. However, if the center ties a significant share of its revenue to donor support without any long-term commitments, it may be hard to attract appropriate financing as investors might see this revenue stream as too risky.

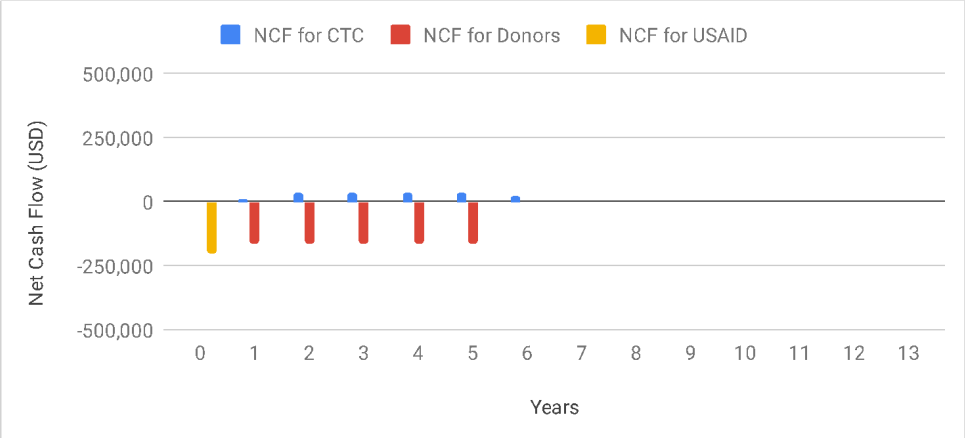
6.3.2 "Business as Usual" Financial Viability Commentary

While a grant from USAID *could* make this scenario financial attractive for the CTC, this scenario is not financially sustainable without the grant. We report two critical net present values (NPV) from this analysis, along with other investment criteria. The first is the "NPV (CTC)," which reports the net financial impact on CTC. The second indicator is the "NPV (Total Investment)," which reports the net financial impact if the investment cost was covered by CTC. The difference between these two perspectives is the USAID grant. This scenario reflects the way the center is operated to date – poor maintenance. In the absence of proper maintenance, a grant from USAID, or another donor, can sustain the center's operation at inefficient levels. This scenario does not require any institutional reform or private participation, it is the "business-as-usual" – easy to implement, but an inefficient use of public funds.

Figure 9 Investment criteria for Scenario 1 ("Business-as-Usual")

Investment Criteria	
NPV (CTC)	$128,404
NPV (Total Investment)	-$71,596
Tuition Subsidy by Donors	$606,526
Investment by USAID	$200,000

Figure 10 Net Cashflows in Scenario 1 ("Business-as-Usual")



6.4 Scenario 2: Maintain Current Capacity

6.4.1 Scenario 2 (Maintained Capacity) Assumptions

Scenario 2 uses similar assumptions to Scenario 1 but adds costs for basic maintenance and a longer expected lifespan as a result. This could be considered the basic scenario, using the parameters already discussed in section 6.3.

Table 4 Assumptions in Scenario 2 (Maintain Capacity)

Assumptions by Course			
	WPO	**Game Scout**	**Refresher**
Fee/Tuition	$2,000	$700	$200
# of Participants	200	100	0
Subsidy	80%	0%	0%
Course Length	6 Months	3 Months	1 Month
Kit Cost	$450	$450	$0
Other Assumptions			
Assumption			**Value**
Senior Scout monthly wage			$1,000
Ranger monthly wage			$1,000
Fixed annual maintenance costs (repairs/paint/etc.)			$5,000
Fixed annual admin costs (computers/internet/etc.)			$5,000
# of Administrators employed			2
Administrator's annual wage			$9,000
# of Groundskeepers employed			2
Groundskeeper's annual wage			$9,000
Room and board for one participant for one month			$60
Investment cost			$200,000
% of costs set aside as working capital			10%
Quality of maintenance			100%
Average life of assets			10
Discount rate			10%
USAID Grant			$200,000

6.4.2 Operating Revenues and Costs in Scenario 2 (Maintained Capacity)

Operating Revenues: In scenario 2, with 200 WPO participants paying a $2000 fee, and 100 Community Scouts paying an average of $700 each, we could expect an annual revenue of $470,000.

Operating Costs: In this scenario, employing 4 full time staff who earn $9,000 each, and providing approximately $10,000 for basic admin and maintenance costs, fixed costs have an average value of $46,000 annually.

Faculty costs are currently estimated at $144,000 annually. We assume one instructor is required per 12 students, which rounding up, means 17 instructors the 200 students enrolled in the 6-month WPO course(s) and 9 instructors for those 100 students enrolled in the 3-month scout courses. This means paying 129 months' worth of salary. We also assume an additional higher-level ranger is hired for every class of 100 students, meaning 2 additional rangers for the 6-month classes, and 1 for the 3-month class, an additional 15 months of salary. This all together comes out to 144 months of salary a year, which at $1,000 a month, means a cost of $144,000 a year for faculty. This may be an overestimate, since there could to be economies of scale that can be exploited, which will not be captured in our linear method of modelling faculty requirements.

Other variable costs, which includes a kit ($450) and food ($60 per person per month) come out to $219,000 annually. The kits comprise $135,000 of this, which might mean that this is an area to examine for potential cost savings. That said, kits could also be more expensive in the future if the trainings include additional content that requires supplies.

Working capital requirements are estimated as 10 percent of the other operations costs, which when calculated using baseline estimates, indicates $40,900 should be held in hand in operations periods. However, since working capital are being used to pay for the costs already estimated, and any excess in hand money is an asset, the true cost of working capital is the opportunity cost of holding this value over the life of the center. Thus, this is typically more of a financing consideration as opposed to an economic cost, and it may be possible to reduce such costs by encouraging timely payment or arranging advanced payment with other stakeholders.

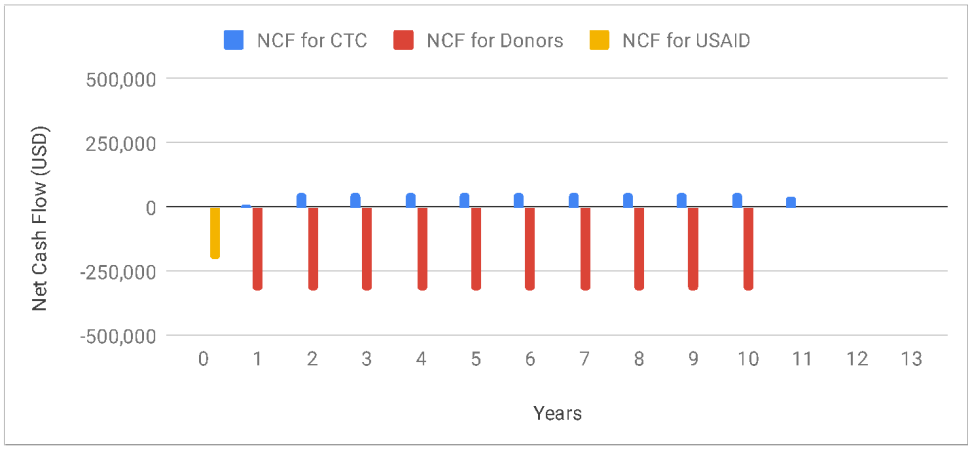
6.4.3 Investment Criteria and Cash Flows Over Time

In this scenario, all costs are assumed by the CTC, USAID provides no grants and donors provide no subsidies. With the assumed values for annual enrollment and tuition fees (200 WPO participants paying $2,000 each, and 100 Game Scouts paying $700 each), this investment is financially viable. Financial viability means that the expected revenue over the useful life of the assets will be enough to cover the investment and operating costs. The revenue net of all costs – the net cash flow – for each year is presented in Figure 12.

