



INSIDE

Closing the gap between supply and demand

Design guidelines for effective, low-cost HWTS products

Micro-loans overcome key access barriers

Promising strategies to reach the world's poor with household water treatment and safe storage products

PERSPECTIVES

SPECIAL REPORT

Commercial approaches to delivering household water treatment and safe storage products and solutions to low-income households

Dear Colleagues,

Five years ago, in 2007, PATH launched the Safe Water Project to better understand the role that commercial markets could play in increasing access to safe drinking water by selling and distributing inexpensive household water treatment and safe storage (HWTS) products to low-income households.



The Safe Water Project was one of several learning initiative grants funded by the Bill & Melinda Gates Foundation that explored ways of improving access to safe water, sanitation, and hygiene for the billions of people who lack these basic needs. Our focus on the role that the commercial sector could play is a small but potentially high-impact addition to the range of promising solutions being explored in the water and sanitation sector. It turns out that market-based approaches can extend and enhance the reach of public health programs and dedicated nongovernmental organizations through gains in efficiency and effectiveness and leverage through private-sector investments and infrastructure.

This publication brings you the most valuable nuggets of learning from the project. We call it *Perspectives* because we recognize that this is a unique, and in some ways limited, market-based view of safe drinking water and is just one of many ways to approach the global water problem. It is organized in six sections:

ORIGINS	PEOPLE	PRODUCTS	DISCOVERIES	IMPLICATIONS	BEYOND
describes the reasons for focusing on the intersections of health, household water treatment, and the commercial sector, and our approach to the work.	describes what we learned about households and how their point of view helped us understand market limitations and opportunities.	describes our efforts to stimulate choice and competition among HWTS manufacturers and build better HWTS products for the poor.	summarizes our commercial pilot projects, where we engaged companies in reaching low-income households with HWTS products.	discusses our analysis and synthesis of results and provides our own perspective of what we learned and where to go next.	describes how the results of our work might impact others in the water, sanitation, and hygiene (WASH) sector.

The magazine format is new to us. We selected it because we felt it would be more inviting and accessible than a report. It forced us to be concise and relevant to both experts and non-experts who can then be selective about which in-depth reports to access online. My vision is that this magazine, picked up for a quick browse in the lunchroom or on long flights, will reveal new and useful ideas about how to improve access to safe water using the power of markets in developing countries.

Our entire WASH team and our valued partners hope you will find the articles provocative and stimulating, as they represent a new direction in the HWTS field specifically and the WASH field more generally, which we think adds value to the ongoing work of the many committed researchers, governments, organizations, businesses, and citizens seeking to ensure safe drinking water for all.



GLENN AUSTIN
Safe Water Project Director, PATH
Seattle, Washington
October 2012



PERSPECTIVES

SPECIAL REPORT

Commercial approaches to delivering household water treatment and safe storage products and solutions to low-income households

PATH is an international nonprofit organization that transforms global health through innovation. We take an entrepreneurial approach to developing and delivering high-impact, low-cost solutions, from lifesaving vaccines and devices to collaborative programs with communities. Through our work in more than 70 countries, PATH and our partners empower people to achieve their full potential. For more information, please visit www.path.org.

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Summary of PATH pilot projects in Cambodia, India, Kenya, and Vietnam


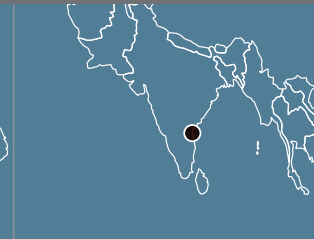
	DIRECT SALES MODEL				MICROFINANCE INSTITUTIONS (MFI) MODEL				RETAIL SALES MODEL
MAP									
LOCATION	UTTAR PRADESH INDIA	CAN THO PROVINCE VIETNAM	NYANZA AND WESTERN PROVINCES KENYA	KAMPONG SPEU CAMBODIA	TAMIL NADU INDIA	MADHYA PRADESH INDIA	ANDHRA PRADESH INDIA	KAMPONG SPEU CAMBODIA	KAMPONG CHAM CAMBODIA
PRODUCT									
PRODUCT NAME	AQUATABS	AQUATABS	CHUJIO	TUNSAI AND SUPER TUNSAI	PUREIT	PUREIT	AQUASURE XTRA	TUNSAI AND SUPER TUNSAI	TUNSAI AND SUPER TUNSAI
PRODUCT PARTNER	MEDENTECH	MEDENTECH	CHUJIO CERAMICS	HYDROLOGIC SOCIAL ENTERPRISE	HINDUSTAN UNILEVER LTD.	HINDUSTAN UNILEVER LTD.	EUREKA FORBES	HYDROLOGIC SOCIAL ENTERPRISE	HYDROLOGIC SOCIAL ENTERPRISE
CHANNEL PARTNER	MART	ZUELLIG PHARMA	SAFEWATER AND AIDS PROJECT	VISION FUND CAMBODIA	SPANDANA SPHOORTY FINANCIAL LTD.	SPANDANA SPHOORTY FINANCIAL LTD.	ACCESS and LUCKNOW PRAGATI SEWA SANSTHAN	VISION FUND CAMBODIA	N/A
MODEL DESCRIPTION	Sales of Aquatabs by newly recruited and trained bicycle entrepreneurs at weekly markets and door to door.	Sales of Aquatabs door to door by public-sector community health workers.	Sales of a ceramic water pot by self-help group members already selling health products through a basket-of-goods approach at community group meetings and door to door.	Sales of two brands of ceramic water pots door to door by direct sales agents.	Promotion and sales of durable water filters through microfinance institutions with various micro-loan schemes and product price subsidies.				Sales of two durable water filters by retailers.
POPULATION STRATA	Rural areas	Rural areas	Rural areas	Rural areas	Urban & rural areas	Rural areas	Rural areas	Rural areas	Rural areas
PRODUCT PRICE	Initially 0.5 Indian Rupees (INR) (US\$0.01) per Aquatabs, increased to 1 INR (US\$0.02) half way through the pilot	1,000 Vietnamese Dong (US\$0.05) per Aquatabs	Two price points tested, both subsidized: <ul style="list-style-type: none">• 1,100 Kenyan Shillings (KSH) (US\$12.30)• 700 KSH (US\$7.80)	Two products tested at two different prices: <ul style="list-style-type: none">• 52,000 Cambodian Riel (KHR) (US\$12.50) for Tunsai• 92,000 KHR (US\$22) for Super Tunsai	2,000 INR (US\$45)	Two subsidized price points tested: <ul style="list-style-type: none">• 1,000 INR (US\$22) – 50 percent subsidy for Pureit• 730 INR (US\$16) for Pureit and two extra filter replacement cartridges – 100 percent subsidy for Pureit	1,740 INR (US\$39) for AquaSure Xtra and one replacment filter cartridge	Two products tested at two different prices: <ul style="list-style-type: none">• 52,000 KHR (US\$12.50) for Tunsai• 92,000 KHR (US\$22) for Super Tunsai	The Tunsai sold for 52,000 KHR (US\$12.50) and the Super Tunsai was sold at three different price points in different areas: 52,000 KHR (US\$12.50), 72,000 KHR (US\$17), 92,000 KHR (US\$22).
LOAN SCHEME	N/A	N/A	Layaway plan with monthly installments over 3 months was introduced but implemented by very few vendors	N/A	Two loan repayment plans tested (in different areas): <ul style="list-style-type: none">• 80 INR (US\$1.80) per week for 25 weeks• 43 INR (US\$0.95) per week for 50 weeks	Two loan repayment plans tested (in different areas): <ul style="list-style-type: none">• 43 INR (US\$0.95) per week for 25 weeks• 39 INR (US\$0.87) per week for 17 weeks	Loan repayment plan: 250 INR (US\$5.60) per month for 6 months, plus upfront payment of 250 INR	Loan repayment plan: 8,100 KHR (US\$2) total interest; either 1.5 percent per month for 6 months or 18 percent annually	
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LETTERS FROM EXPERTS

