

Request for Proposals: Geothermal- Aquaculture Sector Feasibility Study

1. ASSIGNMENT SUMMARY

Title of assignment	Geothermal- Aquaculture Sector Feasibility Study
Location of assignment	Monze- Lochinvar National Park
Sector	Food and Agriculture
Reports to	Sector Lead- Food and Agriculture
Anticipated start date	September 15, 2021
Duration of contract	Open for consultants to suggest

2. ABOUT PROSPERO

Prospero is a UKaid-funded private sector development entity designed to incentivise investment in innovation that will change the way that market systems work and create new growth opportunities for MSMEs. We focus on the following high-growth potential sectors:

- **Food and Agriculture:** Increasing competitiveness and value of Zambian food products in end consumer markets.
- **Mines and Mining Services:** Increasing the sustainable and inclusive economic impact of mining in Zambia.
- **Tourism and Hospitality:** Increasing the value and proportion of tourist revenues captured by local businesses.
- **Investment Services:** To increase MSME access to appropriate financial services by strengthening the Zambian finance and investment ecosystem
- **Business Services:** To increase MSME access to appropriate non-financial services to stimulate business innovation and growth

We partner with leading private sector players, government agencies and business associations to design synergistic initiatives that support strong business model development, promote transformative financial services, attract quality investors and foster enabling business and investment environments. We work at the intersection of market system development and the impact investment ecosystem, recognising that enterprise growth at scale requires access to substantial and sustainable sources of commercial finance.

3. BACKGROUND TO THE FOOD AND AGRICULTURE SECTOR

The food and agriculture sector in Zambia is currently dominated by low value mono cropping of maize, with very little processing and value addition of crops in-country. To achieve inclusive and

sustainable growth, the limited competitiveness of the in the sector is the key problem that needs to be addressed. Prospero aims to support the sector to increase the presence and competitiveness of Zambian origin food products in end-consumer markets- local and international.

The program aims to address investment constraints more systematically to stimulate business growth by developing innovative financial products to address constraints to growth and providing technical expertise and capacity building to SMEs, so they are able to transition and access diverse commercial investment. Prospero therefore envisions that at the end of the five-year programme, the agriculture sector will have integrated inclusive value chains in diverse sub-sectors allowing MSMEs to be able to have access to diverse investments to successfully compete on the local and international markets, provide food products and services and contribute to poverty reduction in Zambia.

Prospero's Food and Agriculture sector comprises three 'initiatives', defined as sub-sectors, or market systems that the programme aims to focus on. The three key initiatives include:

- **Small livestock** (e.g., goats, fish, pigs);
- **Fruits and vegetables** (e.g., tubers, high-value vegetables, export fruits and vegetables).
- **Legumes** (e.g., soya, beans, groundnuts).

The **Small Livestock** sector is characterized as a fragmented value chain with many MSMEs having limited scale and therefore only able to supply informal markets. The program aims to commercialize and formalise the small livestock sub-sector through the strengthening of businesses in breeding/hatching, aggregation, value addition and export to bolster the value chain which is expected to increase participation of SMEs (including emerging farmers). This is expected to result in more poverty reduction, job creation and income opportunities for rural populations (especially farmers), women and youth. In addition, the initiatives will build local, regional, and international market opportunities for small livestock. The program aims to work across 5 constraint areas within the small livestock sector:

- Access to inputs and information to farmers
- Aggregation and storage
- Processing/value-addition
- Compliance to local and export standards, certification, and industry governance
- Access to finance for increased investment and growth

Prospero also aims to create opportunities for MSMEs to innovate and adopt climate smart agriculture products and systems (e.g., use of renewable energies, fertilizers, fruit trees, legumes) that can further enhance the climate resilience of the sector.

4. CONTEXT OF THE ASSIGNMENT

The current fish production in Zambia does not meet the country's domestic demand, which has led the country to import from countries such as China and India. In 2015 Zambia's fish imports by volume was estimated at 77,199 metric tonnes which increased to 126,345 metric tonnes in 2016 (Department of Fisheries, 2017). The aquaculture sector has been designated as a priority sector for investment in order to meet the deficit for domestic consumption and also to take advantage of the export opportunities to the region. Furthermore, aquaculture has been recognized in the country's

development agenda as a means to promote employment and a source of livelihood for small scale farmers (PMRC, 2018).

Kalahari GeoEnergy Ltd (“KGE”), a private limited company registered in Zambia has partnered with Prospero Zambia to develop direct applications of geothermal energy in Zambia. Kalahari GeoEnergy is currently exploring geothermal energy in the Bweengwa River Geothermal Resource Area of Zambia. This geothermal resource area covers the southern part of Lochinvar National Park and traditional lands sparsely occupied by the pastoralist Tonga ethnic group to the south of the Park.

KGE will be developing a geothermal energy pilot plant with sustainable applications of direct applications together will a small absorption chiller and the possibility of a pilot fertilizer plant. Kalahari GeoEnergy has identified opportunities for various uses and application of geothermal heat in dairy, aquaculture, legumes, coffee, and horticulture production in Zambia. The utilization of geothermal energy for agriculture could contributed to creating employment, improve access to energy and diverse economic activities in rural areas. Most importantly, unlike fossil fuels, geothermal energy is a renewable energy resource that does not emit the greenhouse gases that cause climate change and can play a role in enhancing resilience to impacts of climate change.

Kalahari GeoEnergy and Prospero have partnered to explore opportunities for establishment of an aquaculture park that would utilize geo-energy in fish production. Therefore, to explore the viability of the aquaculture park, Kalahari Geo and Prospero wish to conduct a study to assess the feasibility of establishing a geothermal heated aquaculture park in Monze, Southern Province, Zambia.

5. OBJECTIVE OF THE ASSIGNMENT

The main objective of this assignment is to establish the feasibility of developing an aquaculture production unit that will utilize geothermal energy to heat ponds. The assignment will include analysis of different innovative production and business models that have been tried and tested, analysis of the commercial viability of the business models, market potential, value of the heat used and an analysis of opportunities down the value chain such as processing and packaging facilities. Finally, the feasibility should provide recommendations on the most feasible business model, practical recommendations on how to actualize the recommended business model and the design of a pilot geothermal aquaculture production unit.

6. SCOPE OF WORK

The consultant is required to work closely with Prospero and Kalahari GeoEnergy to develop a research plan, research tools (i.e., questionnaires) and identifying relevant stakeholders. The feasibility study will need to include the status of the aquaculture (fish) value chain from input supply (hatcheries & Nurseries, feed, etc.)–aggregation–processing–retail and possibly exports. The study will be conducted on the boundary of Lochinvar National Park in Monze District. As such, the consultant (s) will be required to work closely with Prospero and Kalahari GeoEnergy staff to conduct the feasibility study. The consultant(s) will need to provide but not be limited to the following:

1. Asses the feasibility of a geothermal heated aquaculture production park.
2. Identify the best suited site (i.e., proximity to geothermal plant, suitability of identified site for fish farming etc.) for the development of the aquaculture park

3. Recommend a commercially viable business model for the aquaculture park including investment costs, gross margin analysis, implementation model, the value it will bring to Kalahari GeoEnergy etc.
4. Develop a pilot model based on the business model that has been recommended to illustrate the viability of the aquaculture park.
5. Design the pilot production unit and develop a commercially viable production plan for the pilot model.
6. Map and identify relevant value chain players required for the park that Prospero/KGE could link.
7. Identify and quantify the investment requirements for the other value chain players to be able benefit from this park.

The consultant will be supervised by Kalahari GeoEnergy Staff in collaboration with Prospero’s Food and Agriculture sector team to deliver stipulated deliverables in the TORs. The consultant will collect data, analyze it, and provide technical support to the entire process and produce a comprehensive jargon free report.

7. DELIVERABLES

Deliverables	Due date
Inception report and work plan presented and approved by Kalahari GeoEnergy and Prospero.	21 st September 2021
Draft feasibility report with practical recommendations and steps.	21 st October 2021
Final feasibility report presented to Kalahari GeoEnergy and Prospero after approval.	1 st November 2022

8. PROFILE OF THE SERVICE PROVIDER

- Interested firms/individuals should provide information demonstrating that they have the required experience and relevant qualifications to perform the services described in the TORs.
- More than 5 years’ experience in geothermal energy, agriculture, and rural aquaculture sector. Experience in the field of utilization of geothermal energy for direct application would be an advantage.
- Demonstrate evidence of skills and competencies required to conduct feasibility studies in the field of agriculture and aquaculture subsector.
- Show evidence of previous experience related to the task and expertise in designing data collection tools, data collection and analysis.
- Adequacy of the proposed methodology and work-plan in responding to the Terms of Reference

- Staff qualifications and competence for the assignment
- Excellent understanding of research methodologies including statistical and qualitative analysis and technical report writing
- Experience in the field of agriculture sector reviews and monitoring and evaluation. Specifically, the consultant must demonstrate the understanding of social science methodology in their proposal and key variables to be used in data collection.
- Knowledge of geothermal energy sector agriculture and aquaculture value chains

9. PROPOSAL SUBMISSION GUIDELINES

Please apply by emailing your CV(s) (not exceed 4 pages) and a technical/financial proposal outlining the methodology to be used, number of days input, daily fee rates, reimbursable expenses and total cost (inclusive of all taxes) (8-10 pages maximum) to procurement@prospero.co.zm and copy Claire@prospero.co.zm by 3rd September 2021. Please state “**Geothermal-Aquaculture feasibility study**” in the subject line.

Prospero reserves the right to amend, extend or cancel this request for proposals at any stage. The costs of preparing proposals are entirely on the account of the organisation preparing the proposal.

10. PROPOSAL EVALUATION AND CONTRACT AWARD

Prospero will seek (but does not guarantee) to complete an evaluation of compliant proposals within ten days of the deadline for submission. The preferred bidder will be informed and invited to contract negotiations. If the contract negotiations with the preferred bidder are unsuccessful, Prospero may either;

1. cancel the request for proposals, or
2. identify an alternative preferred bidder based on the evaluation of the remaining proposals.

In any case, contract award will be subject to the standard Prospero due diligence assessment. Prospero will provide feedback to shortlisted applications within 14 days after the deadline for submission.

11. APPLICABLE TAXES

Prospero is in full compliance with the tax laws of the Republic of Zambia and will make any necessary deductions for withholding taxes (WHT) or any other applicable taxes when making any payment to an independent consultant or contractor. Guidance on applicable deductions and rates can be found on the Zambia Revenue Authority (ZRA) website - <https://www.zra.org.zm/>