Figure 11 Investment Criteria for Scenario 2

Investment Criteria	
NPV (CTC)	$314,769
NPV (Total Investment)	$114,769
Tuition Subsidy by Donors	$1,966,261
Investment by USAID	$200,000

Figure 12 Net Cashflows in Scenario 2



Even without a grant, the cash flows would pay off investment costs quickly. Cumulative cash flow for the investment in this scenario would become positive by Year 5. Figure 13 shows the cumulative cash flow of the project over time.

Figure 13 Cumulative Cash Flow Projections in Scenario 2

6.4.4 Sensitivity Analysis of Scenario 2 (Maintained Capacity)

Given that most of the parameters of the model are likely to vary from our estimates, and many will need to be negotiated amongst various stakeholders, it is helpful to consider how our results and subsequent recommendations would change because of overestimation or underestimation of key inputs.

In the following tables, we calculate the net present value (NPV) of the projected cash flows for each combination of the row and column input values. NPV is a measure of a project's value that takes a sum

of all future costs and benefits, discounted according to how far in the future they occur.[15] If estimated correctly, higher NPVs indicate greater financial potential, which we can use as an indirect measure of financial sustainability. Values less than zero indicate a net loss for the center, meaning that something would need to change, or the center would operate at a loss (either requiring a subsidy or becoming insolvent). The values in each table are color coded, with negative values in red and positive values in green.

Table 5 Investment NPV in Scenario 2, by WPO Fees/Enrollments

		WPO Course Fee				
		$1,000	**$1,500**	***$2,000**	**$2,500**	**$3,000**
# WPO Enrolled	**50**	-798,844	-645,230	-491,616	-338,001	-184,387
	100	-891,543	-584,315	-277,086	30,142	337,370
	150	-1,021,445	-560,602	-99,760	361,083	821,925
	200	-1,114,144	-499,687	***114,769**	729,226	1,343,683
	250	-1,244,046	-475,975	292,096	1,060,167	1,828,238

***Current Scenario**

Table 5 shows the sensitivity of the indicator (NPV) to different choices of WPO fee and different WPO enrolment averages. Examining the table, we see that the project has a positive NPV for the baseline combinations of 200 students paying $2,000 each. However, in the scenarios with lower numbers for either of these inputs, the NPV becomes negative. We can infer that the fees and enrollment will both have a large impact on the viability of the project and should be key points of discussion in any investment plans. Government, or NGO commitments to funding a minimum number of students each year for a defined timespan would anchor revenues and significantly decrease risk.

To better understand what is happening here, consider the net cash flow of a typical operating period.

[15] We use a Discount Rate of 10% for our analysis

Table 6 CTC Operating Cash Flow ($/year) in Scenario 2, by WPO Fees/Enrollments

# WPO Enrolled	WPO Course Fee $1,000	$1,500	*$2,000	$2,500	$3,000
50	-95,500	- 70,500	-45,500	-20,500	4,500
100	-110,000	-60,000	-10,000	40,000	90,000
150	-130,500	-55,500	19,500	94,500	169,500
200	-145,000	-45,000	***55,000**	155,000	255,000
250	-165,500	-40,500	84,500	209,500	334,500

***Current Scenario**

Based on the results shown in Table 6, it becomes clear that the cost and revenue structure of the model make tuition fees below $2,000 unviable, under the assumptions of the basic scenario. However, lower WPO enrollment *is* possible if higher course fees are paid. This is because most costs in the model are variable, meaning they increase or decrease with enrollment numbers. Every additional student enrolled requires a kit, room and board, and faculty for teaching. If tuition does not cover these basic costs, additional students will cost the center money and increased enrollment reduces NPV (see the column where course fees are only $1000 and note how *losses* increase with WPO Enrollment)

Table 7 Investment NPV in Scenario 2, by Investment Cost

Investment Cost $0	$100,000	*$200,000	$300,000	$400,000
314,769	214,769	***114,769**	14,769	-85,231

***Current Scenario**

The NPV is listed for different investment costs in Table 7. Note that keeping other scenario assumptions unchanged, investment costs can increase by more than 50 percent before the project becomes financially

unviable. This suggests there is a significant amount of budgetary flexibility for investment in the center, if the future revenue stream can be secured. This supports our conclusion that one of the most important details to negotiate going forward will be enrollment guarantees, since these can guarantee revenue streams. The level of investment can be negotiated based on projected revenues and costs. Investment costs can also be offset by larger initial grants from USAID or other stakeholders.

6.4.5 "MAINTAINED CAPACITY" - FINANCIAL VIABILITY

Assuming the estimates provided in the basic scenario are reasonable approximations, we expect the center to operate at a revenue surplus and be financially self-sustaining. One key obstacle to this scenario would be the upfront costs of renovation. The "easiest" way to overcome this obstacle, in terms of maximizing chances of financial sustainability, would be for a USAID grant to cover the investment costs, and provide a modest pool of working capital. This would allow the center to avoid borrowing any additional funds since revenue should be sufficient to cover costs after the investment phase. However, if a grant is not possible, the center's future revenue streams could provide the basis for a loan at a reasonable interest rate, or, for investors to invest in an equity arrangement.

Some of the most important inputs identified in the sensitivity analysis are enrollment and course fees, which are the main determinants of revenue. This project could reduce risk significantly by getting GRZ or DNPW to commit to a minimum level of demand, thus ensuring a healthy, secure revenue stream. If the government is unwilling to pay the fees assumed in this scenario, it is possible that donors could be approached to subsidize the price of trainings, as is the current status quo. Donor support or direct payments from the government, if guaranteed over time, can provide the financial stability needed to attract private investors.

6.5 Scenario 3: Increased Capacity

6.5.1 "INCREASED CAPACITY" – INTRO AND ASSUMPTIONS

In this scenario, we assume medium to high upfront investment cost to ensure that the center can provide power, running water, vehicles, etc. We also assume some significant infrastructure additions that increase capacity and allow additional trainings to occur. This includes the addition of one month refresher courses that could be offered within the DNPW or other government organizations.

We also assume that USAID supports the investment through a grant. The amount of grant financing will not affect the cash flows from the investment point of view but will act as a transfer from one stakeholder (USAID or partners) to another (the CTC). This grant could help center attract investment as an independent entity by mitigating some of portion of the risk investors would face. A grant could also allow the center to sustain operations with less total revenue, a scenario that might emerge if stakeholders are unable to fully fund course fees in the future.

The assumptions changed in this scenario, as compared to the Basic (Maintained Capacity) Scenario are highlighted in Table 8.