Throughout the Safe Water Project, PATH learned much from collaborators who have been working in the water field for many decades. We asked them to share their thoughts about market-based solutions and describe what they learned during our collaboration and what they still hope to tackle in coming years. This section offers a snapshot of their thinking.

The pace of the spread of HWTS is rather slow and [appropriate, inexpensive] devices have yet to be made for poor countries.

I hope your readers know the critical importance of the need for safe drinking water. Unfortunately, even educated people in developing countries do not perceive this need and therefore are not willing to put their money toward it, which is clearly borne out by the fact that they buy and maintain a mobile phone [and not a] HWTS product.

The pace of the spread of HWTS is rather slow and [appropriate, inexpensive] devices have yet to be made for poor countries. However, all stakeholders are now convinced about the importance of HWTS and hopefully will start using these devices before the water sources become further polluted and thus totally undrinkable without treatment.

— **VINAY SINGHAL**
Principal, SJV Consultants

One of the biggest shifts in the ethos of this project was the mindset around the poor.

They are no longer viewed as beneficiaries in need of our help and our technologies, but are engaged as economic actors and decision-makers, with needs, values, prefer-

ences, aspirations, and freedom of choice. It may seem a small shift, but it is a shift that necessitates a fundamental change in strategy away from the distribu-

tion of one product to 'those who need our help' (a predominantly top-down push strategy) to a people-centered strategy, in which people have the freedom to choose and

act in ways that are best for them within a dynamic and continually improving market that is cognizant of and responsive to their needs, values, and aspirations.

— **RASHMIR BALASUBRAMANIAM**, Founder, Nsansa

It seems to me that there is no silver bullet or one size fits all technology that will solve the water problem.

There are so many different cultural norms and preferences as well as variety of conditions to consider that solutions have to be tailored to the people and place. With such a huge need for clean water, the solution will have to consist of many different parts, and market-based solutions have the potential to make a big contribution.

— **WENDY MICKLE**
Co-chair, Global Fundamentals/Laird Norton Family Foundation



The fact is, few understand markets, and fewer still really truly care about market distortions.

Daily, I am bombarded with emails, solicitations, and personal appeals to support the greatest filters, dispensers, and various other treatment options. Each seems to think he has solved something that nobody else has considered. All claim to remove 99.99 percent of contaminants. All call for a new partnership where we finance and/or distribute their products in the field for them.

The fact is, few understand markets, and fewer still really truly care about market distortions; Africa, Asia, and Latin America are littered with crappy filters, unused or in disrepair from improper use. The real revolution in water treatment will only occur when inventors and filter promoters take the time to understand customers, markets, and products.

— **NED BRESLIN**
CEO, Water for People

My concern is that demand and willingness to pay for household water treatment and safe storage solutions is still quite low.

We can try to move the demand curve out with clever marketing and messaging, or we can try to move down the demand curve by lowering prices. Both options are great challenges for research to take on.

— **ALIX ZWANE**
Senior Program Officer, Bill & Melinda Gates Foundation



My hope is that investments in market-based solutions for HWTS products will increase the percentage of low-resource households that can take control of their water quality.

In a perfect world, HWTS products would be unnecessary. Household access to safe water would be acknowledged as a basic human right and safe water would be universally available at the tap, regardless of household income. Because we don't live in a perfect world, my hope is that investments in market-based solutions for HWTS products will increase the percentage of low-resource households that can take control of their water quality.

— **BILL SNYDER**
Sustainable Business Development, LLC



We have learned that it is much harder to develop a low-cost HWTS filter for households in the developing world.

As a relatively small family-owned business, our philanthropic efforts are much smaller than those required to address the demands for safe water. If we want to make a difference, we'll need to do it by applying significant time and manpower toward finding sustainable new technical and business solutions. It wouldn't have been possible for Cascade Designs Inc. to start working on low-cost developing-world solutions without impetus from PATH.

We have learned that it is much harder to develop a low-cost HWTS filter for households in the developing world than the developed world. Nevertheless, we recognize that over the next ten-plus years, the growth in emerging markets is projected to surpass growth in our existing business.

— **KEVIN GALLAGHER**
Product Development Manager,
Cascade Designs Inc.

— **LAURA MCLAUGHLIN**
Environmental Engineer,
Cascade Designs Inc.

If successful marketing can reach lower-income groups and giveaways can be arranged for the very poor, then perhaps meaningful scale could be achieved.

I think market-based solutions play an important role in HWTS efforts in three main ways. First, through marketing, messages about water treatment can be disseminated widely and rapidly, resulting in great increases in awareness in target populations. Second, companies can create access to water treatment products. Finally, through successful sales (implying that there is consumer demand for an effective, locally appropriate product), companies can continue to make the water treatment

products available. Where market-based solutions fall short is in reaching the poorest of the poor, where the greatest burden of diarrhea morbidity and mortality resides. For these populations, I can't see any way around free, or highly subsidized, product distribution. If successful marketing can reach lower-income groups and giveaways can be arranged for the very poor, then perhaps meaningful scale could be achieved.

— **ROBERT QUICK**, Medical Epidemiologist,
US Centers for Disease Control and Prevention

MEET THE TEAM



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Photo: PATH/Sara Watson

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Dr. Thomas Clasen focuses his epidemiological research on waterborne diseases affecting low-income populations, including household-based interventions to improve the microbiological quality of drinking water in development and emergency settings.

As a Technical Advisor to PATH's Safe Water Project, Dr. Clasen was a natural contributor to *Perspectives*. Through his article, "Household water treatment and health," Dr. Clasen sets the stage for PATH's Safe Water Project's focus on household water treatment and

safe storage as means to reduce deaths caused by diarrheal disease.




MAKARAND PHADKE, PHD
Senior Vice President, Innovations, Reliance Industries Ltd.

