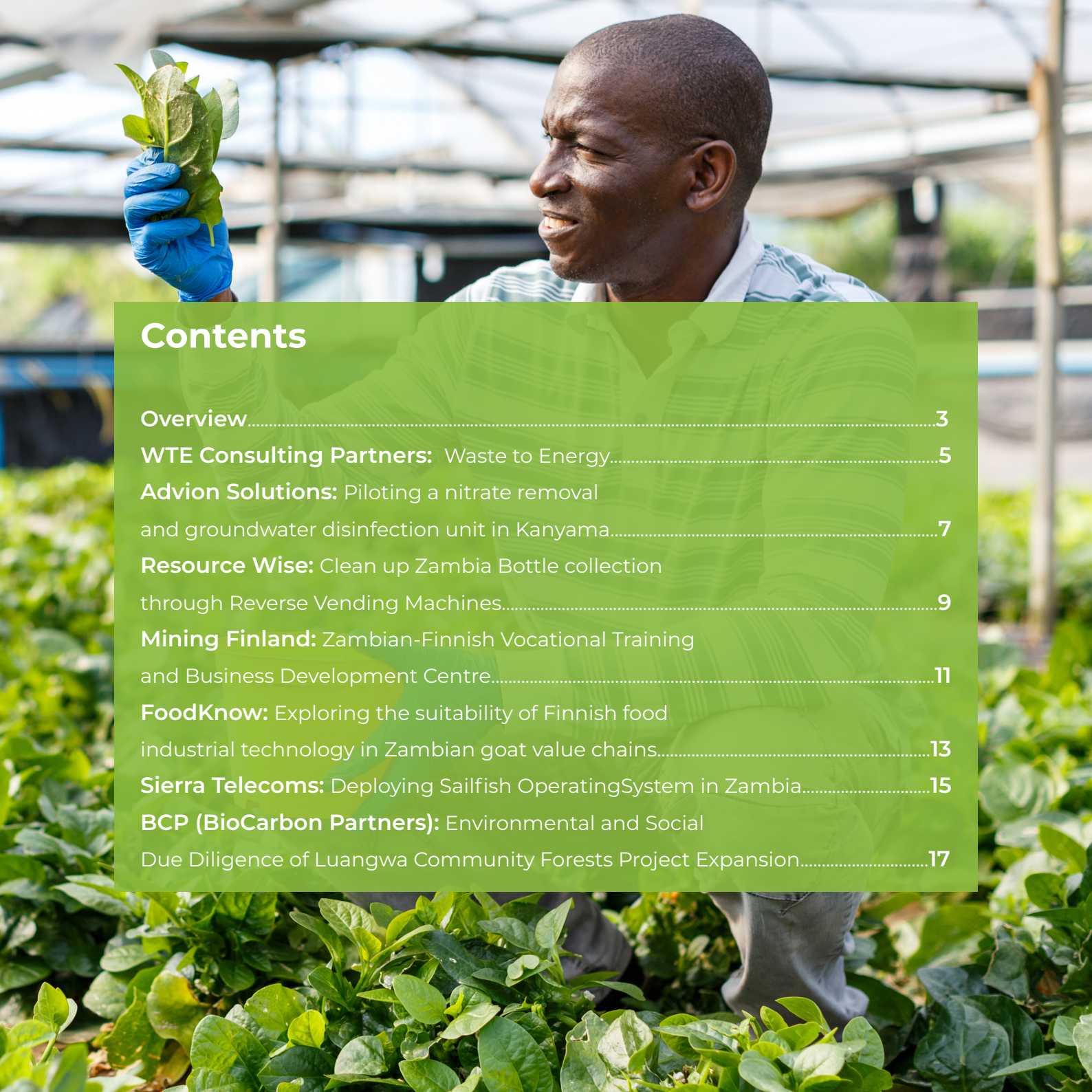
AGS | BUILDING BUSINESSES AND PARTNERSHIPS

# Feasibility Studies Supported by AGS

Accelerated Growth for SMEs in Zambia (AGS) Programme supports Zambian and Finnish SMEs to explore new markets and partnerships in Zambia, Finland and Southern Africa. In 2018-2019 AGS supported seven feasibility study projects in Zambia.