Table 8 Key Assumptions in Scenario 3 ("Increased Capacity")

Assumptions by Course			
	WPO	**Community Scout**	**Refresher**
Fee/Tuition	$2,000	$700	$200
# of Participants	200 →300	100→200	0→200
Subsidy	80%	0%	0%
Course Length	6 Months	3 Months	1 Month
Kit Cost	$450	$450	0
Other Assumptions			
Assumption			**Value**
Senior WPO monthly wage			$1,000
Ranger monthly wage			$1,000
Fixed annual maintenance costs (repairs/paint/etc.)			$5,000
Fixed annual admin costs (computers/internet/etc.)			$5,000
# of Administrators employed			2→4
Administrator's annual wage			$9,000
# of Groundskeepers employed			2→4
Groundskeeper's annual wage			$9,000
Room and board for one participant for one month			$60
Investment cost			$200,000→$500,000
% of costs set aside as working capital			10%
Quality of maintenance			100%

Average life of assets	10
Discount rate	10%
USAID Grant	$200,000→$300,000

6.5.2 Scenario 3 "Increased Capacity" - Cash Flows Over Time

Figure 14 shows the cash flows for the center over time in this scenario. Note that USAID is providing a grant in year zero to reduce the costs of initial investment. Also note that no Donor support is required in this scenario, under the assumption that enrolment guarantees have been obtained from GRZ, perhaps with the leverage provided by offering a grant.

Figure 14 "Increase Capacity" Net Cash Flow Projections, 2019 USD

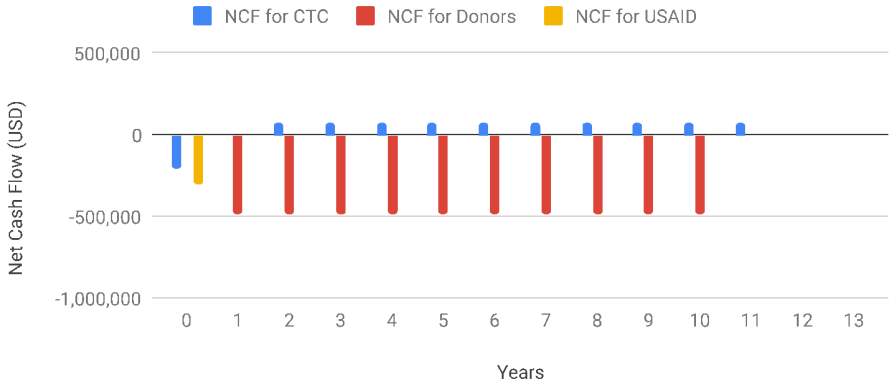


Figure 15 and Figure 16 show the cumulative cash flow from an investment perspective (combining USAID and CTC), and from the CTC's perspective as an independent stakeholder over time, respectively.

Figure 15 "Increased Capacity" Cumulative Cash Flow Projections (Total Investment)

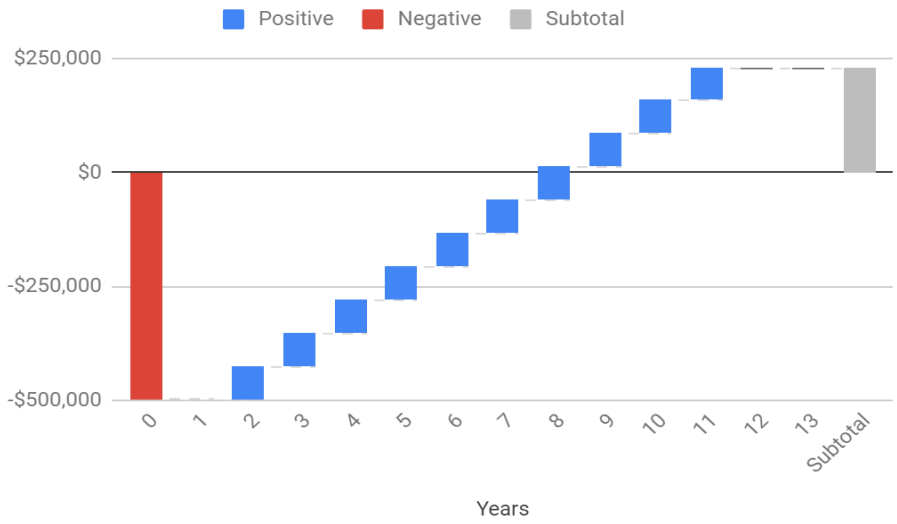
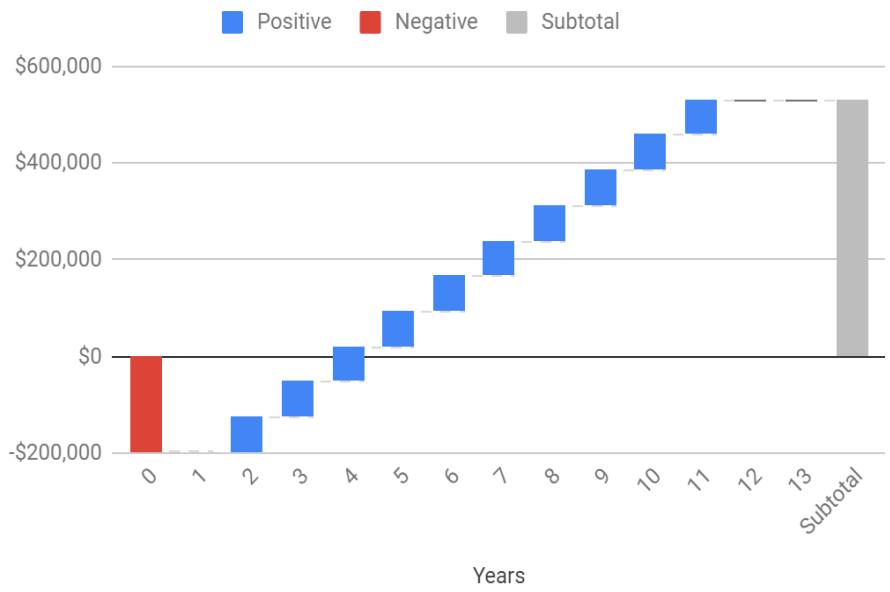


Figure 16 "Increased Capacity" Cumulative Cash Flow Projections (CTC)



Notice how in the first figure, the entire cost of the initial investment is shown in year 1, and revenue streams do not break even until year 8, which is notably longer than other scenarios. However, in the second figure which shows cash flows solely from the centers perspective, payback happens in year 4, which is the result of the USAID grant assumed in this scenario.

6.5.3 Financial Feasibility of "Increased Capacity" Scenario

This scenario also appears to be financially viable.

The initial investment is greater than the previous scenario, because of additions to capacity and the quality of the center. However, because of the larger revenue streams associated with increased enrollment, even in the absence of a loan, the project finances can pay off the initial investment in approximately eight years, ignoring interest or other financial costs. Depending on interest rates and investor interest, the investment in the CTC could be financed through debt or equity arrangements. If private finance is unwilling to participate, the USAID grant can make the project feasible. A grant could make investment more attractive to private partners, effectively reducing the amount of debt the project would start with. Under the assumption of a $300,000 grant we employ in this scenario, the center now only takes four years to pay back its investment.

It is also possible that USAID could finance the project at zero percent interest rather than provide a grant. In this case, the revenues of the center would need to go towards paying back USAID. Given that the project demonstrates financial potential, there are several financing methods that can be employed, as discussed in the next chapter.

6.6 Scenario 4: "Dream-Big"

6.6.1 "DREAM BIG" INTRO AND ASSUMPTIONS

In scenario 4, we consider the possibility that the center offers high quality, highly demanded trainings and expands its capacity significantly. In this scenario, the center attracts private and government sector participants, from both Zambia and other countries. We choose a high upfront investment cost to ensure that the center can invest in all the possible needs of a college offering high quality trainings and provide comfortable accommodations that make participants enjoy their stay and refer the center to future participants.

