STANFORD
GRADUATE SCHOOL OF BUSINESS

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ECOPOST: FINANCING A GREEN STARTUP IN AFRICA
DRAFT

Our biggest challenge right now is we feel we are ready for capital, but the kind of documents [investors] need – financial projections, statements of accounts, documentation of cash flows – we don't have these things very well documented. So we are really struggling.[1]

—Lorna Rutto, Cofounder, EcoPost

Lorna Rutto, cofounder and director of EcoPost, stepped back from a pile of freshly delivered plastic waste and paused to survey her company's warehouse. As usual, the factory floor was busy with activity, with employees hovering around the various production line stations, working to recycle the pile of plastic trash—discarded bags, packaging, fast food utensils, and more—into durable construction posts.

Founded and headquartered in Nairobi, Kenya, EcoPost manufactured and sold fencing posts made from recycled plastic trash. Though Rutto and her cofounder Charles Kalama had only started the company two years before, the posts had become quite popular with local fence makers and other businesses. Whereas lumber in Kenya was relatively scarce and a frequent target of theft, the finished posts were fabricated from an abundant supply of plastic trash generated daily by one of Africa's largest cities, and possessed a number of desirable properties for builders. Equally important to Rutto and Kalama, the recycling process was environmentally beneficial and created jobs for the impoverished local population.

As Rutto took in the entirety of the factory floor, she felt a mixture of satisfaction and apprehension. The posts had become so popular that the company's biggest challenge at this point was attracting growth capital to invest in machinery and staff that would allow the business to scale and diversify production. EcoPost made about 80 to 100 posts per day, every one of

[1] All information in this case is based on interview with Lorna Rutto and Charles Kalama, cofounders and directors of EcoPost, unless otherwise noted. Interview was conducted on May 3, 2012.

Michael Kennedy, Gina Jorasch and Professor Jesper Sorensen prepared this case as the basis for class discussion rather than to illustrate either effective or ineffective handling of an administrative situation.

which usually sold very quickly. More often than not, the number of orders the company received far exceeded its manufacturing capacity, and orders often went unfulfilled. Despite this seemingly large market opportunity, Rutto and Kalama's attempts to secure nearly $300,000 in financing for new equipment had met with little success, largely due to the lack of a complete and verifiable accounting of EcoPost's sales, revenue, and expense history. Fortunately, they had recently hired a professional accountant who was working to revamp and improve the company's accounting practices such that they could better pitch themselves to potential investors.

Rutto and Kalama believed that the new machinery would not only allow the company to produce many more posts, but also to manufacture a more versatile product offering, so that the recycled plastic could function as a much better substitute for lumber in products such as furniture. However, without significant additional funding, this vision was unlikely to materialize. The company had been operating on very thin margins and was unable to entertain the idea of making any significant strategic investments without additional cash. While the two directors were optimistic about the new accountant's plans to improve EcoPost's rudimentary bookkeeping practices, they were still a long way from convincing potential investors of the business's future viability.

ECOPOST

Company History

With a 2011 population of nearly 3 million people, Nairobi generated over 2,400 tons of trash every day, of which roughly 20 percent was plastic.[2] With an essentially non-existent organized waste collection system, much of the city's trash ended up littered in large piles along residential streets and in public areas. Rutto, a Kenyan national, was working at a stable accounting job for a U.K.-based financial company when she decided to leave and launch a venture that would somehow address her country's environmental challenges and help provide economic opportunities for her fellow citizens: "Personally I'm very passionate about the environment being clean…. When I saw all this waste littered everywhere, I felt that if we got money, then that's where we should channel it and create some way to remove the plastic."

Rutto met Kalama, who holds a degree in biochemistry, while in the U.K. The two found they shared a similar interest in waste management in Africa and also potentially complementary business skills. Rutto recalled:

> When we sat down and talked, we realized, wow, we could actually do something together, because we found out we were both passionate about doing what we are doing now. We just needed to join up and form a good partnership. I would bring business skills, Charles would bring the technical biochemistry skills I don't have.