Ministry of Commerce, Trade and Industry of Zambia

Ministry for Foreign Affairs of Finland



# Contents

# Overview

During its Inception Phase in 2018-2019, AGS supported Zambian and Finnish SMEs to explore business opportunities in the Zambian market by commissioning a set of feasibility studies. This was set up as an agile mechanism for companies to validate the product-market fit and relevance of their products, services, and business ideas. The unique opportunity gave Zambian and Finnish companies a chance to form bilateral partnerships and explore joint business ideas. With AGS support, the selected SMEs examined value chains, identified key stakeholders, and evaluated the demand for their offering.

AGS ran two Calls for Proposals and selected a total of seven studies for support. A maximum of 75% of project costs were financed by AGS while the companies committed to a minimum of 25% in self-financing. Perceptible development impact – economic, social, or environmental – was a key condition for funding. The funded projects were asked to demonstrate their alignment with Finnish development priorities and cross-cutting objectives.

The feasibility studies served as a Go / No-Go Tool for the selected SMEs, but equally helped AGS in its early stages to observe the level of interest and demand for the Programme. The Calls for Proposals allowed AGS to scout the type of Finnish companies interested in the Zambian market, and Zambian companies eager to expand their operations in the country. This paved the way and gave shape to the Programme design as whole.

AGS funded

**7**

feasibility studies during the inception phase (2018-2019).

With AGS support, the selected SMEs examined value chains, identified key stakeholders and evaluated the demand for their offering.

The studies prompted a wide range of results from the recognition of attractive business opportunities and partnerships to the rejection of existing assumptions and identification of points for further research. The purpose of validating – or denying validation of – business initiatives was fulfilled for seven individual cases. The following sections discuss the findings of the seven supported feasibility studies.

A maximum of

**75%**

of project costs were financed by AGS.

Do you have an existing product or service that you want to bring a new market? Do you operate in one of the following sectors?

- **Agribusiness**
- **Forestry**
- **Renewable Energy**
- **Circular Economy**
- **Mining**
- **(ICT or Education)**

AGS continues to facilitate market access and partnership building between the Zambian and Finnish private sectors. More feasibility studies will be funded over the course of the Programme supporting Finnish businesses entering the Zambian market, and Zambian companies entering domestic, regional, and Finnish markets.

For more information and guidance on how to apply, visit **www.agsprogramme.org** or contact us at **info@agsprogramme.org.**

# **WTE Consulting Partners:**
# Waste to Energy Plant

## Partnership

The Waste to Energy Consortium is a group of Zambian SMEs operating in the waste management sector formed as a response to the AGS feasibility study opportunity. The proposed Finnish technology partner Valmet is a leading global developer and supplier of waste to energy and other specialised technologies, automation and services for the pulp, paper, and energy industries.

Insufficient solid waste management has emerged as a national priority in Zambia due to increasing health and environmental issues and decreasing quality of life due to rubbish in public spaces. Currently, only 40% of waste in Lusaka is collected and 6% is recycled. Due to growing urbanisation and informal settlements, establishing professional solutions to waste management is becoming a pressing and urgent issue. To address this, the WTE study assesses the feasibility of developing a Waste to Energy Plant in the Lusaka District of Zambia.

Waste to Energy (WTE) offers a way to turn the enormous volumes of waste into useful bioenergy, reducing the environmental problems associated with landfills and indiscriminate dumping of waste. Europe is currently the leading continent in utilising WTE technology, while first movers in Africa are following the trend. The first African WTE plant was built in Ethiopia in 2018 and construction plans are in place in Kenya and Ghana. The total amount of municipal solid waste from both legal and illegal landfills in Lusaka is currently at 1,260,000 tons per year. A complete WTE plant would be able to handle up to 45% of the waste from the landfills, i.e. 567,000 tons of waste annually.

**40%**
of waste in Lusaka is collected

**6%**
is recycled.

Lusaka is currently at

**1,260,000**

tons of solid waste in landfills per year.

A complete WTE plant would be able to handle

**45%**

of the landfill waste in Lusaka.