In this scenario, investment costs might include a fleet of multiple vehicles, upgrades to electrical and water systems, the addition of multiple sleeping buildings to increase capacity, a block of classrooms, modern IT infrastructure with on campus Wi-Fi, a computer lab for training programs like SMART, an armory and shooting range, and additional housing for administration and instructors. The investment cost in this scenario would be magnitudes greater than the rehabilitation costs discussed in previous scenarios.

Operations costs would likely be much higher as well. We can assume that more full-time staff would be hired, including administrators, grounds keepers, and additional security and cooking staff as well (for the purposes of using the existing model structure, we combine these staff with admin and groundskeepers, and assume all will be paid similar wages). We also assume that the larger version of the center might require significantly larger fixed expenditures for admin and maintenance, needing to cover costs like satellite internet connections, subscriptions to online services, research publications, etc. We scale them up by a factor of 10.

Table 9 Key Assumptions in Scenario 4 ("Dream Big")

Assumptions by Course			
	WPO	**Community Scout**	**Refresher**
Fee/Tuition	$2,000→ $2500	$700→ $1000	$200
# of Participants	200→400	100→200	0→400
Subsidy	80%	0%	0%
Course Length	6 Months	3 Months	1 Month
Kit Cost	$450	$450	0
Other Assumptions			
Assumption			**Value**
Senior WPO monthly wage			$1,000
Ranger monthly wage			$1,000
Fixed annual maintenance costs (repairs/paint/etc.)			$5,000→$50,000
Fixed annual admin costs (computers/internet/etc.)			$5,000→$50,000
# of Administrators employed			2→8
Administrator's annual wage			$9,000

# of Groundskeepers employed	2→8
Groundskeeper's annual wage	$9,000
Room and board for one participant for one month	$60
Investment cost	$200,000→$1,000,000
% of costs set aside as working capital	10%
Quality of maintenance	100%
Average life of assets	10
Discount rate	3%
USAID Grant	$200,000→$500,000

6.5.2 "Dream Big" Scenario Operating Cash flows

In this scenario, the operation costs increase significantly because more full-time employees are hired, and more annual maintenance and admin are needed. However, the revenues also increase with more students enrolled paying course fees, meaning the net cash flow in operations periods is more than $200,000 annually.

6.6.3 "Dream Big" Scenario Cash Flows Over Time

Figure 17 Net Cash Flow Projections for Scenario 4 ("Dream-Big")

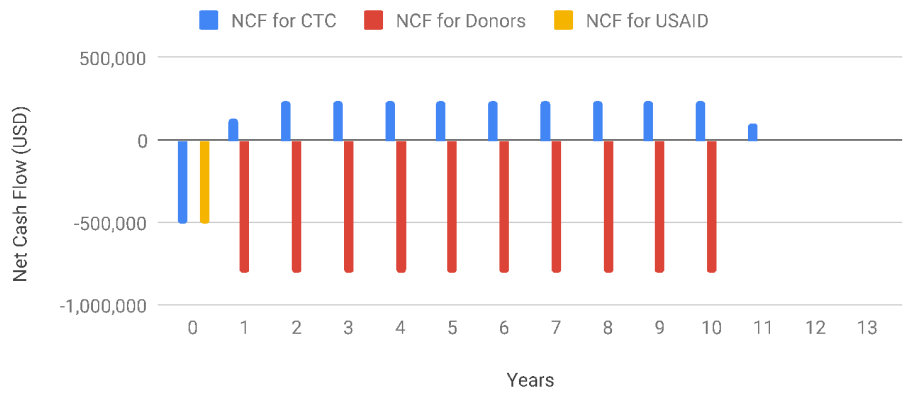


Figure 18 Cumulative Cash Flow Projections in Scenario 4 ("Dream-Big")

The million-dollar investment in the center pays in a period of 5 years, which is not notably different from the pay off period of other scenarios. This suggests that the project's main limitation to scale up is not initial investment (within reasonable bounds) but the revenue streams. If revenues are over estimated, the higher operating costs of this scenario may cause problems.

6.6.4 "Dream Big" Scenario Financial Viability Commentary

Based on the assumptions of this scenario, the CTC would remain financially viable and could operate as an independent entity with the ability to self-finance through instruments like debt or equity. However, this scenario depends on enrollment numbers more than double those of the basic scenario and assumes a noticeable price increase for both the WPO and Scout courses to reflect the improved facilities. This scenario may or may not be possible, but it is included in our analysis as inspiration for what a "strong" version of the center might look like and what revenue and cost flows might be required to make it a reality.

This scenario is purposely optimistic, requiring a large investment, but resulting in strong revenue and the highest net operating cash flows of all the scenarios discussed. Cash flow estimates are large enough in this scenario that the payback period is roughly in line with the "basic" scenario and "business as usual" scenario estimates. Like the other scenarios, large upfront costs will require financing, either through debt or equity arrangements with private partners or through assistance from USAID and other Partners. With a scenario of this magnitude, USAID could help to finance the initial investment by using the promise of donor matching to leverage a grant to optimal effect and help cover the remainder of the project's costs either by guaranteeing private investments or by providing a low-interest loan themselves.

The potential financial viability of a large investment in the center, as in all other scenarios, hinges on demand and willingness to pay. If the government and other stakeholders do not support the expanded

capacities of the facility, then such investment will be quite risky and financially costly. This underscores one of our key recommendations, which is that a first step towards creating a sustainable "center of excellence" is to obtain commitments from stakeholders to fund a set level of output for a reasonable time-period (5-10) years. The details of investment or expansion can then be determined, on the basis of this guaranteed revenue flow.

6.7 Summary of Assumptions and Key Indicators by Scenario

Table 10 and 11 summarize the key assumptions and analytical results of each potential scenario.

Table 10 Key Assumptions by Scenario

	Scenarios		
Assumptions	**2 (Maintain Capacity)**	**3 (Increase Capacity)**	**4 ("Dream-big")**
WPO Tuition	$2,000	$2,000	$2,500
WPO Enrollment	200	300	400
Community Scout Tuition	$700	$700	$700
Community Scout Enrolment	100	200	200
Refresher Tuition	$200	$200	$200
Refresher Enrolment	0	200	400
Fixed annual maintenance costs	$5,000	$5,000	$50,000
Fixed annual admin costs	$5,000	$5,000	$50,000
# of full time employees	4	8	16
Investment	$200,000	$500,000	$1,000,000
USAID Grant	$200,000	$300,000	$500,000
Quality of maintenance	100%	100%	100%

Table 11 Key Results by Scenario, 10% discount rate

Scenarios			
Results	**2 (Maintain Capacity)**	**3 (Increase Capacity)**	**4 ("Dream-big")**
Annual operating NCF	$55,000	$73,000	$239,000
Investment NPV	$114,769	-$102,720[16]	$410,402
CTC NPV	$314,769	$197,280	$910,402
Investment Payback Period (Years)	5	8	5

The main conclusion of the assessment team with respect to the three scenarios analyzed in this section is that there is significant potential across different project sizes, and, that revenue streams are the key variable that will guide any investment recommendations. In each scenario, assumptions about salaries, operating costs, and revenue lead us to forecast positive cash flows for operating periods. The investment costs can be covered by several stakeholders, including USAID, either through project financings (debt or equity) that would be repaid from future revenues, or through grant assistance, from USAID or other partners. Positive NPVs from the CTC perspective means that, at the level of the grant included in each scenario, financial sustainability should be possible. A negative NPV from the investment perspective (as seen in scenario 3) means that in the 10-year period we have considered, investments might not quite pay for themselves. This does not identify this scenario as infeasible, but rather identifies a scenario where private finance in isolation may not be enough to support the investment, and additional funding through grants may be essential. In the two scenarios with positive investment NPVs (2 and 4), it may be possible to finance investment entirely through private investors without any grant, although a grant obviously makes the odds of achieving financial sustainability higher and may provide the "hook" that leads to positive participation from other stakeholders.