Dr. Makarand Phadke started his industrial career with Rohm & Haas Company in Philadelphia in their Research Department. In 1994, Dr. Phadke moved to India, where he has been working with water treatment companies.

Dr. Phadke's experience has covered research and development, marketing, sales, and business leadership. Based on this diverse experience and his role as a Technical Advisor to PATH's Safe Water Project, Dr. Phadke wrote "Market-based approaches and the

very poor" for *Perspectives*. This article discusses the potential for market-based approaches to reach low-income households with water treatment solutions.




NANCY R. LEE, MBA
Founder and President, Social Marketing Services, Inc.

Nancy Lee has more than 25 years of professional marketing experience in the private, nonprofit, and public sectors. She conducts seminars and workshops on social marketing and marketing in the public sector and is a frequent speaker on social marketing at

conferences, coalition meetings, and workshops. Nancy has coauthored nine books on social marketing, including one entitled *Social Marketing: Influencing Behaviors for Good*, which features a success story from PATH.

Nancy contributed the article "Influencing consumer behavior" for *Perspectives*, in which she contextualizes the role of social marketing in behavior surrounding household water treatment.




ROBERT QUICK, MD, MPH
Medical Epidemiologist, Enteric Diseases Epidemiology Branch, US Centers for Disease Control and Prevention

Dr. Robert Quick is a medical epidemiologist at the US Centers for Disease Control and Prevention (CDC). For the past 17 years, he has worked at the CDC conducting research on the etiology, control, and prevention of enteric diseases in the developing world.

With colleagues at the CDC and the Pan American Health Organization, Dr. Quick developed the Safe Water System, a simple, inexpensive, household-based water quality intervention.

In his article, "A model worth replicating: combining antenatal care and water treatment strategies," Dr. Quick reflects on the success of a project originally conceived and implemented by Population Services International, the government of Malawi, and the CDC.



JAMIE BARTRAM, PHD
Don and Jennifer Holzworth Distinguished Professor, Environmental Sciences and Engineering, Gillings School of Public Health, University of North Carolina

Dr. Jamie Bartram's research interests focus on the connections between water (including sanitation and hygiene) and health—especially the links between science, policy, and practice—in both developing and developed countries. His research covers technologies for urban

sanitation renewal; management systems for drinking water safety and rural drinking water supply; emerging issues (including water scarcity and climate change) and their impacts on system sustainability; health system activities on water and sanitation; and sector capacity issues.

Dr. Bartram wrote "Connecting the dots between safe water standards and products" for *Perspectives*, in which he makes a case for consistent standards by which to measure the performance of household water treatment and safe storage products.

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PATH's Safe Water Project also acknowledges our many valued partners, including Abt Associates, Academy for Educational Development, Biovior Labs, Cascade Designs Inc., CDC Development Solutions/ MBAs Without Borders, CDC Foundation, China Business Group, Chujo Ceramics, Ningbo Dukang Ceramic Co., Ltd., Emory University, Eureka Forbes Limited, Hindustan Unilever Ltd., Hydrologic Social Enterprise, International Development Enterprises, Intellicap, Kadence, KMPG, Living Goods, MART, Massachusetts Institute of Technology, Medentech, Monitor, Ningbo Clean Water Purifying Equipment-Making Co., Ltd., Potters for Peace, PureEasy, Quicksand, Research Triangle Institute International, Spandana Sphoorty Financial Ltd., Safe Water and AIDS Project, CDC, University of North Carolina, Zuellig Pharma.

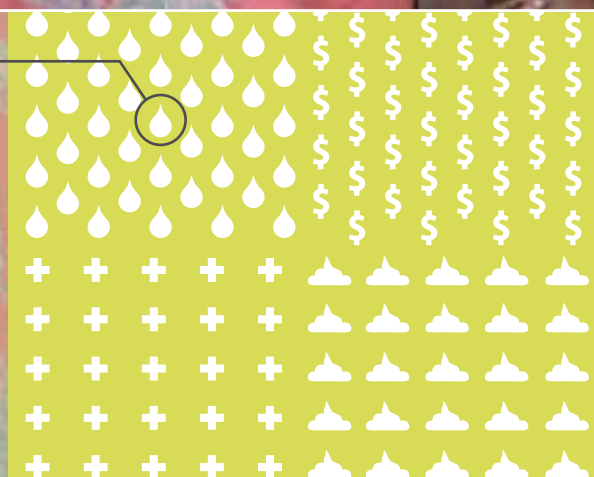
Consultants Marshall Brumer, Tara Herrick, Adrienne Kols, and Bill Snyder are much appreciated for their years of contribution to this work, as are the many other consultants who have influenced PATH's Safe Water Project.

PATH also wishes to thank the many passionate researchers, developers, designers, and implementers who continue to pioneer novel approaches to equitable access to safe water, sanitation, and hygiene products and services. Decades of extensive experimentation, research, and sharing form a firm foundation for our and all future work.

PATH's Safe Water Project was supported by a grant from the Bill & Melinda Gates Foundation.

ORIGINS

THIS SECTION REPRESENTS the perspective of many in the field who believe commercial approaches to HWTS are worth exploring. It describes how PATH built upon the deep knowledge of our colleagues in the water space and developed a strategic approach for addressing gaps in the commercial market for household water treatment products for the poor.



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Photo: PATH



Household water treatment and health

Guest article by Tom Clasen, Senior Lecturer in Water, Sanitation and Health, London School of Hygiene & Tropical Medicine

An estimated 780 million people worldwide lack access to safe drinking water (WHO 2010), and hundreds of millions more use water supplies that are contaminated or at risk of recontamination in the home.

For these people, household water treatment—such as boiling, chlorinating, or filtering water in the home—combined with safe storage can be an effective way to improve water quality and prevent disease (Clasen 2006). Household water treatment and safe storage (HWTS) has been shown to be cost-effective and cost-beneficial and can deliver significant savings that exceed the cost of delivery, especially to health care systems (WHO 2002, Hutton 2004, Clasen 2007).

Both the World Health Organization (WHO) and United Nations Children’s Fund (UNICEF) have emphasized the health gains that can be achieved from effective HWTS (WHO 2002). As a tool to prevent waterborne disease, HWTS has the potential for substantial reductions in morbidity and mortality and related health care expenditures, as well as for improvements in nutrition, productivity, school attendance, and physical and cognitive development (WHO 2002, Hutton 2004). In 2008, WHO stressed the potential contribution of HWTS in its *Guidelines for Drinking-water Quality*, noting its potential for “rapid and significant positive health impacts in situations where piped water systems are not possible and where people rely on source water that may be contaminated, or

where stored water becomes contaminated because of unhygienic handling during transport or in the home” (WHO 2008). WHO also recognized the health contribution that HWTS can make among people living with HIV/AIDS (WHO 2008). In 2009, WHO and UNICEF announced a seven-point strategy for the treatment and prevention of diarrhea among children that expressly includes HWTS (WHO 2009).