## Findings

As a first step, the study recommends the construction of a small dry waste plant in Lusaka, with support to the development of a holistic waste management process from collection, sorting, logistics and delivery to a central depository site. The initial investment costs for a small WTE unit will be significantly lower than that of larger ones, making the pilot project more lucrative for investors to join. The plant should be modular and scalable for future expansion subject to certain conditions. The pilot plant will have a waste capacity of approximately 2.4 tons/hour with the ability to manage supplied waste from selected areas only. Due to the limited electricity production capacity, heat supply may be a profitable option for the WTE at pilot stage. Alternatively, the plant can be located next to an industrial site to provide electricity for the neighbouring operations specifically.

The group suggests for the pilot plant to be partly financed by donors to mitigate risks. A number of issues remain to be finalised including off-take agreements with ZESCO. In the long run, it is envisioned that the WTE project can positively influence environmental conditions, create jobs, increase energy security, and save costs in waste disposal. The Finnish technology partner, Valmet, has offered their support throughout the project.

# Piloting a nitrate removal and groundwater disinfection unit in Kanyama

## Partnership

Advion Solutions Ltd is a Finnish company specialising in circular economy business models in emerging markets with focus on water and waste management, renewable energy, and healthcare services. Advion partnered with Zambian Envaros Ltd, an innovative Research and Capacity Development Hub working in water security, water supply and environmental sanitation, impact of mining and climate resilience. The partnership further included Industrial Water Ltd (Teollisuuden Vesi Oy), a Finnish water treatment service company with expertise in process microbiology, and Better World Energy, a Zambian environmental business research hub and incubator.

This Finnish-Zambian partnership is set out to tackle the widespread issue of groundwater contamination in Lusaka. It is estimated that 86% of Lusaka's groundwaters are nitrate contaminated, caused largely by open defecation and poor sanitation infrastructure in the city. The project's pilot location, Kanyama, has suffered from the spread of a number of infectious diseases caused by chronic groundwater contamination.

It is estimated that

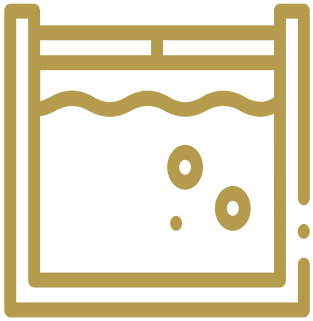
**86%**

of Lusaka's groundwaters are nitrate contaminated

In their quest towards better water security, the Advion-led partnership plans to pilot a Nitrate Remover Disinfection unit (NRD) to disinfect groundwater at the Kanyama water trust. The pilot unit will be a 40 ft container which holds the process control and sampling systems, on-line measurement of water quality parameters, microbial analyses, and remote-control systems. The pilot unit will be produced in Finland by Industrial Water Ltd while the following "zero-series" units will be assembled in Zambia. Ultimately, the serial production is foreseen to be commenced locally through a technology transfer programme with selected Zambian production partners.

## Findings

The feasibility study concludes that Industrial Water Ltd's technological solution is applicable and relevant in the Zambian context. The equipment and system design are operational in Zambia, the unit can be manufactured locally and the market demand exists for years to come. The study further outlines a business model including several stakeholders and forecasts an earning structure that is expected to benefit all parties. Next steps include attracting Nordic/western investors and confirming the Zambian production partners. The sense of ownership and commitment from local parties will be of utmost importance for the successful roll-out of the project.



The pilot unit will be a 40 ft container which holds the process control and sampling systems.

RESOURCE WISE
Making the most of all Resources.

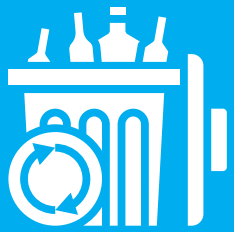
# Clean up Zambia - Bottle collection through Reverse Vending Machines

## Partnership

Resource Wise is a Zambian SME providing innovative circular economy solutions. The company has a history in pursuing the management of post-consumer waste, including Bottle Return Systems (BRS). Key Finnish partners in this project are TOMRA, a global leader in producing and maintaining reverse vending machinery, and PALPA (Suomen Palautuspakkaus Oy), a non-profit company administering the collection, recycling and reuse of packages in return systems.

This Zambian-led project embarked on a mission to introduce a formal Bottle Return System with the prominent use of Reverse Vending Machines in the Zambian beverage sector. Management of post-consumer packaging such as PET bottles is currently unsystematic in Zambia, relying to a large degree on informal practices with little involvement from manufacturers, distributors, retailers and consumers. Due to limited separation of waste at source, the waste tends to be mixed, thus reducing the value obtained when collected and sold to recyclers.

