

# Preliminary Description of Composting Potential Action Research Pilot

## ECoH Holdings Limited

### 1. BACKGROUND

The second phase of the “Converting City Waste into Compost” project, aims to prepare and implement a pilot project based on the findings of the inventory and assessment phase. During this phase, it was found that indeed there is potential for the diversion of fairly uncontaminated wastes from markets, hotels, restaurants etc into compost generation. These divertible organic wastes currently have virtually no claims and as such are being disposed into the Dandora dumpsite.

Market waste was particularly found to be a good source of organic waste for compost production, as it is fairly uncontaminated, with generation rates of about 19-20 tonnes per day. However, access to this waste is currently limited due to the NCC solid waste management by-laws, 2007. The by-laws only allow for small scale recovery activities to be undertaken by organized groups at designated sites before disposal of waste. However, these sites are determined by the Council, upon request. This has been a major barrier, for organizations/individuals that require large volumes of organic waste for valorization.

Composting, within Nairobi, has been largely viewed as a social activity, thus in order for it to provide the much needed impetus as an income generating activity, there has to be more input into the value chain of compost production, which allows for compost to be a competitive product in the fertilizer market.

This report explores the potential of undertaking a commercially based composting action research pilot with the ECoH holdings limited; a local company, producing a successful brand of compost. The preliminary discussions presented below are based on meetings held with the marketing director of the company, who is one of the three shareholders of the company.

### 2. ECoH HOLDINGS LIMITED

**Structure:** ECoH Holdings Limited is a privately owned company, based in Nairobi, which is involved in composting. Established in 2007, the company has been in operation for three years now, under the management of its three directors, with a work force of 5 permanently employed staff and 5 casual workers<sup>1</sup>, who are actively involved in the composting process. The company is registered, under the private companies Act. The company is also licensed by the National Environmental Management Organization, to handle waste and undertake recycling activities. The company is currently composting organic wastes derived from Mavoko Municipal Market in their site in Athi River 25km from Nairobi City centre.

**Operational Processes:** The Company’s production operations are both mechanical and manual. Organic waste from markets is composted anaerobically in a controlled environment; within a bioreactor located in the composting site. After which, the materials are then extracted and spread out in an open area, for further aerobic composting. Some of the equipment on site includes; a bioreactor and locally made pelletizer. The current production capacity for compost production is 50 tonnes per month. The composting process takes about 40-45 days, which yield both compost and harvested leachate Effective Microorganisms, cultured with yeast are added to the composting process to speed up the decomposition process.

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<sup>1</sup> The number of casual workers increases depending on the demand for compost.

ECoH holdings limited pelletizes their compost, however, not all the compost produced is pelletized, which is a limitation faced by the company, as they would like to pelletize all the compost, as soon as it is ready. This limitation arises from the current production capacity of the pellet mill (300kg per hour), which the company feels is very low. However, there are plans to source for a modern pelletizer with a higher production capacity.

**Product:** The Company's compost is packed in 50kg sacks; branded **YAD®** (a registered trademark, with the Kenya Industrial Property Institute). The leachate harvested from the composting process is also packaged and branded as **EcoHBalance**. ECoH Holdings ensures quality control by undertaking tests on the compost and leachate, from every batch generated. These tests are carried out at the KARI (Kenya Agricultural Research Institute).

**Customers:** The Company has more than 200 customers, through its marketing network, which targets farmers association. Currently, ECoH holdings limited is distributing its products through two farmers association namely: Kilgoris farmers association and Bomet farmers association.

**Finances:** As a business, the company is self financed. The initial start-up capital was raised by the company's three directors. However, the business is now able to sustain itself, through its sales.

### **3. PROPOSED CONCEPT FOR COMMERCIAL BASED COMPOST:**

The pilot project will test how a partnership between the private sector, the community and the Nairobi City Council can be effectively enhanced to improve organic waste management in the City. It will develop a prototype product of enhanced/fortified compost combining private sector approach and community sector support. The project will evaluate the dynamics of the following three processes and how each party can play an effective role in the composting business:

***Pilot project design and issues that can be addressed:*** Areas in the value chain envisaged to be addressed, according to the marketing director includes among others:

**Product Development** - ECoH holdings limited, has not only developed a marketable product; YAD® from organic wastes as compost, but also applied innovative value addition techniques such as pelletizing, to the compost they produce. The proposed pilot project would therefore seek to develop a similar product, which can be branded and pelletized. The current processing technology used by ECoH Holdings is easily adoptable, and suitable for small-scale, ecologically sustainable production of compost within the city. The current costs for the production of compost by ECoH holdings for the pilot project will be discussed further, at the inception phase of the pilot project. However, ECoH holdings is willing to use their equipment for production of this product. The pilot project seeks to develop a product, through ECoH holdings, which can be used to determine the baseline information required in order to successfully produce and market a brand of compost. This baseline information includes:

- i. The legal requirements governing compost production, with respect to legitimizing the process;
- ii. The key organizations involved in the marketing, licensing and quality control of compost;
- iii. The costs involved in producing a fortified brand of compost;
- iv. The entry points to potential markets in Nairobi.

**Market Development** - The ECoH holdings business model, which pro-actively identifies farmers associations in the rural areas, developing close relationships with them in order to market and distribute their product to the farmers. Though, ECoH holdings has been able to make marginal profits due to this approach, which has allowed for them to target a larger niche market, while avoiding significant costs, such as those often associated with the launching of a new product into

the market<sup>2</sup>. The proposed pilot could improve on this marketing communication strategy within Nairobi, by targeting KIOF (Kenya Institute of Organic Farming), KOAN (Kenya Organic Agriculture Network), as well as the Agricultural Society of Kenya (ASK) as entry points for the compost into the organic and urban farming market. In addition, participation in the annual international trade fair would be an entry point for the product into a larger market, targeting farmers from various parts of Kenya.

The proposed pilot project could also offer a small section, in which some vegetables, maize etc can be grown, offering a testing ground for the compost developed. Moreover, the proposed pilot would also require testing of compost samples. Currently, ECoH Holdings is undertaking testing of its compost and leachate samples at the Kenya Agricultural Research Institute (KARI), however, the pilot project could take this a step further by using the Kenya Bureau of Standards (KEBS) for the standardization of compost generated<sup>3</sup>. These activities, can form the backdrop for the marketing tools to be used such as brochures, pamphlets etc.

**Supply chain Development** - The inability to meet the demand for compost is apparent in the ECoH supply chain. The current demand for ECoH holdings pelletized compost is 900 bags per month. This demand is from the Kilgoris farmers association and the Bomet farmers association. However, ECoH holdings is only able to supply about 200-300 bags per month. This critical gap in the supply chain can be attributed to two key factors:

- i. The lack of adequate raw materials to generate sufficient volumes of compost;
- ii. The production capacity of the local pellet mill used by ECoH Holdings - 300kg per hour.

The proposed pilot project would seek to achieve the following key points, through the involvement of ECoH holdings limited:

- i. Remove the barrier of lack of adequate raw materials, by trying to create linkages with the City Council of Nairobi, to allow for permission to access market wastes;
- ii. By developing linkages with NCC and/or NEMA, the proposed pilot project would seek to influence some changes/amendments to existing bylaws, which would, give allow for wider scale recovery of organic wastes;
- iii. Investigate the potential for the incorporation of non-traditional groups into active waste collection;
- iv. Investigate the use or need for commercial collectors in the current municipal waste management setup.

The proposed action research pilot project will incorporate the best practices from ECoH Holdings limited to develop another brand of compost, which can be taken through the key stages in a market chain; product development, market development and supply chain development.

The proposed action research pilot will strengthen the backward linkages, which at present are weak for ECoH holdings. Currently, the company is faced with inadequate volumes of raw material to make compost, which is affecting their supply chain.

These backward linkages include:

- i. Linkages with the City Council of Nairobi – through a proposed public-private partnership, which would allow ECoH holdings to divert some organic wastes from the municipal markets;
- ii. Linkages with existing agricultural institutions in Nairobi;

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<sup>2</sup>Rent - incurred from setting up an outlet, employing a shop attendant/s.

<sup>3</sup> There are currently no existing standards for compost. However, the testing for harmful elements in compost is readily done by KEBS, for a fee.

iii. Linkages with the Kenya Bureau of Standards.

This new product, developed through the pilot project, will be produced using the same production method and processes, which ECoH holdings is currently using. The proposed market to be used for the action research pilot project is the Wakulima market, as suggested by the marketing director. The choice of this market based on the fact that, due to the time of operations in the market; 4.00a.m to 2:00p.m. This would allow for the waste collectors to sort and carry out the waste, without interfering with the normal business operations.

ECoH holdings limited, is willing to set up waste collection bins within the markets in Nairobi for organic waste. It is that the City Council of Nairobi staff, used to clean the waste area could sort out the waste and manage the disposal area.

#### 4. DISCUSSION OUTPUTS

The outputs of preliminary discussions with the marketing director of ECoH Holdings limited are presented below:

**Objective of the commercial based pilot:** The proposed action research pilot, based on the concept envisaged above would seek to achieve the following objectives:

- 1) To test feasibility of creating sustainable and fair supply chain relationships between:
  - Institutional generators of organic waste materials and commercial based collectors
  - Commercial based producers of compost and users/markets;
- 2) To apply, the existing public-private partnership (PPP) programme within the City Council of Nairobi, to remove existing barriers to recovery of municipal waste at source thus allowing for the diversion of market waste into composting;
- 3) To establish benchmark operational and cost parameters that can be the basis for planning larger or more extensive composting projects;
- 4) To identify and seek solution to other barriers for a larger-scale composting strategy/up scaling;
- 5) To interest key stakeholders such as, donors, regulatory agencies, ministries, local authorities, banks, and the like, in actively supporting the activity in the future.

**Willingness to participate:** The Marketing Director of ECoH Holdings expressed a willingness to participate in the action research pilot but only if ECoH Holdings would benefit from the proposed action research pilot project, through the creation of a linkage with the City Council of Nairobi, allowing them to divert market wastes.

In addition, the company is of the view that this project would enable them to transfer some of their skills, through training of composting groups at the CBO level, as part of their corporate social responsibility. Nonetheless, the company maintains that its role and responsibilities can be further discussed during the planning of the inception of the action research pilot project.

**Host organisation and ownership of pilot project and results:** It is envisaged that ECoH holdings would be an active partner in the pilot project, however, the ownership of the action research pilot project will rest with all involved stakeholders. These stakeholders will be the coordinators of the pilot (CCWC<sup>4</sup> project team), and ECoH Holdings.

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<sup>4</sup> CCWC – Converting City Waste into Compost

ECoH is of the view that, they may be able to get a temporary piece of land near the central business district to facilitate the composting process, In addition, they may be able to provide some equipment for the pilot project;. However, these will be discussed further at the planning stage.

The marketing manager, however, felt that the new compost brand that would be the output of the pilot project should be marketed alongside YAD®, within Nairobi. ECoH holdings is willing to play a lead role in the marketing of the new compost brand, which includes, creating linkages with potential markets in Nairobi, as stipulated above in the market development segment.

In addition, ECoH holdings would be one of the product owners for the compost generated from the pilot project. This ownership would arise from the involvement they would have in creating the product and developing the market for the product. Similarly, revenues accruing from the project will be shared at an agreed upon share, to be determined at the inception phase of the pilot project.

**Proposed activities:** The activities to be undertaken during the operational phase of the pilot project include:

**Phase 1:**

- Collection and transportation of source segregated wastes and or organic wastes in general
- Reinforcing a fence around compost production area
- Purchase of input materials
  - wheel barrows for waste collection and transport
  - Hand gloves
  - Overalls
  - Effective micro-organisms
  - Waste collection bins
  - Fence for the composting areas to seclude roaming livestock

**Phase 2:**

Compost production including pelletizing – weighing of quantities generated before and after pelletizing

- Branding & packaging activities
  - Designing logos
  - Carrying out laboratory analysis of compost samples (KARI & KEBS)
  - Preparing advertisement materials (pamphlets, brochures, posters)
  - Awareness creation (exhibitions in the international trade fair, public barazas)

**Phase 3:**

- Grow some vegetables, maize etc, near the composting site to act as a testing ground for the compost produced.
- Transportation of compost to the markets
- Maintaining records of inventory;
- Creating linkages with existing compost users and stockists;
- Scheduling training sessions with some community level compost generators to up-grade their skills

**Location of the pilot and availability of space:** The pilot will be located in an area with easy access to market waste. Echo Holdings, premises at Athi River is far and the transport costs would increase the cost of the compost.

ECoH holdings are willing to try and find a piece of land adjacent to the Central business district, however, if there is an already available piece which the project coordinators have, then they would use it.

**Composting materials and products:** ECoH holdings would like to use market wastes, from Wakulima market. This is because the waste is fairly uncontaminated, is more cost effective, and it reduces the risk of producing contaminated batches of compost.

The preferred form of compost to be produced is envisaged to be pelletized. ECoH holdings, suggests this, because, it is easier to market the product in this form. The quality of the compost will be controlled through laboratory analysis of compost samples to maintain a consistency in the quality of the compost.

**Contacts with formal (government) control institutions:** The current limitations presented in the solid waste management by-laws, which prevent large-scale diversion of waste from the source, to either recycling or reuse, without the explicit permission from the City Council of Nairobi, has prevented adequate recovery of organic wastes from the municipal markets. However, NEMA does issue licenses to recyclers.

The proposed action research pilot project would allow for the creation of linkages with the City Council of Nairobi, allowing for the potential diversion of market wastes. However, the following linkages will need to be made in the inception phase of the pilot project:

- City Council for issuance of trading permits for selling of compost.
- Kenya Agricultural Research Institute and the Kenya Bureau of Standards for testing of the compost.

**Financial responsibilities, rights, benefits and risks:** ECoH is of the view that, though they may be able to provide some assistance, in terms of logistics, land acquisition, etc, more discussions would need to be held, in order to identify the costs, which would be associated with the project. Upon these discussions, then ECoH holdings would be able to determine how much they would be able to invest.

There are some risks, which ECoH holdings, hopes that a proposed pilot, in which they participate in, would address. These risks include:

- (i). Creating a brand which will directly compete with theirs..This risk is expected to be mitigated, by allowing ECoH holdings to have ownership of the new brand upon the end of the pilot project life cycle.
- (ii). Inability of ECoH holdings to share all their production methods, due to the risk of re-creating YAD®

The potential benefits for ECoH holdings limited include,

- (i). The ease of exploitation of market wastes, allowing for them to produce large and almost consistent volumes of compost.
- (ii). Sharing and transfer of knowledge and skills to other composting groups at the CBO level, as part of the corporate social responsibility.

**Potential for replicability and sustainability:**

From the discussions which were held, the pilot project would be able to sustain itself through:

- Re-investing of the income generated from compost sales to the pilot project itself.
- The reduction of organic wastes going into Dandora dumpsite, allowing for more municipal and town councils to welcome the idea of composting in urban areas.

- Creation of employment, to the participating partners – ECoH holdings would be able to hire more casual labourers for the project. It is envisaged that this employment could then flow horizontally to other groups who wish to replicate the concept.

**Exit strategies:** The proposed pilot project is hypothesized to sustain itself by the end of the trial phase. This will be sustained through the income generated from the sale of compost. In addition, proper documentation of the costing and inventory, should allow for the strengthening of key weak areas, prior to the exiting of the project coordinators, allowing for the project to sustain itself alter on.

The ownership of the brand can be held between the project coordinators and ECoH holdings for an agreed time frame, upon which ECoH holdings would then take over full ownership.