With only about 400,000 Kenyan shillings (about $5,000 US dollars) in start-up funding, Rutto and Kalama began searching for a potential business model that could help address

[2] Source: EcoPost

environmental problems in Nairobi. They discovered that other countries had developed a relatively inexpensive and straightforward way to manufacture plastic building materials out of recycled trash. Kalama elaborated:

> We did a lot of research.... We wanted to get rid of the plastics that were all over [Nairobi], and we were wondering what could be done with them. So after quite a large amount of research we found that [this process] was already at work in developed countries, and we could see how the machines were actually recycling plastics into posts. What we needed to know was how to get such a machine. We walked around the city's industrial area trying to look for a machine secondhand. Eventually we found out that we could actually refurbish a machine intended for another purpose.

Rutto and Kalama purchased their initial equipment for about 2 million Kenyan shillings (about $23,000 USD). The company produced its first set of posts in April of 2010. Since then, Rutto and Kalama hired a full-time staff of more than 20 local Kenyans, and refined and improved the manufacturing process to achieve a daily output of between 80 and 100 posts. Though demand for the posts was strong from the outset, the company's chronic lack of working capital had made sustaining a high rate of capacity utilization difficult.

Rutto also encountered difficulties with the local sociopolitical environment. The Kenyan business and entrepreneurial culture was very male-dominated, and she sometimes found it difficult to be taken seriously as a female business manager, especially by local politicians. However, Rutto was selected as a laureate for Sub Saharan Africa of the Cartier Women's Initiative Award, and also won an Enablis Business Launchpad award for a "Green and Ecological" business plan. Among other awards (See **Exhibit 2** for a list of awards given to Lorna Rutto and EcoPost.)

The Product

EcoPost offered a relatively simple array of dark grey building posts that resembled the wooden two-by-fours that are ubiquitous to construction material shops and hardware stores in the West, with the conspicuous difference that they were made of recycled plastic rather than lumber. The company sold both circular and squared versions of their products in a variety of lengths. (See **Exhibit 3**.)

Lumber was scarce in Kenya owing to the depletion of local forests and recent government efforts to outlaw unauthorized timber harvesting. Many of Kenya's poorest citizens also resorted to theft in order to obtain fuel for cooking fires. Thus demand for affordable alternatives to wood in the local construction market was high. Like wood, the plastic EcoPosts could be drilled, sawed, and nailed. Since they were useless as firewood, they were far less likely to be stolen. They were also more resistant to environmental decay and termites (a common local nuisance) than wood.

The company's customers included [local] Nairobi residents, businesses and national park services. The posts were typically used to build fencing (for example, to demarcate the borders of a nature preserve or residential property). EcoPost provided basic fence construction instructions on their website and planned to explore selling other fencing related goods such as chain link mesh to support this business. However, the posts were also put to use to construct a variety of other objects, such as gates and picnic tables. While the posts performed well in these applications, the company currently lacked the necessary hardware to construct stronger, denser posts that could demonstrate the required structural integrity to be useful in additional applications like flooring and furniture.

EcoPost charged between 450 and 2,500 Kenyan shillings for their posts (between $5 and $30 USD). Because Kenya's economy had exhibited high inflation in recent years, pricing had been a challenge.[3] Kalama explained how simply increasing prices each month to keep pace with inflation tended to alienate customers: "You can't really afford change your prices all the time because competitors have a presence. If you change your prices all the time, then your competitors will leave their prices stable, and that's eating at your business."

Manufacturing Process

EcoPost employed a relatively low-tech and labor-intensive (most of the labor went into collecting and sorting the plastic waste) manufacturing process. To obtain the plastic waste from which the posts were manufactured, EcoPost employees drove trucks to various locations near waste dumps and collection yards in Nairobi, where they purchased plastic trash from a network of 200 to 300 part-time "collectors" (mostly women and young people).

Once the plastic arrived at the factory, EcoPost full-time employees prepared the material for processing by separating out the collected plastic into different categories of thickness and size (from light and thin grocery bags to thickly molded plastics found in toys and furniture), and by removing any unwanted materials embedded in the trash, such as scraps of metal or rocks.