Unlike piped water and other improved water supplies, HWTS only addresses drinking water quality. It does not improve water quantity and access, which are essential for optimizing the health and development benefits of water. As a result, it is important that HWTS strategies continue to focus on health outcomes.

Research has shown the conditions that must underlie a strategy to advance HWTS that is driven by public health concerns. First, the method for treating water must be safe and effective and be available, affordable, and acceptable to the target population. Boiling predominates worldwide because of its effectiveness, availability, and acceptability (Rosa 2010), and it should continue to be the standard against which other approaches

are measured. Second, the method must reach a population that is vulnerable—especially children younger than five years of age, the immune compromised, those affected by emergencies and outbreaks, and those relying on contaminated water. Third, household members must practice HWTS correctly and consistently; even occasional exposure to untreated water can vitiate much of the potential health impact (Brown 2012).

All sectors have an important role in advancing a strategy for HWTS that is driven by public health concerns. The private sector has invested heavily in developing and promoting effective HWTS solutions, and they have achieved some of the most impressive gains to date in scaling up the intervention. This creates more opportunities for governments and nongovernmental organizations to focus scarce resources on remote and lower-income populations. Because they rely on public resources, however, it is especially incumbent upon these implementers to move away from measuring their progress in terms of coverage and to demonstrate how their approaches meet the conditions for achieving desired health outcomes. Research will support this strategy by identifying the circumstances under which the intervention can be most effective. ■

**All citations in Perspectives are listed in the “Dive Deeper” section at the end of the magazine.*

Women in India filling storage vessels at the community water pipe. Photo: PATH

Market-based approaches and the very poor

Guest article by Makarand Phadke, Senior Vice President of Innovations, Reliance Industries Ltd., Mumbai, India

Over the past five years, PATH’s Safe Water Project has invited my perspective on reaching low-income populations through the private sector.

During this time, India’s economy has seen incredible growth, and many of India’s low-income citizens have improved their quality of life as members of a new consumer class (Ablett 2007). New enterprises and opportunities for entrepreneurs are now born from little more than venture capital, technology, skills, and vision. Yet India still suffers from one of the world’s highest rates of death from diarrheal disease, and too many extremely poor endure unthinkable hardship.

The Safe Water Project sought a scenario where commercial enterprises could serve the basic needs of low-income consumers and perhaps contribute to solutions for the poorest. Their discoveries point a way forward for shared public- and private-sector investment in global health and well-being.

Reliance Industries—India’s largest private-sector enterprise—considers itself a backward vertically integrated organization; that is, we seek to be fully integrated along the materials and energy value chains. Our success relies on the integrity of these value chains. The Safe Water Project looked at household water treatment from the perspective of a similar value chain and sought to address gaps that prevent poor consumers from accessing market benefits. These gaps in product development, distribution, promotion, and affordability are fairly common, but addressing them on behalf of the poor is relatively new (Pralahad 2004).

With a growing number of companies interested in reaching the global poor, the private sector can play a strong role in meeting the needs of people

living just above poverty. This enables government, civil society, and community-level entrepreneurs to serve the poorest of the poor more effectively and efficiently. It also allows the private sector to tackle a larger share of the research and development burden, overcome distribution hurdles, and put their marketing machinery to work, all of which can result in better, more accessible, more desirable, less-expensive products that meet the specific needs of low-income families.

Market-based initiatives are a small but vital piece of the global water solution, and they represent an untapped source of financing, innovation, creativity, and scale of household water treatment solutions for low-income households. Engaging the private sector to help reach the world’s poor with water treatment products is an important step toward meeting the needs of the estimated 780 million people without access to safe drinking water. ■



The water tap is a gathering place for women and children. Photo: PATH/Glenn Austin

PATH's 35-year history commercializing products for the poor

Even when commercial entities have the capacity and expertise to develop appropriate and affordable products for low-resource settings, market forces tend to steer the private sector toward projects with higher profit potential.

This means that much-needed public health products “fail to scale,” never actually reaching the millions of people who might benefit from them. Other products may reach the market but fail to meet the specific economic and practical needs of low-income consumers.

The challenge for organizations like PATH is to influence market forces enough to attract private-sector involvement in developing appropriate, cost-effective products and making them available to resource-poor populations. To accomplish this, we co-invest in necessary and suitable technologies, reduce risks, and invigorate private commercial investment.

Through collaborations with private- and public-sector partners, PATH has been introducing innovative and affordable health-related technologies and products for 35 years. Following are some examples of products we have helped commercialize on a large scale.



The HIV dipstick is a low-cost, rapid diagnostic test that can be used in low-resource health settings to confirm HIV infection (68 million units distributed as of 2011). Photo: PATH/Glenn Austin



The Uniject™ injection system is prefilled with the exact dose of medication or vaccine. A simple squeeze of the bubble releases the right dose and disables the device to prevent reuse (88 million units sold as of 2011). Photo: PATH/Patrick McKern



Vaccine vial monitors are dime-sized stickers that adhere to vaccine vials and change color as the vaccine is exposed to heat, letting health workers know whether the vaccine is still viable (4 billion units sold). Photo: World Health Organization/Umit Kartoglu



Fortified grains made with PATH's Ultra Rice® fortification technology are blended with traditionally milled rice to create a fortified rice packed with key micronutrients to fight malnutrition. Photo: PATH/Glenn Austin



PATH developed the SoloShot™ syringe, with a fixed needle that automatically locks after a single injection to prevent reuse and infection (6 billion units sold). Photo: PATH/Glenn Austin

SoloShot and Uniject are trademarks of BD. Ultra Rice is a registered US trademark of Bon Dente International, Inc.

Improving access at the bottom of the pyramid

In theory, improving access requires that a product or service is physically available to the people who need it.

HOW WE MEASURE INCOME

For the Safe Water Project, PATH measures wealth using a standard developed for Demographic and Health Surveys called the wealth index. The wealth index measures a household's living standard using easy-to-collect data on ownership of select assets, such as radios, farm animals, and bicycles; housing construction materials; and access to water and sanitation facilities. The index is generated on a country-by-country basis using a statistical procedure known as principal component analysis, which places individual households on a continuous scale of relative wealth. The full scale is then divided into five equal parts, called wealth quintiles. In the Safe Water Project, PATH aimed to reach households living in the middle three wealth quintiles who have sufficient resources to participate in the market but are not served by the high-end market.

However, when promoting products geared toward low-income households, access has a much deeper meaning. In our experience developing global health solutions for low-income communities, PATH has learned that access can only be achieved when products are:

1. APPROPRIATE:

Too often, products are designed for higher-income users and fail to account for the unique needs and constraints of low-income users. Developing appropriate technologies requires a user-centered approach to designing, testing, and adapting new products and technologies.

2. AVAILABLE:

A good product that is never in stock or that requires a long journey to obtain is really not accessible at all. Sometimes it is necessary to transfer skills and technology to local companies and negotiate supply agreements that ensure products are readily available.

3. AFFORDABLE:

Cost can be an insurmountable obstacle in low-resource settings. To minimize the cost of products and services, local institutions can be supported

to develop or improve capabilities for purchasing, manufacturing, testing, distributing, and financing effective health products.

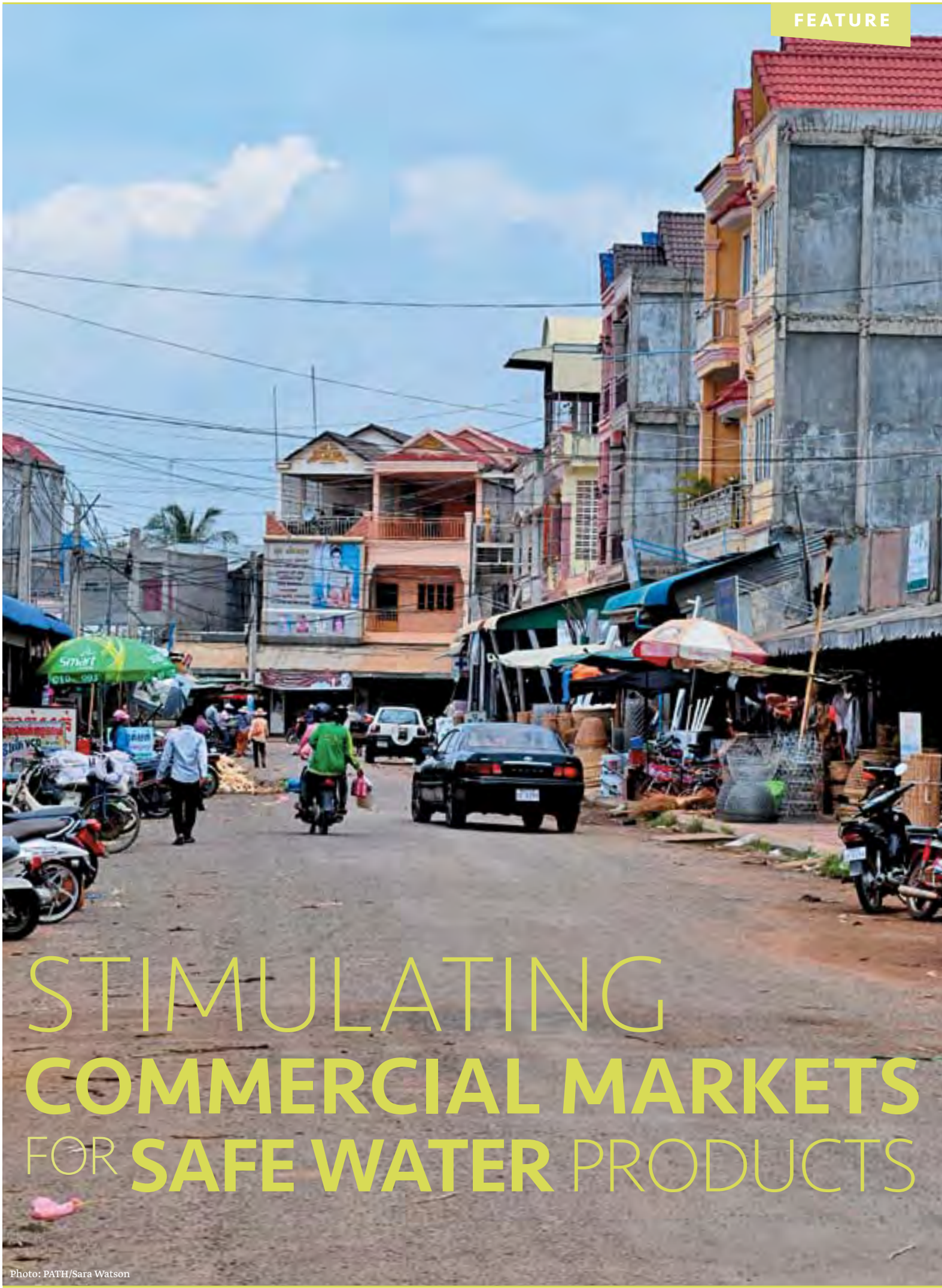
4. ACCEPTABLE:

If a community perceives a health intervention as inconvenient, threatening, or unnecessary, the intervention will not be used. An effective product development process involves users in the design process, helping to ensure the product's acceptability and even its desirability among target populations.

Achieving these objectives for the world's poorest consumers requires health-promoting organizations to align their goals with commercial companies, offer reasonable incentives, and provide oversight so that access can be improved with a sustainable return on investment for both the public and private sectors. ■

Women in Andhra Pradesh, India collect water twice daily. Photo: PATH/Sara Watson





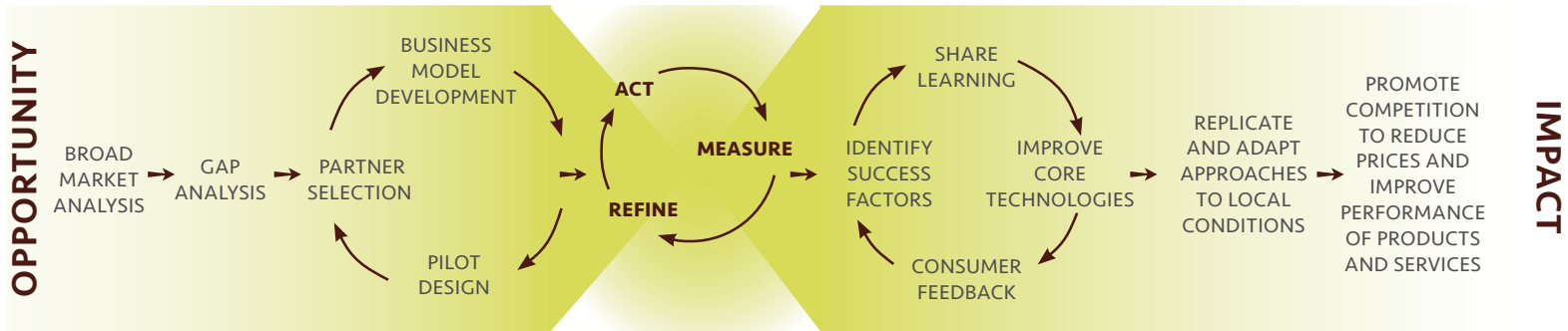
FEATURE

STIMULATING COMMERCIAL MARKETS FOR SAFE WATER PRODUCTS

Photo: PATH/Sara Watson

Over the five years of PATH’s Safe Water Project, we piloted a number of innovative approaches to product development, sales, distribution, and financing to help commercial markets reach low-income consumers with household water treatment and safe storage (HWTS) products.

FIGURE 1:
THE SAFE WATER PROJECT’S STRATEGIC APPROACH



PATH’s strategy was to identify gaps in the marketplace, test new ways to address the gaps, measure the outcomes, and share the most promising solutions.

These approaches were built upon a strategy that we developed to address three key needs in the marketplace:

- The private sector’s need to earn a profit.
- The public sector’s need to improve health.
- The consumer’s need for appropriate, affordable safe water products, especially for low-income consumers who may earn as little as US\$2 a day.

The process we followed to create this strategy (Figure 1) involved identifying gaps in the market-

place, testing methods to bridge those gaps, measuring outcomes, and sharing the most promising solutions.

INFORMED BY MARKET-BASED SOLUTIONS AROUND THE WORLD

To better understand existing market-based strategies and opportunities, we began by conducting our own foundational research on a range of low-cost durable consumer products, including HWTS products, markets, and potential customers, and co-funded a large study by the Monitor Group.

This study examined 200 market-based solutions, and identified key success factors and obstacles to scale, commercial viability, and social impact.

This work identified three important obstacles facing commercial markets. First, the up-front cost of acquiring durable HWTS products can be a significant barrier for cash-poor consumers who may not perceive the value of or need for water treatment. Second, proprietary distribution channels that protect thin profit margins for competitors act as a barrier to consumer choice, with fierce competition between brands also preventing companies from aggregating demand for specific products. Third, little is known about the preferences, desires, and constraints of low-income consumers.

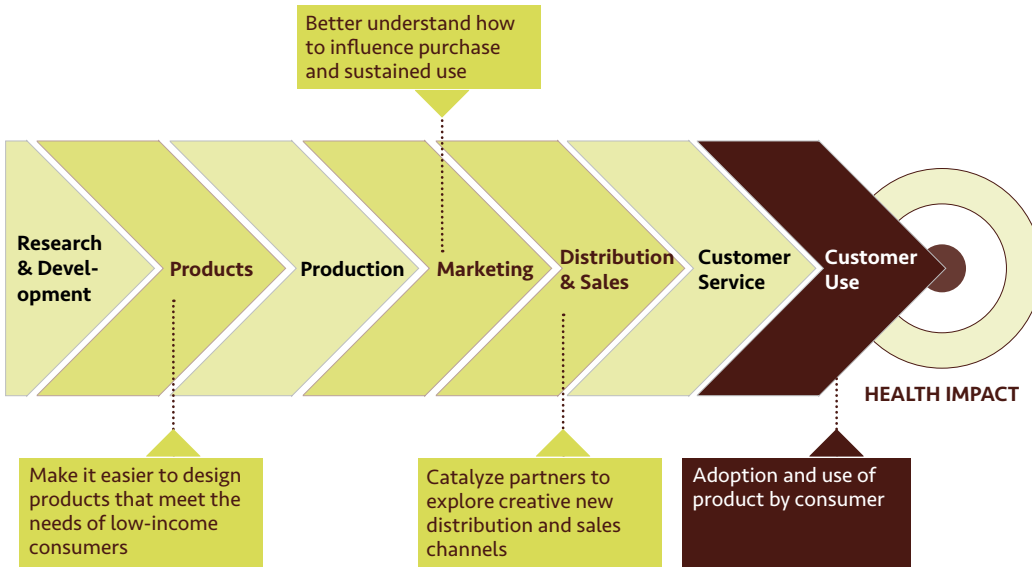
A STRATEGIC FRAMEWORK TO GUIDE INVESTMENT DECISIONS

Assimilating these insights and our formative research findings, we considered an array of distribution opportunities and potential partners—more than we could pursue in a single project. We then developed a framework (Figure 2) called the HWTS product category value chain to better understand and prioritize opportunities for impact.

When applied globally, the value chain analysis revealed three persistent gaps that could be bridged to advance the HWTS category in all countries.

continues on the next page

FIGURE 2:
HWTS VALUE CHAIN WITH GAP ANALYSIS



The HWTS product category value chain provided PATH with a strategic framework to better identify gaps and assess opportunities. Source: Adapted from Michael Porter’s Value Chain Model and Value Chain Group’s Value Reference Model

HOW WE MEASURE COMMERCIAL VIABILITY

The concept of commercial viability is often presented in different ways, depending on the context or organization. Throughout this publication, we'll look at commercial viability through two lenses. The first will be through the ultimate sustainability of the models we have worked to develop. Particularly for our private-sector partners, these models can be considered commercially viable if partners choose to carry forward and/or scale them up after the initial project period has run its course.

However, an important component of this sustainability is the second lens through which we measure commercial viability—the concept of Total Cost Recovery (TCR). While models can sometimes be considered sustainable even when they do not fully recover the costs of implementation, measuring TCR is a reliable metric to use when assessing the commercial viability of an approach. While the term “cost recovery” has sometimes been used to describe the ability of a model to recover only the costs of the health product being distributed, we feel that the inclusion of all program costs provides a more complete picture of cost recovery and thus have added the clarifying term “total” to signify that we are including all costs required to implement a model. Under this definition, the TCR methodology is as follows:

$$\text{TCR} = \frac{\text{Sales}}{\text{Program Costs}}$$

Where sales = all revenues derived from the sale of the chosen health product

Program costs = product, distribution, marketing, and administrative costs of implementation

A TCR greater than 100 percent indicates that overall, the model is profitable. A TCR less than 100 percent shows the proportion of total costs the model was able to recover.

The first gap was an overall lack of products well-suited for low-income households (see the “Products” section to learn how we attempted to introduce competition and choice among low-cost HWTS products).

The second gap was a lack of distribution models that could sustainably reach low-income households (see the “Discoveries” section to learn about our distribution and sales pilots).

And the third gap was a lack of sales and financing strategies that could persuade households to purchase and use HWTS devices (see the “People” section to learn how we tried to stimulate demand among low-income households).

These gaps varied in importance and intensity within specific countries, and they became the focus of our subsequent investments.

Geographically, we focused our initial efforts in India, where the consumer market is relatively mature and diarrhea and water-related diseases kill an estimated 1.5 million children each year (Parikh 1999). We then extended our efforts into Cambodia, Kenya, and Vietnam to build upon our learning and validate adaptations of our approaches.

PARTNERSHIP APPROACH

Focusing on gaps in the marketplace helped us identify partners needed to bridge the gaps. For example, PATH examined a number of affinity-based distribution models in India. These models typically involved a nongovernmental organization or self-help group assembling consumers and one or more companies selling water purification products. Some included a mechanism for extending credit for purchases, typically through a microfinance institution.

Knowing that the up-front costs of water filters can greatly impact uptake, PATH felt we could address both the financing and distribution gaps by pairing a microfinance lender with a water filter manufacturer. From there, PATH was able to identify a range of compatible partners.

A FOCUS ON LEARNING AND SHARING

Working with experienced institutions, we also created a monitoring and evaluation framework to capture unbiased data showing the percentage and income levels of households reached, whether the models would be profitable and scalable, and the kinds of complementary efforts that might be needed to stimulate supply and demand for HWTS.

Data were collected in quantitative surveys of randomly selected persons in our pilot areas. Water quality tests at key points plus additional qualitative interviews and focus group discussions revealed important consumer, cultural, and behavioral factors.

The resulting strategic approach reflected many of PATH's previous product development initiatives and informed pilot work that built upon models, tools, and programs across the four countries. Those pilot approaches continue to be expanded and refined by our private-sector partners, with other commercial companies and nongovernmental organizations also showing interest in advancing the models. ■

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Bird's eye view of PATH's Safe Water Project

The goal of PATH's Safe Water Project was to determine the extent to which commercial approaches can increase access to safe drinking water among low-income populations through sales of household water treatment and safe storage products.

To have an impact on the billions of people without access to safe drinking water, we sought to identify commercial models that would:

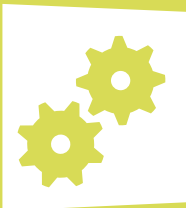
	BE SUSTAINABLE based on commercial viability when reaching low-income populations without ongoing charitable subsidies.		INFLUENCE WATER TREATMENT BEHAVIOR so products are used consistently and correctly by target households over time.
	BE SCALABLE and therefore able to reach millions of low-income households around the world.		REACH RESOURCE-POOR HOUSEHOLDS in the middle three wealth quintiles that are not currently served by existing commercial efforts.

Our plan was to work strategically with a variety of partners to pilot innovative business strategies to overcome the challenges inherent in reaching underserved, low-income markets.

PATH's initial research indicated that three major challenges consistently prevent commercial entities from reaching low-income households: products that are poorly suited to the needs of low-income populations, a lack of efficient distribution channels capable of penetrating diffuse rural markets, and an incomplete understanding of the needs and desires of low-income households.

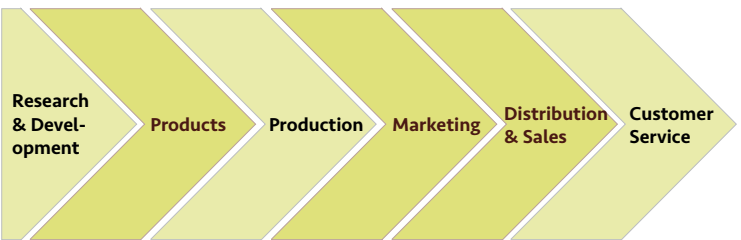
Our activities were developed to address these challenges on both the supply and demand sides. On the supply side, we helped develop and refine products and piloted eight financing and distribution models. On the demand side, we studied markets and consumers in four countries, conducted in-depth user testing with existing products, and built upon existing market research in the field.

This work has helped us understand which business models can scale in low-resource communities, which products best match the preferences and incomes of low-income households, and the limits and potential of commercial markets in reaching the poorest of the poor. ■



TOOLS APPLY THESE YOURSELF

THE VALUE CHAIN



VALUE CHAIN

PATH's value chain shows the process by which entities add value to a product or service before or after it is sold. For any social enterprise, understanding the value chain for each specific product or service is an important first step in successfully addressing market opportunities and identifying weaknesses in the value chain. To learn how to apply the value chain to your product or service, see the Landscape: The value chain section of the commercialization toolkit.

To visit PATH's commercialization toolkit, go to: sites.path.org/commercializationtoolkit

PEOPLE

HOUSEHOLDS LIVING NEAR THE BOTTOM of the economic pyramid have been our primary collaborators and most powerful teachers. This section explores household water treatment from their perspective, and shows how their insights, needs, and desires steered our work and shaped our results. Here, we explore several promising strategies for motivating people to buy and use household water treatment and safe storage products.



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Photo: PATH/Siri Wood



Selling a need

Getting consumers to buy technologies they don't think they need is a dilemma as old as the free market.

Did you know you needed an *iSomething* until you bought one?



The idea of spending scarce disposable income on a device that purifies drinking water is a strange concept to families that have been drinking the same unpurified water for generations. Although households living on less than US\$5 per day are relatively inexperienced as consumers, their requirements for new technologies are exacting. Purchase decisions are neither frivolous nor spontaneous.

A household water filter must be well-designed, highly affordable, and easy to obtain. It has to fit in people's homes now and appeal to their aspirations for the future. To motivate people to

continue using the device, it needs to be durable and easy to maintain while offering value, such as a reduction in illness or better-tasting water.

Even when these criteria are met, people may struggle to understand the problem the technology is trying to solve. Generating interest in household-level water treatment may pose the toughest obstacle of all, requiring multi-channel education efforts that use schools, health providers, the media, and the power of interpersonal communication to help people understand what clean water can do for them. ■

Many barriers prevent low-income families from desiring and purchasing devices to improve their health, such as water treatment products. Photo: PATH/Sara Watson

Persuading low-income consumers to buy household water treatment devices means first raising awareness of the need for and health benefits of clean water. Photo: PATH/Quicksand Design

Got Safe Water?

The value of category-wide promotion

Got Milk? is one of the most famous category campaigns in the United States. The campaign is credited with successfully generating sales for milk without promoting specific brands.

“Got Safe Water?” (the idea, not the wording) may be the type of campaign that is needed in many developing countries to rouse nascent demand for household water treatment.

PATH’s interest in category campaigns stemmed from the fact that few of the 780 million people without access to improved drinking water are aware that their water may be unsafe, especially if it looks clear. Many households with improved water sources still drink water that is contaminated at the source or recontaminated in the house before it is consumed. Companies that try to address this lack of awareness by promoting their specific brand of water filter can be successful, but can also fail to win the trust of potential new customers, especially when those customers have no prior experience with water treatment as a whole.

Category-level campaigns are less common because they require a lot of coordination among competitors. However, their potential for shifting demand is promising. If water treatment products are promoted as a category along with education on water quality, our findings suggest it is possible to raise demand for water treatment.

Two pilots, in Tamil Nadu and Madhya Pradesh, relied solely on brand-level promotion of Pureit water purifiers. While this approach generated high brand awareness and an uptick in sales, consumers had little appreciation of water contamination. Without a felt need for water treatment, correct and consistent use of the purifiers dropped quickly.

In contrast, a later pilot in Andhra Pradesh complemented brand-level promotions of AquaSure water purifiers with a category campaign to raise awareness of the need for safe drinking water. Consumers got the message: when forced to stop using the purifier due to filter recall, more than three-quarters of them shifted to an alternative product, subsidized bottled water, rather than return to drinking unsafe water. Of course, this was only possible because there was another competitively priced and widely promoted method available on the market.

Individuals making only a few dollars a day have hardly been a part of consumer society—with mobile phones as a notable exception. Resource limitations of this magnitude require creativity

in product design, financing mechanisms, and sales and marketing. Typical brand marketing will be dismissed by target consumers if it is not underpinned by long-term efforts to raise awareness about the need to treat water at the point of use.