The key to understanding if any scenario is to be achieved is to determine the magnitude of demand from the government. From here, enrollment fees and numbers can be negotiated, and the potential of a grant can be used as an incentive for the firm commitments. Dependent on these, an investment can be structured that resembles the scenarios described in this section. Financing arrangements can follow based on the nature of the projected cash flow. Our model can be used during the negotiations and planning stages to show what level of grant and enrollment fees will be necessary for different levels of demand, and stakeholders can hone the key parameters until the situation is acceptable to all parties.

The model also highlights the importance of incentivizing proper maintenance. Although a grant can make a poorly maintained facility financially sustainable, it is a wasteful use of funds. Privatization is not the only solution to incentivize private maintenance, however, it is an effective one if designed properly.

[16] Please note that a negative financial Net Present Value (NPV) only reflects lack of financial viability based on the assumptions for training fees and enrollment numbers. The financial NPV of many initiatives with significant external benefits are negative.

7. PRELIMINARY CONCEPT DESIGN

In Section 6, our Feasibility Analysis highlighted three different feasible scenarios for rehabilitation of the Center, based on level of ambition: 1) basic repairs to maintain current capacity; 2) investment in increased capacity; and 3) the creation of a Center of Excellence. The analysis highlighted two key findings that can inform USAID/Zambia's decisions about the nature and scale of their investment in renovating the CTC.

1. Given certain requirements are met, the operation of CTC as a financially independent entity is feasible. Depending on the operational structure going forward, a range of financing options can be considered for the renovation and operation of the CTC.

2. The most critical factor that determines the financial viability of CTC is demand for training. WPO training demand is distorted by donor presence, limiting government's long-term budgetary commitment to such training.

As a part of the project financing arrangement, USAID may be able to leverage its position and obtain commitment from other donors and the GRZ for sustained enrollment in WPO courses at CTC over the next five to ten years. Depending on the number of enrollments, USAID/Zambia can make an informed decision about the magnitude of investment in CTC.

An investment opportunity with manageable risk can attract private investors. Once the demand risk is addressed, the investment or the operation, or both, can be handed over to private participants through various forms of partnerships. The right choice of partnership depends on the appetite of GRZ and their institutional capacity for financial and operational contracts with the private sector.

As for any form of private participation, the process requires clear regulatory processes, from certification and standards, to audits and reporting requirements.

7.1 Financing Options

The right choice of financing option will depend on the existing investment environment in Zambia, the risk mitigation strategies available to private parties, and the risk associated with this investment.

- **Government:** User fees currently charged for any additional courses of the CTC will, by law, be paid into the 99 Account of the GRZ, and go into general funds, and investment in CTC is at the discretion of the government. Given that the center currently relies on donor funding and the government benefits without providing substantial resources, there is no reason to expect that adequate funds will materialize for CTC operations. Under these conditions, it is unlikely that the government will provide additional investment.

- **African Parks:** Financing option 2 would place the CTC under the aegis of the proposed African Parks/DNPW co-management agreement for the Kafue NP, should it be signed. Under such an

agreement, it is expected that African Parks would pay 20 percent of revenues from Kafue to DNPW. If African Parks manages CTC directly, 20 percent of its revenues would presumably go to DNPW. At the same time, CTC operations would become an overhead cost for African Parks. If CTC will need to charge only nominal fees to be affordable to the conservation community, a 20 percent overhead to DNPW may require CTC to raise its rates beyond the ability or willingness to pay.

The development of CTC as a financially viable institution would be subsumed under the long-term management objectives of African Parks in Kafue NP, and would have to compete with other urgent priorities. The question becomes to what extent African Parks is willing and able to take on a long-term commitment to the capacity building issue, or whether it would view this as "mission creep". If African Parks embraces the principle of an autonomous CTC and works to improve its management, it could, using its existing partners for Kafue (including The Nature Conservancy and GRI), carry the day for CTC. It will take time to tell if a broad approach to conservation training would be deployed at CTC under this arrangement. The ongoing negotiations with GRZ are moving slowly through the government system.

- **Full Privatization:** Under this scenario, a private company would take over operation of the CTC facility under license from the GRZ. The study determined that there are legal prohibitions on private law enforcement in Zambia (which extend to training of law enforcement personnel such as WPO training), that would effectively preclude privatization of the actual training. Much of the training at CTC would be in-service training and continuous education under the responsibility of employers, in most cases the DNPW. A market for private training may emerge over time (e.g., for game ranching). However, the creation of this market will require donor support. A private training center would not be well positioned to raise funds, and it would effectively need to compete directly with the conservation community for operating funds from donors. This would not be supported and therefore this scenario is considered not to be viable by key informants.

- **A Public-Private Partnership:** Option four is to manage the CTC through a public/private partnership (PPP) involving the DNPW, the conservation community in Zambia, and additional stakeholders such as TEVETA and the SAWC. This approach is the most compatible with the outcomes of interest identified by stakeholders, including the DNPW and its NGO partners. A management partnership provides structure for the design and delivery of capacity building, a sense of ownership by participants, the means for prioritization of approaches and the prevention of duplication of efforts, and a framework for adaptive management as the CTC evolves.

Of these options, the assessment team believes that the PPP may have the greatest likelihood of success. Partnership with the private sector, when done right, can provide an efficient and sustainable means for the operation of public assets such as CTC. However, for PPPs to be successful, the investment must be financially viable, and risk must be appropriately management. An investment opportunity with manageable risk can attract private investors. In this case, the largest source of risk is demand. Once the demand risk is addressed, the investment or the operation, or both, can be handed over to private participants through various forms of partnerships.

To initiate such a process, USAID, together with other donors such as GIZ and the DNPW, could convene a consultation to discuss this, provided that the GRZ is prepared to commit to providing the enabling

policies for such an experiment in governance to function. Financial support to make the CTC operational would "kick-start" the partnership. Emphasis should be on planning and needs assessment, and basic infrastructure, especially lighting and clean water.

Some continued donor support will be necessary to put the system in place and secure basic facilities for expansion beyond law enforcement training, but with sound management, robust demand for services, and a committed group of partners, dependence on donor support for operations should diminish as the management matures.

This scenario is not without risks and does not provide a solid guarantee of funding. Risks include failure to arrive at a shared vision, competing demands for control of the facility, failure of the GRZ to provide the enabling environment, failure to meet TEVETA facility standards and competition from other facilities. However, this arrangement offers the best opportunity to optimize the use of the facility and support a comprehensive system including accreditation of the facility and certification of participants.

7.2 The Case for Building a Center of Excellence

A Center of Excellence is a facility with a focus on an area of competence, with a goal of driving leadership for best practices and producing continuous organizational improvement. This requires that such a center provide more than intellectual leadership; it must be evidence-based, and provide continuous measurement of performance, at the level of individuals, organizations, and systems.