After preparation, workers placed the thicker, more rigid plastic into a machine that shredded the material into small 5mm-length pieces. Meanwhile, the "flimsy plastic" such as supermarket shopping bags, was placed into an agglomerator, which formed the material into small round balls. EcoPost then mixed the shredded and agglomerated plastics in a 60:40 ratio into an extruder (essentially, a large molding machine). After heating the mixture to around 250 degrees so that the plastic melted and molded into the desired shape, the workers removed the finished posts and placed them in water to cool. (See **Exhibit 1**.)

OBTAINING FINANCE

Capital Requirements

EcoPost was having a difficult time attracting growth capital. Rutto stated flatly:

> Our biggest challenge at the moment is funding. We need financing to expand production capacity. Right now we can't manufacture enough posts to meet demand. In fact, some of our biggest problems are waking up in the morning with

[3] "Kenya," *The CIA World Factbook,* https://www.cia.gov/library/publications/the-world-factbook/geos/ke.html (May 10, 2012).

> a customer saying, 'Why haven't you produced my posts?'. Some of our customers pre-pay for our posts, so sometimes we have to refund back their money because we don't have the product. So what we really need is the new machinery to increase our capacity.

Rutto and Kalama felt that there was much greater demand for their products not only in Nairobi, but also in other areas of Kenya and East Africa such as Uganda and Rwanda. Moreover, they believed that with better equipment, the company could make a wider variety of higher-quality products that could expand their reach into the local economy (and increase the level of trash removal from the environment). They had set a target of increasing production to 800 posts per day (roughly eight times current levels). To do so would require several significant capital expenditures: a new shredder and agglomerator, additional collection trucks, and investment into new product development. Rutto elaborated:

> For the new machine, we would need around 25 million Kenyan shillings [about $290,000 USD], which is inclusive of everything necessary to [upgrade the factory], like the cost of importing and the cost of other supporting machines like a shredder. The market loves the posts we are making right now, but we can actually make much better posts with new equipment. We have more demand than we can actually meet, but I'm sure if we are able to get to the machine that actually is designed to manufacture those posts, we'll make much better quality posts. These are the kinds of items we really want to make, but with our capacity right now we have to stick to fencing.
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> The street youths who collect the plastic waste for us currently make so little ($3 to $5 dollars per day) that it only provides for very basic items like food. It is better than nothing, but the new machine would enable us to increase our margins and allow us to provide them with better health, education and an income while tackling some of our stubborn problems with respect to waste management and environmental protection. If we acquire the machine, we will be able to create over 1,500 jobs by 2014.

Even a lower level of funding would be helpful to the company, as a dearth of working capital occasionally led to production slowdowns and lost sales. EcoPost currently operated with little or no inventory, so if a breakdown occurred in the production process for any reason, they could not satisfy some customer orders. While Rutto and Kalama wished to be able to stockpile a modest amount of inventory as a safety net, the company was so desperate for capital that they could not afford to turn away customers in favor of building up inventory stock. At one point, EcoPost lacked enough cash on hand to pay the monthly rent on their factory building, and the employees arrived in the morning to find the factory doors locked shut with the equipment inside. Only after winning a cash prize from a pro-environmental business competition was the company able to restart operations. Kalama also recounted how their situation led to an order cancellation during a recent power outage: "Because of a large amount of rain, [Nairobi] only had working power for three days in a span of ten days." The lack of power slowed the production of posts to the point where they had to refund one customer 16,000 shillings. "If we could buy a generator, we wouldn't have this problem," noted Rutto.

As a way to partially address their funding needs, EcoPost had entered and won several business competitions run by local agencies and international NGOs, some of which provided modest cash prizes (see **Exhibit 2**). Though this was an inefficient means of raising capital, EcoPost had few alternatives, and the directors saw it as a low-cost marketing opportunity. As Rutto remarked, "At least it helps you to get some capital that you really need, and also visibility. It never hurts to be able to market our products."

