

## Household Water Treatment and Safe Storage Implementation Case Study: Ceramic Filters in Guatemala



### Program Details



**Lead Organization:** Ecofiltro (Guatemala)

**Product / Technology:** Ceramic pot filters

**Dates:** Established in 1990s and changed to a for-profit social enterprise in 2009

**Filters Distributed:** Over 250,000 filters as of 2016



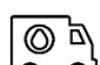



### Program Overview:

Ecofiltro started operating as a nonprofit in Guatemala over 25 years ago, distributing filters free-of-charge in rural communities. Philip Wilson took over as CEO in 2009 and transitioned Ecofiltro into a social business. Ecofiltro aims to reach 1 million rural Guatemalans with clean water by 2020.

Ecofiltro's modern factory, which opened in 2012, produces 8,000 ceramic filters each month. The filters are assembled with locally-produced receptacles, which range from simple plastic to handcrafted ceramic or enamelware containers. This range of products allows Ecofiltro to serve a diverse customer base. Over 400 community entrepreneurs (vendors) promote and sell the filters with the support of 10 Ecofiltro field representatives. The entrepreneurs are well-respected community members who receive training and support from Ecofiltro. Field representatives are Ecofiltro staff members responsible for communication and coordination.

In 2014, Ecofiltro began working through schools in rural communities. Filters are donated to schools by foundations, businesses, and Ecofiltro itself. This school program helps community members become familiar with the technology. Community entrepreneurs work with the schools to promote and distribute filters to households in the surrounding community.

### Who's Involved?

Group / Organization	Creating Demand	Supplying Products & Services	Monitoring for Improvement	Building Capacity	Financing
					
<i>Ecofiltro</i>	✓	✓	✓	✓	✓
<i>Community Entrepreneurs</i>	✓	✓	✓	✓	
<i>Schools</i>	✓				
<i>NGOs and Companies</i>	✓	✓			✓
<i>Carbon Offset Company</i>			✓		✓

## Case Study Details



### Creating Demand

In the past, Ecofiltro was funded by a family foundation, and distributed its filters for free. CEO Philip Wilson realized that this was not the best way to generate demand for filters and demonstrate their value. Under his leadership, Ecofiltro has shifted its approach and now markets filters to three different types of customers:

- Rural households
- Urban households
- Private companies and nongovernmental organizations (NGOs)

**¿QUIERES AHORRAR?**

MES	SEMANAS	Precio Garantado
ENERO	4	Q128
FEBRERO	4	Q128
MARZO	4	Q128
ABRIL	4	Q128
MAYO	4	Q128
JUNIO	4	Q128
JULIO	4	Q128
AGOSTO	4	Q128
SEPTIEMBRE	4	Q128
OCTUBRE	4	Q128
NOVIEMBRE	4	Q128
DICIEMBRE	4	Q128
<b>TOTAL AL AÑO</b>		<b>Q1,536</b>

**PURIFICADOR DE AGUA**  
RICA FRESCA Y SALUDABLE

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**¿Que beneficios te dará ecofiltro?**

- ahorro mes a mes
- salud para tu familia
- sabor puro
- cuidado al ambiente
- agua en abundancia

**¡Ahorra más de Q1,500 anuales!**

**Plan de pago**  
Entrega: Q100

Mes 1: Q50  
Mes 2: Q50  
Mes 3: Q50  
Mes 4: Q50

Representante:   
Contacto:

Ecofiltro promotional material for urban (left) and rural (right) households

### Rural Households and the School Program

In rural areas, Ecofiltro relies on community entrepreneurs. These entrepreneurs are respected community members trained by Ecofiltro. They know what key messages will be most convincing and most motivating for their neighbours. For example, they use marketing materials that emphasize the cost savings from not having to buy wood for boiling water. This helps community members consider the costs and benefits of the technology in a new way.

Ecofiltro has observed that involving children is a great way to influence social norms and generate demand in rural communities. Children strongly influence their parents. One way Ecofiltro increases demand from families is through its school program.

In the school program, field representatives from Ecofiltro identify the most motivated and organized schools in a particular region. They schedule a time to deliver a filter for each classroom and one for the kitchen. In 2015, Ecofiltro reached 823 schools with free filters. These filters were provided through corporate sponsors such as Coca-Cola, Visa, and Nestle.

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When filters are delivered to the school, Ecofiltro representatives host a community meeting attended by parents of the school children. At this meeting, representatives explain the health and economic benefits of clean water and ceramic filters. Parents can sign up for the “water for life” program, in which they agree to a payment schedule to purchase their filter. Families can choose to pay the costs of the filter over three monthly payments or all at once. A community leader is chosen to collect payments.