There is an emerging, but not yet explicit, sense within Zambia of what "excellence" is required. The revitalization of the CTC can, under the right conditions, serve to catalyze the process of arriving at a consensus among conservation stakeholders about capacity, leadership, and priorities, and identify appropriate indicators for their measurement.

The global crisis of wildlife crime is driving most of the support for conservation capacity building, and preserving wildlife resources by preventing wildlife crime is the top priority. It is less well recognized, but equally important, to recognize that the alienation of communities from wildlife and nature is an underlying cause. Consequently, it will be important to strike a balance between reactive and proactive strategies for conservation. For this reason, it is useful to think of the CTC as a system for solving the challenges of biodiversity conservation, rather than as a physical place.

This system requires the engagement of the full range of stakeholders involved in conservation, from legislators to residents in the GMAs, and embrace government agencies, the tourism sector, game ranchers, hunters, and foresters - all of which require professional standards to achieve optimal use of the resource base.

It may be useful to visualize this system as a key-ring, holding the keys to multiple problems faced in conservation in Zambia. The oldest, largest key is WPO training, clearly a fundamental condition for nature conservation. But other keys are needed as well. An important key to biodiversity conservation is ecosystem management at the landscape level, incorporating the management of ecosystem services for human and natural benefit. The management of landscapes across legal jurisdictions and social organizations, such as ethnic groups, poses huge challenges, the likes of which we are only beginning to

understand. Thus, knowledge management, the ability to retain, retrieve, and reuse information for positive outcomes, is central to the system for capacity building.

A system for capacity building must have the ability to retain, reproduce, and share knowledge to develop both human and institutional capacity. This is a very tall order, especially when starting with the modest offerings of the CTC. However, the strategic partnerships upon which this approach is based offer the best chance to "bake" capacity building into Zambian conservation.

Not all conservation training needs to be physically located at the CTC. In many cases, it will be more effective to train *in situ,* either using mobile units, or through partner organizations. For example, it may make little sense to host some kinds of game ranching training at the CTC campus; mobile training units can be deployed to communities and private operators for training best done on site. Some Zambian NGOs, such as Conservation Lower Zambezi, have training facilities and could provide specialized training under a franchising arrangement.

It is important that the training, wherever offered, is provided according to an agreed upon and enforced level of quality backed by the CTC, even when offered by a CTC partner organization.

Over time, several keys can be added to the key-ring, including the certification of programs described above. Other unmet needs may include technical training in planning for climate adaptation, and fire management. Partners can be expected to emerge for the highest priority training, especially once the reputation of the CTC is established.

7.3 Milestones on the roadmap to a PPP Center of Excellence

Milestone 1: A public/private partnership is formed with an independent board of trustees and budget autonomy.

Milestone 2: The partnership is recognized by the GRZ as a public benefit initiative, with the right to retain fees levied and other revenues for use in facility maintenance and development, staffing, and curriculum development.

Milestone 3: The GRZ provides direct support to the CTC partnership through a budget appropriation or through a surcharge on national park fees.

Milestone 4: The CTC operates the existing upgraded facility at >85percent capacity.

Milestone 5: The CTC receives its first accreditation from TEVETA, possibly in conjunction with the SAWC.

Milestone 6: Ground is broken on a new campus extension for additional short-term training, workshops, and research.

Milestone 7: The CTC undertakes a comprehensive conservation capacity needs analysis, and develops indicators for the measurement of progress in meeting capacity building targets.

Milestone 8: The CTC receives mutual recognition from SADC for conservation training, such that graduates of specific courses at CTC are recognized as having met equivalent training standards in any SADC country.

Milestone 9: The CTC enters into a cooperative agreement with one or more international academic or research institutions such as the Smithsonian Conservation Biology Institute or one of the Max Planck Institutes, to conduct research and/or host training.

Milestone 10: The CTC, through a partnership with Zambian and international academic institutions, becomes an affiliate of a degree granting institution.

8. SUMMARY AND CONCLUSIONS

This document has presented the findings of fieldwork, desk review, and consultations with stakeholders related to the Chunga Training Center. The document and the attached financial model have also described potential paths forward and provided some guidance on the optimal financial and legal structuring of the entity.

In its current state, the CTC does not have the capacity to effectively recruit and train new WPOs and community scouts, to retain and develop existing rangers, or to do so in a manner that generates revenue. To build this capacity, the CTC needs improvements in two areas: the addition of new trainings, workshops and student exchange programs to enhance the workforce, and new or drastically upgraded infrastructure and training facilities.

Beyond these improvements, the assessment team also found demand for the creation of a new research station for visiting researchers, and support for established tourism training. The fulfilment of these needs will enhance the quality of the center, as well as create additional revenue streams to provide further support for the necessary trainings and infrastructure improvements.

Our financial analysis shows that the center can be considered a financially viable investment under different financing and operational scenarios. Although any poor investment can be made financially viable using grants, incentivizing proper maintenance is the best approach for financial sustainability. The model also highlights that the tuition and enrollment numbers are among the most critical assumptions for the financial viability of CTC. Given the historical fluctuations in the enrollment numbers at CTC, without firm commitments on enrollment, it is hard to assume that CTC is an attractive option for private investors.

Therefore, we recommend that USAID considers an investment in CTC if two critical conditions are met:

- An agreement is reached with GRZ, alone, or with other donors, where they guarantee continued demand for training (subject to CTC meeting specific requirements).
- CTC can operate in a financially independent manner at manageable risk, which is necessary for any form of private participation in the operation of the training center.

Moving forward, USAID should consider co-convening with the GRZ, the government of Germany, and other interested donors for a consultation on the terms of the partnership. Given the strong likelihood that the SAWC will begin operating at CTC, and that African Parks will be playing a principal role in the management of Kafue NP, these institutions could be considered anchors of the partnership. During consultation, it is recommended that commitments to funding enrollment fees for a targeted number of trainings is a priority. Funding could come from a combination of stakeholders but should in some part come from GRZ/DNPW to demonstrate their commitment to the success of the center.

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ANNEX II: TERMS OF REFERENCE

SUMMARY OF ACTIVITY

The purpose of the Feasibility Assessment is to undertake a detailed and independent feasibility study of the Chunga Ranger Training Center to inform USAID/Zambia's decisions concerning potential future support for the Center. The assessment will determine if a business case can be made for the continued operations and sustainability of the Center, as well as recommend the most cost-effective option(s) for improving and maintaining the physical infrastructure. Specific activities will include:

- Characterization of the current use of the Center – nature of training, duration, number of trainees, recent trends;
- The identification of training needs and opportunities not currently being met in Zambia or southern Africa in the areas of protected area management, law enforcement, and/or conservation-compatible community development in and adjacent to wildlife management areas and protected areas;
- The identification of issues and options for investment in the Center, constraints to the design or implementation of a commercial strategy for the Center arising from the policy, legal, organization and financial environment within which the school operates;

A roadmap of measures to upgrade the Chunga Center to be able to meet requirements for commercial viability including:

- Short and long-term goals for the development of a multifaceted training facility
- Definition of the functional requirements and interrelationships between activity areas (considering efficiency and multiple uses, safety, workflows, schedules)
- Activities (current and proposed) and the functional spaces required
- Secondary and support areas (kitchens, storerooms, ablutions, dormitories etc.)
- An appropriate facility management model
- Analysis of financial requirements for the recommended options for commercial viability.