Bookkeeping Obstacles

While EcoPost's track record of strong sales and efficient production was much better than many other start-up businesses that were able to attract funding, for much of their history they had done a poor job of accounting for their success. Rutto had experience working in accounting at a Western financial institution and was familiar with the metrics and data that banks typically used to analyze creditworthiness, which made EcoPost's lack of solid records all the more conspicuous. With hindsight, Rutto acknowledged that the incomplete record keeping had negatively impacted the company's attractiveness to investors: "We would get money from clients and spend it on the business before anything was even accounted for, so we cannot even clearly say what our revenue in 2010 was."

Once the problem was evident, Rutto worked toward improving the company's bookkeeping, however all the investors she approached remained skeptical, and she began to think about bringing on an accountant to assist with preparing and monitoring the company's accounting:

> The systems and structures for monitoring administrative activities were still not where we'd really like them to be, so that we can assure investors that their money in a safe place.
>
> We applied for credit with different organizations, such as investment companies in South Africa and Kenya…. We were turned down by several banks, and there aren't local angel investors. [Wealthy Kenyans] don't do this. We've also tried sending an application to another called VadVentures, which is actually based in the Netherlands, but we don't have the documentation they need…. We don't have enough skills to actually put the systems and structures in place.

Kalama suggested the possibility of approaching some outsider groups and NGOs that were attempting to provide clerical, legal, and managerial support to businesses such as EcoPost operating in developing nations: "Some assistance may be available through an East African organization that helps entrepreneurs with setting up a company…. They have a lawyer who assists through the very initial stages to help you get on your feet." However, given the scope of their requirements, the founders eventually decided to bring on a professional accountant.

In March 2012, EcoPost hired Charles Murunga to assist with the bookkeeping and budgeting practices at EcoPost. To the relief of the founders, Murunga remarked that their records were actually been fairly well documented and organized, however much needed to be done in terms of formalizing the available data so that it would be digestible to prospective investors. He then got to work improving EcoPost's accounting practices, focusing intensively on the following tasks:

- Reviewing the existing accounting documents for completeness, agreement, and accurracy
- Analyzing and reconciling the account balances and preparing a report for management outlining weaknesses in accounting systems and process and suggesting recommendations
- Finalizing the financial statements and giving a certified auditor's opinion
- Computing the company's tax bill for 2011
- Completing the tax return forms from the Kenyan Revenue Authority (KRA)

Murunga's work streamlining the company's accounting gave the founders renewed confidence in their search for additional capital. Rutto remarked: accounting:

> It's a question of learning what we should have been doing in the past. Now we realize, 'Oh, we should've studied this' in order to keep track of records. We are trying to get everything in place. That's actually an ongoing project we are working on right now. Setting up a QuickBooks account for every shilling that comes in. Now we make sure that when we get any payment from a customer, from anywhere, it goes first into their account so there's a record. Now that we have even better book keeping, our biggest challenge is knowing the right people and places place to get funding.

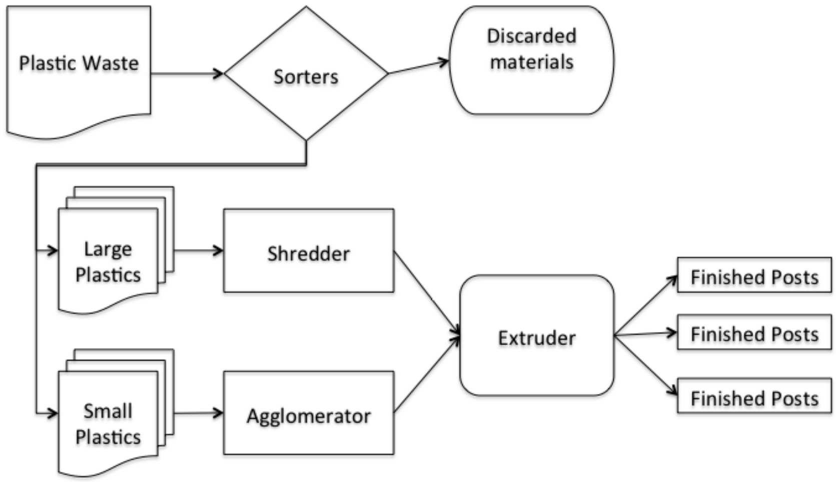
While they preferred an equity injection, they were open to any source of funding that would allow them to grow the business. Rutto explained, "Equity would be better, but even if we take on debt it's something I feel we can repay in 18 months." In their search for finance, Rutto and Kalama attended many local business forums and training seminars in the hopes of networking with capital providers. They did not enjoy much success, having been offered either extremely high interest rates—upwards of 28 percent from local banks—or no money at all, which struck both directors as unfair given the obvious strength of local demand.