Finland was chosen as a case study providing lessons learnt from a context where a Reverse Vending Machine based Bottle Return System operates well. Since the introduction of the BRS, Finland has been able to recycle 93% of its beverage industry bottles.



Finland has been able to recycle

**93%**

of its beverage industry bottles.

At the point of purchase, consumers pay a small additional deposit for each bottle which will be reimbursed when empty bottles are brought to a collection point and inserted into a Reverse Vending Machine.
The feasibility study consisted of a desk review and interviews with Zambian manufacturers of beverages, retailers, policy makers and waste management practitioners, as well as a fact-finding study visit to Finland.

## Findings

Resource Wise Zambia are willing to lead the process and provide technical assistance for the introduction of a Bottle Return System in Zambia. The Extended Producer Responsibility (EPR) regulations introduced in 2018 seek to compel producers in Zambia to carry more responsibility for products throughout the life cycle, including post-consumer recycling measures. However, the study proposes additional Government engagement through the appointment of a not-for-profit central deposit scheme operator to coordinate a Bottle Return System. The scheme operator will design the money flow in consultation with manufacturers, importers, retailers, and all external service providers. A bar code recording system will be used to recognise PET bottles that are part of the scheme. The Government is further suggested to impose tax levied on beverage containers with exemptions for the containers that are part of the official system.

Resource Wise envisage working closely with Finnish partners PALPA and TOMRA, tapping in their experience and expertise at running a formal Bottle Deposit Return System. Commitment from finance providers and local stakeholders including Zambia Environmental Management Agency, major retail stores, beverage companies, the recycling industry and value chain partners will be essential for the project to succeed.

MINING **FINLAND**

ima engineering

# Zambian-Finnish Vocational Training and Business Development Centre

## Partnership

Mining Finland programme promotes business opportunities for its member companies operating in the mining sector. The programme is one of Finnish government's growth programmes funded by Business Finland. The study was jointly conducted with IMA Engineering, a Finnish mining technology provider. The project is envisioned to be implemented in cooperation with Copperbelt University in Zambia.

The mining industry in Zambia is currently not reaching its full potential due to lack of lack of knowhow, transparent information, and strategic supplier networks. Zambian mining suppliers are largely stuck in the role of traders of foreign products, as in-country production of supplies is scarce. Local small scale mining operators struggle with capital needed for exploration and lack of machinery.

The Mining Finland -led partnership aims to support business linkages between the Finnish and Zambian mining sectors, promoting technology and knowledge transfer. This study explores the establishment of a Mining industry focused Vocational Training and Business Development Centre in Zambia. The long-term vision is to create a permanent model to support Zambian capacity building and job creation, while facilitating Finnish SMEs to connect with Zambian stakeholders and to generate profitable business.

## Findings

Demand for the establishment of a training and business development centre exists among both Finnish and Zambian stakeholders. The initiative is considered feasible, while some details still remain to be investigated. Zambian and Finnish authorities, companies and educational institutes have shown strong interest to cooperate, and funding sources have been recognised both internationally and nationally. The centre would enable Finnish companies to have permanent representation in the Zambian mining industry and create pathways for the promotion of Finnish services and knowhow throughout Southern Africa. The initiative would address the prevailing gaps in skilled mid-level workers, entrepreneurial skills and technology driven productivity demands in the Zambian mining sector. The study team emphasises the importance of long-term planning and matching the needs of Zambian citizens, Zambian economy, companies operating in Zambia, Finnish industry's needs and the available financial and educational resources.

Since the first study, the project has attracted further partners and continued with a second feasibility study, funded by Mining Finland. The partnership was strengthened with Polar Partners Ltd, a Finnish company specialized in designing, setting up and supporting the establishment of Finnish-based schools worldwide, and Kajaani University of Applied Sciences (KAMK). The second study outlines a set of stakeholders' motivations, preferences, roles, responsibilities and expected financial involvement in the initiative. Key stakeholders include Finnish and Zambian SMEs in the mining sector, a number of Finnish educational institutes, the Copperbelt University, Northern Technical College (NORTEC), Zambian Ministry of Higher Education, Mining industry corporations operating in Zimbabwe, Zambian Development Agency, AGS, PEPZ and Finnish educational consultants.

Further research is still needed before the initiative is ready for piloting. Open questions include the shape and form of the long-term business model, the location of the centre, the availability of skilled trainers and details of the training curricula. Potential for incubation or acceleration activities connected to the centre should be explored further. Finally, a thorough analysis of the legal and regulatory environment around the establishment of the centre is needed.

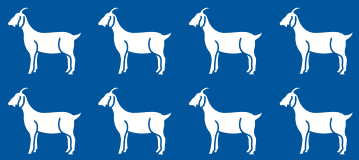
# FoodKnow

## Exploring the suitability of Finnish food industrial technology in Zambian goat value chains

### Partnership

FoodKnow Ltd is a Finnish company providing advisory services for businesses operating in food value chains. FoodKnow partnered with a set of Finnish partners including Noireco Ltd, JPT Industria, Kometos Ltd and Into Seinäjoki Ltd. The feasibility study was conducted in collaboration with a number of Zambian organisations such as the Ministry of Livestock and Fisheries, Goat Task Force, Musika, Summit Consulting, Heron Business Services, Breeding Impuls Zambia and University of Zambia.

The FoodKnow feasibility study conducts a holistic assessment of the Zambian goat meat value chain. Motivation sparks from the considerable demand that Saudi-Arabia has shown for Zambian goat meat. Negotiations on export arrangements have been ongoing for several years between the two countries – yet exports have not been initiated to date. Saudi-Arabia has stated 1 million goats to be their annual target from Zambia alone. FoodKnow identifies action points, cooperation partners and financing possibilities to strengthen the value chain and move closer to this goal.



Saudi-Arabia has stated

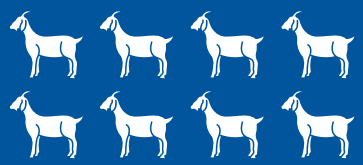
**1,000,000**

goats to be their annual import target from Zambia alone.

FoodKnow Ltd recognised an opportunity to utilise Finnish technology and know-how in managing the hazards and challenges related to large-scale export of meat or live animals between continents. To reach high levels of export, development and up-scaling needs to take place through all stages of the value chain: farms, feed production, meat production, logistics, research, development and training, marketing, financing, local expertise.

## Findings

The analysis concludes that significant gaps in production capacity exist. The challenges range from small farm sizes to poor connection between farmers and R&D and lack of information on export opportunities and financing options. FoodKnow Ltd outline points of improvement and couple them with suggested Finnish expert organisations whose technologies and know-how can be utilised to overcome each challenge. These include e.g. appropriate slaughterhouses and machinery, and solutions for feed production. Furthermore, the study provides a comprehensive stakeholder map outlining the parties whose commitment will be essential in raising Zambian goat meat production to an international level. Ample interest towards this project was discovered amongst the Zambian stakeholders, particularly the Ministry of Livestock and Fisheries. Next steps include engaging with Saudi-Arabian purchasers and confirming buy-in from all Zambian stakeholders, ultimately followed by a pilot project of 200 000 goats exported per year.



A pilot project would export

**200,000**

goats per year

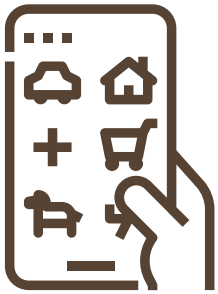
SIERRA GROUP

# Deploying Sailfish Operating System in Zambia

## Partnership

As part of the South African based Sierra Group Investments, the Zambian leg Sierra Telecoms Ltd focuses on development of Smart Cities and digital transformation projects. The Finnish partner Jolla Ltd owns the Sailfish Operating System and offers it to customers for an annual license fee, including engineering and support services. Further partners include the SMART Zambia institute (a Division under the Office of the President implementing e-government solutions) and the large Zambian telecommunications provider, Zamtel.