- A preliminary identification of opportunities to create a "Center of Excellence" in Zambia with the potential to be transformational for the future of conservation in the country and region, in the form of a "road-map" of a potential process:

- How to build consensus around a vision
- How to identify champions in Government, civil society, and among potential donors
- How to identify potential markets to be served and willingness to pay

TECHNICAL APPROACH

STAGE 1: DEVELOPMENT OF ACTIVITY AUTHORIZATION REQUEST

Based on the kick-off telephone discussion with USAID/Zambia on December 20, 2018, the LEAP III team will provide a partial Activity Authorization Request (AAR) for review and approval (i.e. this document) by January 15, 2019. This AAR outlines the background, technical approach, as well as the anticipated timeline and budget for the assessment. The AAR serves as a working document and can be refined and edited per USAID/Zambia's comments and feedback.

Based on the feedback the LEAP team received on January 29, 2019, comments and edits have been incorporated and will be sent back for review and approval on January 31, 2019. The LEAP team still has questions about the timeline of this Activity and would like to arrange a quick call to discuss next steps.

Based on a call with USAID/Zambia on February 5, 2019, the LEAP III team has updated this AAR based on the guidance of the Mission to reduce the budget and thus the scope to accommodate the funding available.

STAGE 2: DESK REVIEW AND BENCHMARKING STUDY

2.1 Initial consultations with USAID: Upon approval of the Activity Authorization Request (AAR), LEAP III will conduct a kick-off call with USAID/Zambia to finalize the work plan and schedule.

2.2 Desk review and stakeholder interviews: Utilizing Integra's established relationship in Zambia, the team will conduct a review of the available literature, data and reports and interview key stakeholders by phone. Deliverables will include:

- Preliminary multi-stakeholder (i.e. private sector, public sector, academic and NGOs) needs assessment.
- Preliminary SWOT analysis of the current operation of Chunga Ranger Training Center
- Documentation of available current training options offered at Chunga Ranger Training Center and an analysis of gaps in offerings

2.3 Regional benchmarking study: Review and identify a representative sample of similar facilities across Southern Africa. Based on this review, conduct desk review and phone interviews with the most suitable facilities to assess best practices in 1) infrastructure, 2) approaches to training and the linkages between training and effective institutional development, and 3) business models and pricing for services. Deliverables will include a regional benchmark study assessing current practices in infrastructure, capacity building and commercial viability.

STAGE 3: SURVEY DESIGN AND FIELD WORK PREPARATION

3.1 Survey Design: Based on the outcome of Stage 1, LEAP will develop a methodology and survey instrument for key informant interviews (KIIs).

3.2 Stakeholder Identification: LEAP will work with USAID/Zambia and DPNW to identify a diverse range of priority stakeholders, including Chunga Ranger Training Center Staff, the Department of National Parks and Wildlife, other relevant public sector actors, other development partners, private sector actors, NGOs, and academic institutions.

3.3 Stakeholder invitations: To maximize the efficiency of the time spent during field work, LEAP will work with USAID/Zambia to send out stakeholder interview requests in advance.

STAGE 4: FIELD WORK AND STAKEHOLDER ROUNDTABLE

Over a ten-day period, Integra will conduct KIIs and select FGDs in Lusaka and Kafue National Park (to be agreed with USAID during Stage 2). The team will begin and conclude with kick-off and exit briefings with USAID. The field work will cover:

4.1 Facilities review: A facilities review addressing the current effectiveness of the Center, its institutional capacity (including possible expanded offerings), operations & maintenance costs, access to human resources, major challenges that inhibit effective operation, and the physical infrastructure for the Center. This will involve an inspection of facilities, review of personnel qualifications and areas of expertise, review of the operating budget of the Center, and a review of the training syllabus.

4.2 Enabling environment review: An assessment of the enabling environment for the expansion of offerings, including commercial offerings, according to Zambian law and policy and in view of the evolving management structure of Kafue National Park. This will include the relationship between the Center, Kafue National Park, and the Department of National Parks and Wildlife (DNPW), and the availability of options for modifications in the governance and management of the Center. The relationship between the Center and key stakeholders working in the Kafue National Park will also be examined.

4.3 Training needs review: A training needs analysis for Zambia will explore the needs and resources of the surrounding region, addressing protected area management, law enforcement and anti-poaching operations, anti-poaching technologies, human/wildlife conflict, and community-based management will be conducted. This will include visitor services, including for private operations, such as safari guide training. This will consider the socio-economic conditions and the need for social inclusion, including women's training needs and the issue of youth employment opportunity. This will be accomplished through interviews with governmental and intergovernmental officials, representatives of civil society, and representatives of private wildlife management operations. For areas outside of Zambia, the assessment will only be preliminary, based upon information acquired through existing documentation, questionnaires, and telephone interviews.

4.4 Financing options review: An initial assessment of alternative sources of revenue and financing instruments on the part of private sector actors, NGOs, donors, and government will also be considered. Informed by examples from similar facilities in the region, and motivated based on the results of training needs review (4.3), the team will aim to identify options for enhancing the Center's financial performance, including by offering additional regular courses with a minimum guaranteed number of paying or funded participants, or by transitioning into a financially independent entity through public or private investment.

STAGE 5: FINANCIAL SUSTAINABILITY ANALYSIS

The final report will include a discussion on financial sustainability measures. The financial sustainability analysis considers forecasts for the costs and revenues under alternative scenarios and demonstrates how the sources of revenue perform against various operation and maintenance costs including, not limited to labor, material, and working capital. The analysis explores the required levels of capacity utilization and/or income to secure the financial sustainability of the facility. This analysis will help stakeholders to better understand the organizational and economic implications of the different operational options for the facility.

STAGE 6: DRAFT FEASIBILITY ASSESSMENT REPORT

Within four weeks of the conclusion of the field work, LEAP will produce a draft feasibility assessment report. This will include:

Main report:

- An executive summary
- Background and methodology
- An assessment of the current state of the Center
- Identification of near-term options to upgrade the Center, with an emphasis on economic viability
- Preliminary Concept Design
- Necessary resources to achieve these options
- A financial feasibility analysis
- Defined potential stakeholder roles for each option
- A review of strategies that other GRZ agencies have utilized to enact similar entrepreneurial pursuits.
- Recommendations

Annexes:

- Benchmarking study comparison (within available resources) of the infrastructure of comparable training and conference centers in the region that comprise a representative sample of similar facilities.
- Catalog of existing training opportunities and gap analysis.
- A Road Map to creation of a "Center of Excellence"