Rutto and Kalama continued to believe strongly in EcoPost's mission and business model. Responding to a question about her long-term vision for the company, Rutto said:

> Our mission is to create jobs for marginalized Kenyans to eradicate poverty while adding value to waste. By the year 2025, we want to have a completely integrated waste management solution that will create tens of thousands of job opportunities, provide a clean environment to live in and save our dwindling forests. When people think of waste in this country, we want them to think of EcoPost.

While they were frustrated with their lack of current financing options, they remained optimistic about obtaining a possible future line of credit or equity investment given the recent improvements Murunga had made to their accounting practices. Rutto and Kalama hoped that once the EcoPost name obtained adequate exposure, the new records needed to be in order to attract the attention of serious investors. In the meantime, growing the business only by reinvesting profits would likely continue to be difficult.

Exhibit 1
EcoPost Manufacturing Process



Source: Compiled by casewriter from interview with Lorna Rutto and Charles Kalama, EcoPost website, and http://www.youtube.com/watch?v=0wFbo8pGNw8

Exhibit 2
EcoPost: Noted Entrepreneurial and Environmental Recognitions

- Enablis business competition winner, sponsored by Safaricom Foundation 2009/2010.
- Bid Network winner, sponsored by WWF (World Wide Fund for Nature) 2010.
- SUKUMA AFRICA AWARD winner 2010.
- SEED Initiative Winner 2010, Sponsored by UNEP, UNDP, and IUCN.
- Ichem E-Innovator of the Year 2010.
- William James Foundation honorable mention 2010.
- Acumen Fund winner 2011.
- Cartier Awards winner 2011, for Sub-Sahara Africa.
- Enablis Business Launchpad winner – Green and Ecological category. (held in France).

Source: EcoPost.

Exhibit 3
EcoPost Product and Pricing List:

Solid Recycled Plastic Posts

Illustration	Size (Round / Square)	Length	Price (KShs)
 	3"	6 ft	450.00
		7 ft	500.00
		8 ft	550.00
		9ft	600.00
		10 ft	650.00
	4"	6 ft	800.00
		7 ft	900.00
		8 ft	1,000.00
		9ft	1,200.00
		10 ft	1,300.00
	5″	7 ft	1,700.00
		8 ft	1,900.00
		9ft	2,100.00
		10 ft	2,300.00
	6″	7 ft	1,900.00
		8 ft	2,100.00
		9ft	2,300.00
		10 ft	2,500.00

Planks / Pickets

Illustration	Dimensions	Price (KShs)
	3.5" × 1.5"	60 /ft

We can drill holes on the posts. We charge **KShs. 5** per hole.
Different rates apply to customised solutions
Prices Subject to change without prior notice

Source: EcoPost.

Exhibit 4
YouTube Videos Featuring EcoPost

"Road to Success" - Interview with Lorna Rutto
http://www.youtube.com/watch?v=Ty_R1nBfqLE&feature=relmfu

"Pacesetter: Lorna Rutto, Founder of Ecopost" - Manufacturing process
http://www.youtube.com/watch?v=0wFbo8pGNw8

"Mazingira Dirty Business part 2 of 4" - Detail about supply chain and post attributes
http://www.youtube.com/watch?v=exsCUQf3css&feature=youtu.be&a

Source: EcoPost.