Children participate in a school outreach program (2015)

Ecofiltro recently started offering a 2-week free trial so that rural families can experience the benefits of the filter without committing immediately to a purchase. Most families that participate in the free trial end up buying the filter.

### Urban Households

In urban areas, Ecofiltro uses distributors to market and sell the filter. They offer a range of clay, ceramic and enamelware receptacles that are more appealing to urban consumers. Ecofiltro can sell these fancier options at much higher prices, allowing them to generate higher profit margins. For the first few years it operated as a social enterprise, Ecofiltro used profits from urban filter sales to subsidize the rural filter sales.

Ecofiltro strategically places its filters in popular urban gathering places such as cafes and hotels. Selling or donating filters to these popular venues provides credibility and increases brand recognition. Recently, Ecofiltro began placing water stations outside restaurants, where anyone can have access to potable water as they pass by on the street. This has greatly increased awareness of the product. Newspapers have written about the Ecofiltro stations, which has raised awareness about Ecofiltro and its social business model.



Ecofiltros at a popular bar (left) and at a public water station (right)

Ecofiltro also maintains an attractive and accessible website ([www.ecofiltro.com](http://www.ecofiltro.com)), where customers can compare different filter options, order filters online, or locate a distributor. Ecofiltro actively posts and shares its activities with over 100,000 followers on social media.



Examples of Ecofiltro products available online.  
Left: simple plastic (Q300 or about US \$40)  
Right: painted ceramic (Q1400 or US \$180)



### Organizations

In addition to urban and rural households, Ecofiltro markets its products to some NGOs and businesses. Companies like Coca Cola and Nestle finance the filters for their employees so that they are affordable for them to purchase for their homes. Many of these companies contribute to the Ecofiltro school program by donating filters to the schools where their employees send their children.

Ecofiltro sells bulk orders of filters to a variety of NGOs, such as Save the Children and Project Concern International (PCI). These NGOs then distribute filters and collect payments from households participating in their programs.

### Lessons Learned: Creating Demand

As Ecofiltro transitioned to a for-profit model in rural communities, it had challenges with rural households failing to make all of their payments for the filters. Ecofiltro now works through schools, and actively involves teachers and parents (respected members of the community) in promotion and sales. Customers sign an agreement outlining the payments required to purchase the filter. When customers are dealing with community members they know and respect, they are more likely to remain committed and make all of their payments.

Ecofiltro believes that its filter program will be more sustainable if households are willing to pay for products instead of expecting them for free. Some organizations give filters away for free, while others, including Ecofiltro, require payment. This can cause households to perceive filters as a free hand-out rather than a valuable product. To address this, Ecofiltro decided to sell bulk orders of filters to NGOs only if the organizations request a financial contribution for the filters from their recipients.



### Supplying Products and Services

From 2009 – 2015, Ecofiltro sold 75,000 filters to urban customers and 160,000 to rural customers. Producing and distributing this volume requires a good manufacturing process and supply chain. The Ecofiltro factory makes the ceramic pot component of the filters, and Ecofiltro sources the receptacles from outside suppliers.

#### Ceramic Pot Factory

Ecofiltro opened its factory in 2012 to increase its production capacity. At this factory, staff operate 2 kilns, 5 days each week, to produce 480 ceramic pots per day.

Ecofiltro takes care to select high quality raw materials, performs regular “fail tests” on the filters, and closely controls all parameters such as kiln temperature, drying period, and filter flow rate.



Ceramic pot factory



Artisan works on a new filter receptacle design

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### Receptacles

For rural markets and the low-cost options marketed in urban areas, simple plastic buckets are used as the filter receptacles. These are sourced from a local plastics manufacturer.

Some customers prefer to pay more for an attractive, aspirational filter design. Ecofiltro contracts local artisans and small businesses to make the fancy receptacles (options of clay, ceramic, or enamelware). These are decorated and sold at a significant mark-up to urban customers. The fancier filters are very popular, and Ecofiltro sometimes has difficulty keeping up with demand. They are working to grow the number of local artisans who can make receptacles. They expect this will become easier when artisans see that the demand for these products is growing, and that it is worth the time to learn the skill of crafting receptacles.

### Filter Assembly, Sales, Distribution, and Services

The filters are assembled with their receptacles, taps, and lids in the Ecofiltro factory. Then they are transported by company trucks throughout the country. Distributors in Guatemala purchase bulk orders of filters and sell them to customers in person and online. Ecofiltro is also beginning to distribute filters in other countries, such as Mexico, Honduras, El Salvador, and Costa Rica.



Woman signing a purchase agreement (2016)

Filters are sold for between US \$40 (basic plastic model) and US \$200 (aspirational model with hand-crafted and personalized hand-painted receptacle). Ecofiltro field representatives and entrepreneurs make a commission on every filter sold.

In rural areas, filters are delivered to schools, where families can sign an agreement and purchase the filters through a 3-month payment schedule with 0% interest. Customers pay 100 quetzals (Qs) at delivery, or about \$12.7 USD, and then 2 monthly payments of 100 Qs. Often customers pay the full 300 Qs upfront and receive a 10% discount.

The community entrepreneurs are in charge of collecting payments and helping their neighbors install filters if needed. They also often have extra filters and spigots in their homes to provide their customers if breakage occurs. They keep track of the dates when filters need to be replaced so they can continue to make sales in the community.

### Lessons Learned: Supplying Products and Services

Ecofiltro expected its customers to want the option of paying for filters with very small payments over a long period. Surprisingly, most preferred to pay the filter off as quickly as possible. Previously, customers had to pay 24 installments of 10 Qs, but they preferred to pay the sum off as soon as possible. Collecting these small payments became financially unsustainable for Ecofiltro. Now customers can choose 1 or 3 payments.

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Ecofiltro has found that picking the right community entrepreneurs is the best way to ensure success in rural communities. A strong work ethic, communication skills, and respect from community leaders are important traits. It is also important for the Ecofiltro field representative to return to the community several times after the initial school presentation. This helps the community entrepreneurs reach more community members with the filter program.



### **Monitoring for Improvement**

#### **Monitoring of Filter Production**

At the factory, each filter gets a serial number that is used for tracking during production, testing, and distribution. Ecofiltro regularly tests its filters to ensure quality control. Staff monitor flow rate as the key metric to approve a filter for sale. Each filter must have a flow rate of 1-2 liters per hour. They also do monthly testing of filter performance at an independent water quality lab that is internationally certified.

#### **Monitoring of Filter Use and Performance**

Ecofiltro has been certified under the Gold Standard for Carbon Offsets. To maintain this certification, there are two external monitors that continuously visit randomly selected rural communities to check on water quality and proper filter use and maintenance. An auditor is sent annually by the Gold Standard to Guatemala to visit randomly selected households, asking questions ranging from health impact of the filter to economic savings.

After two years of filter use, vendors encourage users to replace their filters with a new one. The replacement cost is 200 Qs (around US \$25). It is only necessary to replace the ceramic pot, not the receptacle holding the filter.

#### **Lessons Learned: Monitoring for Improvement**

As a business, Ecofiltro is constantly monitoring uptake rates within communities where it promotes the filters. One of the biggest challenges for Ecofiltro is getting more families to buy filters in rural areas. When they reviewed their monitoring results, they found that for every filter donated in a classroom, only 1 family was buying an Ecofiltro for their home. The 2-week free trial was added to increase sales in the communities. Already the ratio of filters sold to filters donated has doubled. The goal is to increase the current ratio 5-fold.



### **Building Human Capacity**

#### **Building Capacity of Staff**

Ecofiltro employs 60 people as administrative staff, urban sales vendors, field representatives and production personnel. To ensure the quality of their work and to support their professional development, Ecofiltro has initiated the process to become ISO certified. Staff members will need to document and carefully follow processes in their department for Ecofiltro to maintain its certification.

## Training Field Representatives and Entrepreneurs

Ecofiltro's Head of Education trains field representatives to be able to explain the benefits and basic maintenance of the filter to the entrepreneurs.

Entrepreneurs then communicate daily with rural families.

Field representatives must come to the factory for several days to understand the manufacturing process and learn key aspects of proper filter maintenance. Ecofiltro then sends them into the field with experienced field representatives for a week. This "job shadowing" helps them witness how to present the Ecofiltro in front of parents at school for maximum effectiveness.

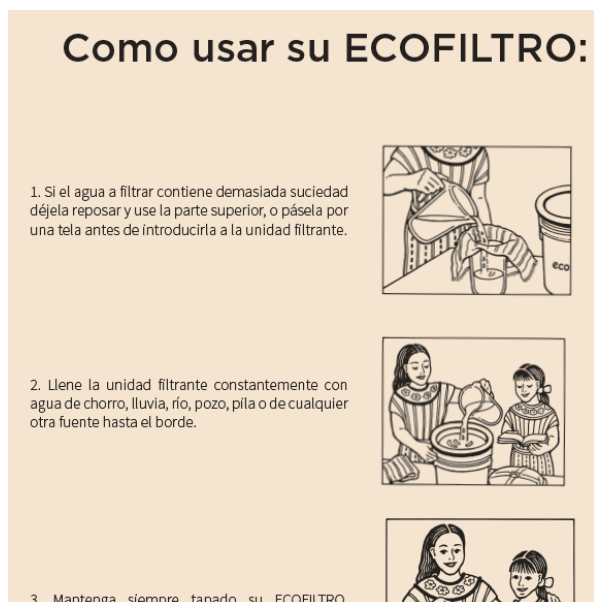


Training about Ecofiltro use and maintenance (2016)

Ecofiltro provides entrepreneurs and vendors with written information to study, and quizzes them on their knowledge of the organization's products and process. Entrepreneurs also receive a lot of technical and sales material.

## Building Capacity of End Users

At school outreach events, Ecofiltro representatives teach community members about the importance of clean water, and how the filter works. To ensure that users understand how the filter operates, when to replace the filter, and who to contact for support, Ecofiltro provides written and graphic material that is easy to understand for rural families with a low level of formal education.



Example excerpt from Ecofiltro educational pamphlet

## Lessons Learned: Building Capacity

Ecofiltro has found that finding enthusiastic school directors is key for effective implementation of the school program. Directors must agree with the educational element of Ecofiltro's program. The filter program becomes aspirational for the parents at school when the director buys a filter for his or her home along with the teachers.

## Financing

A foundation run by Philip Wilson's family provided the finances required to set up Ecofiltro, and funded the first 20 years of its operations. A few years after Ecofiltro became a social business, it became financially sustainable without requiring support from external donors. Currently, its primary funding comes from a mix of:



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- Profit from filter sales
- Carbon credits for each rural filter sold
- Philanthropy from organizations

### **Profit from Filter Sales**

In 2015, Ecofiltro sold 62,000 filters. Of these, 70% were to rural customers (average profit of 2-3% per filter) and 30% to urban customers (average profit of 40% per filter). This was the first year they were able to generate a profit from all filter sales; in the past, they had to subsidize the filters in rural areas.

For a filter sold in the field:

- Rural Director receives 5% commission
- 7 Field Representatives also receive 5% commission
- 420 Entrepreneurs receive a 10% commission

Ecofiltro also gains a small profit from its bulk filter sales to NGOs and companies.

### **Carbon Credit Financing**

Ecofiltro receives 4 carbon offsets for every rural filter sold in a community where families previously boiled water with firewood as their primary means of water treatment. The market price for these carbon offsets fluctuates each year, but stays in the range of \$2 to \$8. The filter program is combined with a clean cook stove called the Eko Stove, which reduces firewood usage by over 70% for cooking purposes and helps to increase the carbon credit revenue. The revenue from carbon credits is used for investments in expanding production capability and for funding filters for the school program.

### **Philanthropy from Organizations**

Corporations and foundations are eager to find ways to give back to their community, and many have started working with Ecofiltro to sponsor the school water program. They donate the funds required to provide filters in schools, which is a key component of Ecofiltro's demand creation strategy.

### **Lessons Learned: Financing**

It took a while for Ecofiltro to convince its staff to see the rural family as a potential customer rather than as an object of charity. Ecofiltro wanted to ensure a sustainable way of financing its program to reach the rural poor. Philip Wilson realized it would be better to reach them in a way that would become profitable, allowing them to scale up operations in low income areas.

There is still an important role for philanthropy at Ecofiltro via the school program. Ecofiltro has found that modern philanthropists want 100% of their funds to go to beneficiaries. If the donation given can be used as a catalyst for demand (as in the school program), then there will never be a shortage of these types of funding opportunities available.



### Ecofiltro Guatemala: Summary of Lessons Learned

- Get to know your end user. Ask questions and don't make assumptions about what they want or are willing to pay.
- Financial sustainability is essential for social businesses. Make sure the product can be paid off quickly and is culturally desirable.
- Respected community members, rather than outsiders, are the best people to use for product promotion and payment collection.
- Offering free trial periods helps to increase demand and uptake.
- If you hope to use a social business model rather than a traditional charity model for product distribution, you can still find creative ways to allow for traditional philanthropy. Ecofiltro uses donations to fund the filters provided in its school program.

### References

Wilson, Philip. Personal communication, February and August 2016.

### Further Information

Ecofiltro: [www.ecofiltro.com](http://www.ecofiltro.com)

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CAWST (Centre for Affordable Water and Sanitation Technology)  
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