ANNEX III: KEY INFORMANTS

NAME	ORGANIZATION	POSITION
James Milanzi	African Parks	Country Director Zambia
Anne Simmons-Benton	Arizona State University	Executive Director, Int'l Development
Dori Mcdougall	Bedrock Africa	Owner/operator
Imakando Sinyama	CollaborateUp	Country Representative
Dale Lewis	COMACO	CEO
Ian Stephenson	Conservation Lower Zambezi	CEO
Rachel McRobb	Conservation South Luangwa	CEO
Dr. Royd Vinya	Copperbelt University	Dean
Matimba Changala	DFID	Prosperity Projects Manager
Adrian Kaluka	DNPW	Ecologist
Alick Yawawa	DNPW	Works Supervisor
Buster Shimbawo	DNPW	Wildlife Police Officer
Chris Kaoma	DNPW	Principal Planning Officer
Dale Mabika	DNPW	Senior Wildlife Police Officer
Fred Siakabeya	DNPW	Engineer
Jarton Shawa	DNPW	Senior Conservation Officer
Kennedy Mingwala	DNPW	Senior Wildlife Police Officer
Lamek Mumba	DNPW	CTC Ranger
Lusizi Mwale	DNPW	Principal Warden, Operations
Matthews Mushimbalume	DNPW	Senior Warden, Operations
Maybin Mwanza	DNPW	Park Ranger
Meriam Namushi	DNPW	Area Warden, Kafue
Paul Zyambo	DNPW	Director
Sidney Miskoti	DNPW	Principal WPO, Senior Instructor
Georgina Kamanga	DNPW	Wildlife Law Enforcement Investigator
Nils Meyer	ENRM Southern Africa	KfW Project Manager
Clive Poultney	Env. Sustainability Agency	CEO
Mpande Mindenda	Forestry Department	Principal Forestry Officer
Karen Laurenson	Frankfurt Zoological Society	Deputy Director, Africa Program
Ian Hoad	Game Rangers International	Special Technical Adviser
Achim Bernhart	German Min. of Foreign Affairs	Ambassador
Christoph Ritz	GIZ	Head of Dev. Cooperation, Zambia
Wrigley Shimbwanga	GMA	Community Scout
Isaac Kapangela	Ila Lodge	Guide
Jacques van Heerden	Ila Lodge	Owner/Operator
Moses Mwale	Ila Lodge	Guide
Khayalami Ngono	Industrial Development Corp.	Sr. Treasury and Equity Analyst

Henry Mwima	Jastis MGMT. & Consulting	Principle Consultant
Edjan van der Heide	Kafue NP Operators Assn	Chair (owner of Mukambi Lodge)
Meredith Gore	Michigan State University	Professor
Morgan Mulamata	Mulendema CRB	Bookkeeper/Secretary
Krissie Clark	PAMS Foundation (TZ)	President
Kim Young Overton	Panthera	Research Scientist
Barry Bell-Crossl	Safari Hunting Outfitters Assn	Chairman
Marshall Jones	SCBI	Sr. Adviser
Kennedy Bowa	TEVETA	Curriculum Development Manager
Prisca Chela	TEVETA	Training Quality Assurance Inspector
Victor Siamudaala	The Nature Conservancy	Country Director Zambia
Adam Pires	TRAFFIC	Project Manager, KAZA CWC
Dr. Harry Chabwera	University of Zambia	Senior Lecturer
Steve Johnson	VukaNow	Chief of Party
Ian Robinson	Wildlife Producers Association	Director, Wildlife Program
Moses Nyirenda	WWF Zambia	Coordinator, Protected Areas
Annika Viera	(independent)	Consultant

ANNEX IV: TEVETA MINIMUM BUILT ENVIRONMENT STANDARDS

From TEVET Standard 3.1: Registration of TEVET Institutions

* Indicates that CTC does not meet this criterion;

⧫ Indicates that this is not applicable to the current facility)

5.1 CLASSROOMS

5.1.1 All classrooms should be cross-ventilated.

5.1.2 Each class room must have at least one chalkboard or whiteboard *

5.1.3 Minimum area per student is 1.25m^2

5.1.4 Each intake of a given program must have its own classroom

5.1.5 Approved documents from the Buildings Department or Local Authority *

5.1.6 Buildings Inspector Report *

5.1.7 The class room area should have a provision of toilet facilities with the ratio of one toilet per 11 students with provision for hand washing *

5.2 WORKSHOPS

5.2.1 All workshops should be cross-ventilated with opening windows on both long opposite walls. ⧫

5.2.2 Each workshop must have a chalkboard or a whiteboard⧫

5.2.3 Fully stocked first aid kit in each workshop⧫

5.2.4 Appropriate workbenches⧫

5.2.5 Area per student should be 4.25 m^2. ⧫

5.2.6 At least one fire extinguisher per Workshop / Laboratory. ⧫

5.2.7 Clearly marked gangways in every workshop⧫

5.3 HOSTELS

5.3.1 For study bedroom the minimum area per student is 4.67 m^2 *

5.3.2 One toilet / shower per 11 students with provision for hand washing *

5.3.3 Copy of the Public Health Inspectors Report *

5.3.4 Copy of the Buildings Inspectors Reports *

5.3.5 Evidence of Change of Use of Premises from Local Authority for Boarding Houses ⧫

5.4 LIBRARY

5.4.1 Reading area will be 1.25 m^2 per student *

5.4.2 The Library should accommodate at least 40percent of the student population *

5.4.3 There should be 1 copy of the reference books per 5 students *

5.4.4 There should be 1 copy of the recommended textbooks per 2 students*

5.5 DINING

5.5.1 In the case where the Institution is offering catering services to the students:

5.5.1.1 The Institution shall have the appropriate cooking utensils *

5.5.1.2 A Dining Area will accommodate at least 60percent of the student population @ 0.35 m^2 *

5.5.2 In the case where the Institution is providing self-catering services, the Institution shall put in place ♦

- A designated cooking area ♦
- A stove with a provision of one plate per student at a given time ♦
- A wash basin with running water for at least 11 students per basin♦
- Appropriate dining furniture♦
- Dining area of 0.35m^2 per student♦
- A copy of the Public Health Report♦

5.6 LABORATORY ♦

5.6.1 Laboratory area will be at least 4 m^2 per student

5.6.2 Acid resistant work benches

5.6.3 Adequate laboratory equipment and apparatus as specified in the curriculum

5.6.4 A stool per student in a Laboratory

5.6.5 Non-corrosive sinks

5.6.6 Appropriate laboratory taps

5.6.7 Fume Extractor or Hood

5.6.8 Fire extinguisher

5.6.9 Cross ventilation

5.6.10 First Aid Box

5.7 COMPUTER LABORATORY ♦

5.7.1 There shall be 1 chair per student

5.7.2 There shall be appropriate computer laboratory furniture

5.7.3 A computer per student at a given time

5.7.4 A fully stocked First Aid Box

5.7.5 A serviced Fire extinguisher

5.7.6 Appropriate and safe wiring system

5.7.7 Cross ventilation and dust free

6 TOOLS AND EQUIPMENT ♦

6.1 One tool box for that trade per student or a maximum of 2 students / tool box

6.2 Maximum of three students for each power operated tool.

6.3 One set of apparatus or utensils per maximum of 2 students

6.4 Maximum of two students per computer.

6.5 One electronic typewriter per student.

6.6 One mechanical typewriter per student.

7 FURNITURE

7.1 There shall be an appropriate classroom chair for each student and 1 desk for maximum of 2 Students. *

7.2 There shall be a bench for every 2 students in the workshop. ♦

8 STORES FACILITIES

8.1 Shelves with proper labeling *

8.2 Storage of items according to materials *

8.3 Adequate lighting system *

8.4 Appropriate documentation in place *

8.5 Fire extinguisher *

8.6 Clearly marked Gangways *

9 SAFETY, HEALTH AND ENVIRONMENT FACILITIES

Every Institution shall have the following safety, health and environment facilities:

9.1 Serviced Fire Extinguishers / Sand buckets *

9.2 Stocked First Aid Boxes *

9.3 Fire Assembly Point *

9.4 Fire Blankets *

9.5 Displayed workshop rules ♦

ANNEX V: FINANCIAL MODEL

See attached Spreadsheet: