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# **Terms of Reference**

# Biofertilizer Market Assessment in Zambia

May 2021

## Background

SNV Netherlands Development Organisation (SNV) is a not-for-profit international development organisation founded in the Netherlands in 1965, with local presence in over 30 developing countries in Asia, Africa, and Latin America. SNV provides advisory services, knowledge networking and supporting advocacy in the agriculture, water, sanitation and hygiene and renewable energy sectors. Driven by the Sustainable Development Goals (SDGs), SNV’s advisors work with local partners to equip communities, businesses and organisations with the tools, knowledge, and connections they need to increase their incomes and gain access to basic services.

Since 2020, SNV is implementing a three-year project called *INCREASE* (Increasing Climate Resilience in Energy and Agricultural Systems and Entrepreneurship). The INCREASE project is funded by the Swedish International Development Agency.

The INCREASE project aims to demonstrate that an integrated private sector approach to climate change is commercially viable and environmentally sustainable. The intervention is expected to contribute to increased profits for the companies and stable incomes and improved livelihoods for the smallholder farmers.

The project is working with agri-businesses, SMEs and small-holder farmer out-grower schemes in dairy, cotton, and horticulture value chains to stabilise and then increase production and productivity. It does so by expanding the offer of climate smart inputs and services (for example: soil testing, Magoye rippers, drought resistant seeds, hybrid varieties, agroforestry compost, bacterial pesticides, solar irrigation, practicing integrated soil fertility management, integrated pest management, integration of agroforestry and use of bio-fertilizer).

A key input to increasing climate resilience in all agricultural value chains is the promotion of biofertilizers from biodigester installations. In Zambia, there are around 5000 brick and mortar “Zamdigesters” in operation, saving on fuelwood, reducing greenhouse gases and saving on money spent on chemical fertilizers. The typical lifespan is 25 years and it costs around 12,000 Kwacha, which comes to a yearly cost of less than 500 Kwacha to cover energy and fertilizer costs. Depending on the size of the digester, treatment of the slurry and composting, a typical household digester produces purely organic fertilizer every day and could service up to 3 hectares a year. Unlike chemical fertilizers, bio-fertilizers improve organic matter and soil structure.

In addition, the project is promoting ready-made digesters from the brand HomeBiogas. The typical lifespan is 15 years and the costs are 800 US dollars (less than 18,000 Kwacha). SNV is also reviewing other models such as those produced by AfriTank.

Up till now, the biofertilizer has not been (fully) applied for use by the biodigester owners themselves, and not yet considered as an income generating commodity that could be sold or traded or even be used to pay back a loan for construction of the digester. This assignment is meant to investigate these opportunities and advise a way forward.

## Objective

The objectives of this assignment are to understand the (potential) market space for organic fertilisers to evaluate the potential and positioning of bioslurry-based fertilisers.

This assignment distinguishes between organic fertilisers as an overall category of fertilisers and its subset of various biofertilizers. Organic fertilisers equally include untreated manure, crop residues, agroforestry waste and other assorted organic waste, while the sub-set of bioslurry is a product from anaerobic (biogas) digesters, sourced mainly from animal waste.

## Scope of Work

The assignment needs to cover the following aspects:

1. **Understand the current market status and future evolution for organic fertiliser supply in Zambia**

. The assessment needs to provide a general background to the overall fertiliser market in Zambia, including organic and -by way of comparison- the non-organic/mineral fertilisers.

The assessment needs to provide a deep dive for organic fertilisers and should be based on quantitative and qualitative analysis, considering primary and secondary sources such as company data and information, secondary literature and stakeholder consultations.

The assessment should include an evaluation of historical market and company growth rates and market growth forecasts. In this context, the assessment needs to showcase the level of market confidence expressed by individual companies and key stakeholders in the organic fertiliser market.

Lastly, an overview of existing organic fertiliser products is required including data on product composition, quantities, certification, pricing, distribution channels and market penetration.

The final analysis and recommendations are to assess to what extent a new product such as packaged bio-slurry and packaged bio-slurry compost can be a competitive and attractive substitute product.

A non-exhaustive list of stakeholders includes:

* Key producers and suppliers of organic fertilisers such as ERG, Africa Organic Fertilizers Ltd, Zambia Fertilizers Ltd, Amiran Zambia Ltd, Dynalab Zambia, Omnia Fertilizer Zambia.
* Project partner such as Alliance Ginneries, who has embarked on organic cotton production needs to be interviewed, as well as any other relevant project partners. ZARI, a leading project partner, is responsible for conducting trials on organic fertilizers, and should therefore also be interviewed.

The consultant is expected to make further suggestions on any additional stakeholders that should be included in this market assessment.

1. **Review the enabling environment and end user market for organic fertilisers in Zambia.**

The consultant is expected to review the policy and regulatory environment for organic fertiliser in Zambia, providing a concise and clear overview of the requirements placed on fertilisers in general, with a specific focus on organic fertiliser production and distribution.

The assignment should explore aspects of customer perception, awareness levels and access to organic fertilizer products. The review will distinguish between commercial farmers and smallholder farmers and provide information on the prevailing volumes of fertiliser (incl. bag sizes) and preferred purchasing channels for end users.