This study assesses the feasibility of deploying the Finnish developed Sailfish Operating System (OS) in Zambia. The platform would enhance e-governance, facilitate secure government-to-government communication, and develop a localised financial ecosystem powering and enhancing mobile revenue payments and collections. Sailfish OS is an independent Linux-based open-source operating system developed by Jolla Ltd. The modern mobile OS can be used for a number of embedded devices and includes a set of functionalities such as secure email, storage, VPN, messaging, calendar, contacts, and mobile device management. It encourages the development of a localised transactional ecosystem that retains all digital payment revenue within the local market, promotes local skills in programming, coding and relevant applications powering the digital economy. Sailfish OS is the only OS offering full source code access, and it is completely free from Google. The offering includes a customised solution with built-in support functions.



"The modern mobile OS can be used for a number of embedded devices and includes a set of functionalities such as secure email, storage, VPN, messaging, calendar, contacts, and mobile device management."

The group of Zambian-Finnish partners recognised an opportunity in deploying Sailfish OS in Zambia's 2020 Census on Population and Housing. Due to the sensitivity of Census data, Sailfish OS was seen as the only credible security oriented and independent alternative to Google's Android and iOS whose core business models are to collect user data – compromising privacy on a national level. Sailfish OS is also argued to be the most attractive solution in financial and political terms. The case for this proposition is supported by the adoption of the same platform for the Russia 2020 Census and its attendant benefits. In addition to the Government, target customers in Zambia include banks, fintech and retail companies.

## Findings

The launch of Sailfish OS in Zambia was deemed feasible in technical and operational terms. With the collaboration of Smart Zambia Institute, active presence, and resourcing of Sierra Zambia operations, Zamtel's network and distribution capability, and technical and project support from Jolla in Finland, the critical operating infrastructure is in place to commence the project. The project plan includes developing local capacities to ensure sustainability of the initiative. Initial discussions to engage Finnish universities in this front are in place.

However, despite interest from the Government of Zambia, gaps in the commercial model remain. The study team proposes a bilateral structure between the governments of Zambia and Finland to provide soft funding for the initiative.

# Environmental and Social Due Diligence of Luangwa Community Forests Project Expansion

## Partnership

BCP (BioCarbon Partners) is a Zambian social enterprise and leading African carbon offset developer with a mission of "Making Conservation of Wildlife Habitat Valuable to People". BCP specialises in the implementation of REDD+ projects (Reducing Emissions from deforestation and forest degradation) by partnering with local communities to create long-term conservation projects that uplift the lives of local communities and raise environmental awareness. BCP works in collaboration with a number of governmental and civil society institutions including government institutions, community associations, private sector organisations, research institutions, civil society organisations, and local and international non-governmental organisations

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This study was conducted by The Landscapes and Livelihoods Group as an environmental and social due diligence of the expansion phase of BCP's Luangwa Community Forests Project (LCFP). The LCFP is a large-scale grouped REDD+ project in Eastern and Lusaka Provinces, covering over 950,000 ha of land, a majority of which are community forests within game management areas. BCP and the Luangwa Community Forests Project have attracted interest from Finnish investors.

The LCFP project covers over

**950,000**

ha of land.

## Findings

While the project adhered to a number of environmental and social best practices, a few gaps were identified. A systematic Environmental and Social Management System was found to be missing. It was suggested that a more comprehensive Livelihood Restoration Plan is developed to further strengthen BCP's attempts to ensure that communities are not negatively affected by the project. The project aims to follow internationally and nationally required FPIC-principles: REDD+ activities implemented on communal lands shall have Free, Prior and Informed Consent (FPIC) of local communities. The study points out that this should be further enforced in certain areas. The report concludes that BCP is in a good position to develop an Environmental and Social Management System. Stakeholder support and resource allocation will be key in completing the System and continuing the project in a sustainable and inclusive manner. BCP has since appointed TLLG (The Landscapes and Livelihoods Group) to assist them to close the gaps identified during the Due Diligence and assist with the ESMS with the aim of having all necessary steps in place by 2023.

**AGS** supports business-minded initiatives that create long-term partnerships between Zambian and Finnish players. We encourage the start-up and implementation of MSME-led projects with economic, social and environmental value. The sectors we support are **agribusiness, forestry, renewable energy, circular economy and mining, with ICT and education as cross-cutting sectors.** To apply for feasibility study financing, visit **www.agsprogramme.org** or contact the AGS team at i**nfo@agsprogramme.org / +260 760 633 618.**

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