In addition, the assessment should explore channels and measures in place for end user awareness of organic fertiliser (aligned with the overall market assessment) and how successful existing measures are to promote the use of organic fertilisers. This can include promotional platforms such as the [Organic Fertilizer made in Zambia | Facebook](https://www.facebook.com/groups/669457073427027) for potential leads and insights.

1. **Analyse the costs and benefits of organic fertilizer solutions currently available** in Zambia as a competing agricultural input versus mineral fertilizers and commercially available compost.

For this assignment, the cost benefit analysis is most important at small scale farmer level. The leading question is: can organic fertilizer replace mineral fertilizer? And can a bioslurry- or compost-based fertiliser substitute mineral fertilisers?

This requires some scientific underpinning in terms of comparison of nutrient content. Notably, a prevailing perception is that organic fertilizers and manure are lacking in Potassium and micro-nutrients (boron (B), chlorine (Cl), copper (Cu), iron (Fe), manganese (Mn), molybdenum (Mo), and zinc (Zn).

1. **Gain an** **estimate of the potential market size** **for a bioslurry-based fertiliser** **product**, based on the analysis on the overall market assessment, enabling environment and end user analysis and cost benefit analysis.

There is a 1:1 ratio between the market potential for biodigesters and bioslurry. The assessment therefore also should take into account the market for biodigesters and resulting availability of bioslurry to produce biofertilizer (a market study for biodigesters and biogas in Zambia is available).

1. **Inform development of a roadmap for a bio-fertiliser product,** limited to the bioslurry-based fertiliser product coming from the INCREASE project’s Zamdigester units and its HomeBioGas units.

The assignment should demonstrate the most plausible value chain design for a bioslurry-based biofertilizer through a detailed roadmap. This will need to include slurry aggregation, routes to market and offtaker engagement, etc. The consultant should also draw on experiences from other countries such as India.

The current thinking about the value chain is: farmers collect and dry the bio-fertilizer. Aggregators -currently thought to be the same masons that construct the digesters- collect from around 5-10 producers and deliver to a point of sale. Buyers come to this point of sale.

In addition to appropriate value chain design, the roadmap should consider regulatory implications such as certification and labelling of the fertiliser.

Furthermore, key value chain players need to be named, incl. online retailers such as project partner AG1 Global and Griffin Services which also feature organic fertilizers and compost. Their market shares are growing as more agriculturalists find their way on-line.

1. **Inform the** **review of the INCREASE project’s incentive scheme for biodigesters.** The project incentivizes farmers to switch to biodigester technology by covering a small percentage of construction costs. To support the development of a market for a bioslurry-based fertiliser, the incentive scheme requires a review to potentially incorporate an additional incentive for a bioslurry product.

Such an incentive could kick-start the commercialisation of bioslurry as an organic fertiliser and the consultant is expected to offer proposals and amend the existing or design a new incentive scheme to this end. For example, a payment scheme can be considered where the incentive paid for bioslurry pays back an initial investment loan. An example is emerging from SNV’s Kenya project with Amiran, who seem willing to pay biodigesters in advance on behalf of farmers and recoup this investment upon the sale of vegetables.

## Scope of Work

* Literature review. SNV literature will be provided by SNV. Further research should be conducted on-line.
* Stakeholder consultation
* Market analysis
	+ detailed review of available organic fertilizer products, market players, value chain structure, customer base, pricing structure
	+ overview of enabling environment for organic fertilisers
	+ market sizing of potential bioslurry production and conversion to biofertilizer product(s)
	+ price benchmarking and cost benefit analysis against existing products, incl. mineral fertilisers
	+ market sizing based on potential customer base, incl. identification of potential offtakers for a bioslurry-based fertiliser product
	+ detailed roadmap for bioslurry-based fertiliser product development
	+ proposed incentive scheme design to kickstart the market for a bioslurry-based fertiliser product
* Recommendations to the project on
	+ roadmap for bioslurry-based fertiliser production and commercialisation strategy
	+ potential private sector partners
	+ incentive scheme design to kick start a bioslurry based product
	+ the potential for bio-slurry to assist in financing biodigester construction

Expected Outputs and Deliverables

The main output of the assignment will be a Biofertiliser Market Assessment report.

The main deliverables of the assignment are as follows:

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| No. | Deliverables | Expected Completion Date |
| 1 | Draft and final nception report outlining implementation approach and methodology | Week 1 |
| 2 | Draft and final desk study and market analysis report submitted to SNV | Week 8 (draft)Week 10 (final) |
| 3 | Stakeholder validation of draft biofertiliser market report  | Week 11 |
| 4 | Final biofertiliser market report including recommendations | Week 12 |

## Budget & Timelines

3 months, 45 consultant days

## Requirements

Ten years or above experience in agriculture of which at least five years expertise with the organic fertiliser sector, with demonstratable interactions with the private sector. The applicant should have research and analysis experience as well as practical field experience in rural Zambia (for example in an NGO context). The assignment is open to both national and international candidates.

Applicants are requested to submit a cover letter, CV, proposal (less than 6 pages) and budget.

The proposal needs to outline

* the understanding of these Terms of Reference
* the proposed research methodology
* a detailed work plan
* offer a draft report outline.

The budget needs to break down the allocation of time against work plan components and state the daily consultant rate applied.