Water education may occur through traditional channels such as health workers. It also may manifest in public-private partnerships or


category campaigns supported by coalitions of private companies, governments, donor organizations, academic institutions, or nongovernmental groups. What coalitions require in time and effort can pay off in creative and sustained campaigns that capitalize on the strengths of each partner. Pairing marketing savvy with public health interests is exactly why the Got Milk? campaign has been so successful.



Promotional materials like this one in Andhra Pradesh, India were created to raise awareness of the need for safe drinking water. Photo: PATH/Sara Watson

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PROJECT BRIEF
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WEBPAGE
- Sparkling Demand for Household Water Treatment Products: Lessons From Commercial Projects in Four Countries
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Generating demand
sites.path.org/water/hwts/people/generating-demand/



In Cambodia as well as India, Kenya, and Vietnam, PATH tested various materials and activities to generate demand for water treatment. Photo: PATH/Sara Watson

FEATURE

CLOSING THE GAP BETWEEN SUPPLY AND DEMAND: LESSONS LEARNED FROM THREE REGIONS

If you build it, will they come?

In markets where water treatment products are new and unfamiliar, it isn't enough to just deliver the product, no matter how sleek or affordable. Stoking demand for safe water products requires inspiring consumers to seek them out—overcoming both their lack of familiarity with the products as well as their lack of knowledge about the importance of treating drinking water.

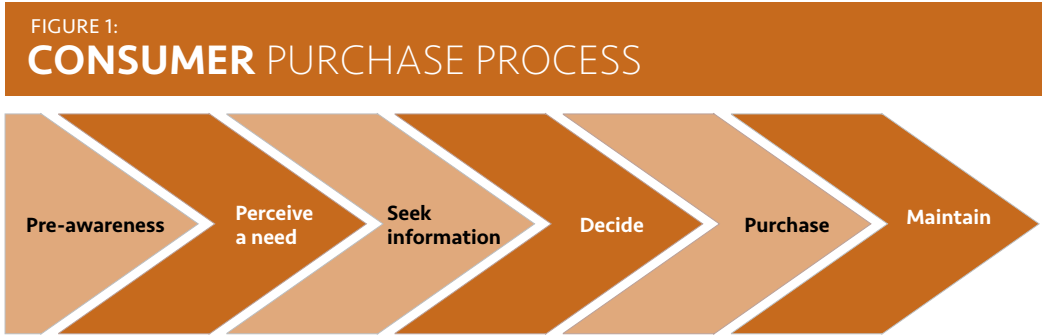
In three target markets where PATH conducted pilot projects, we set out to understand the complex push and pull of market forces that influence the success or failure of water treatment products. We invested in strategies that both increased availability of existing or improved products and encouraged uptake and use through demand generation. We considered key questions, including:

- What triggers demand?
- What role does product choice play?
- What are the most effective sales channels and marketing methods?

In pilot settings in India, Southeast Asia, and East Africa, we experimented with different approaches and learned there are multiple contributing factors

that drive market success. Ultimately, the pilots highlighted the need for innovation in creating both push and pull in these markets.

We started by identifying populations that may be early adopters of water treatment, including individuals who want to treat their water, households with young children, socially aspiring families



This model was used to help PATH understand the consumer experience in the Safe Water Project pilot settings.

interested in innovation, and communities with open water sources. We developed a simple model based on the work of the consumer purchase process to understand the consumer experience in markets where product choices are few, media are limited, and consumers are relatively unsophisticated (Figure 1). The team used the model to interpret market research, guide investments in activities to generate demand, and identify weaknesses in the purchase process that could be addressed through sales and marketing.

Our work yielded some key lessons about the best strategies for bridging the gap between supply and demand:

LESSON 1:
Different values and motivators drive behavior in specific markets and population segments.

In India, for example, familiarity with and trust in a brand name is particularly influential in purchase decisions. In Malawi, free product trials at government antenatal clinics led to significant purchase rates when water treatment messages were reinforced by trusted health workers. In India and Cambodia, safe water pilot projects demonstrated the catalytic power of offering consumer financing to enable purchase of durable filters that were already on the market or were improved and relaunched.

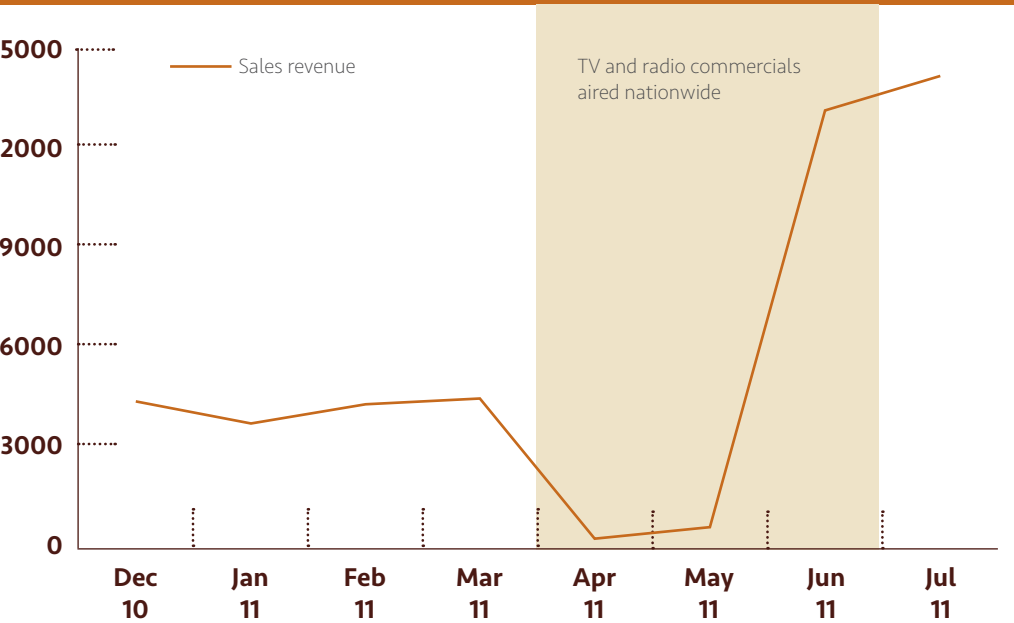
LESSON 2:
The health benefit of clean water is a common motivator for purchasing water treatment products—but it's not the only factor influencing consumer behavior.

Our pilot projects suggest that health messages are one important element in ensuring correct, consistent, and continuing use of household water treatment and storage products. In many cases, consumer aspirations also play a key role. A number of pilot projects employed messages conveying images of a happy, thriving family as an alternative to a purely health-oriented message. In Cambodia, for example, a television commercial used images of people, dress, settings, and behaviors to signal status and modernity, and the accompanying song mentioned how easy the improved ceramic water filter was to use.

LESSON 3:
Successful marketing isn't only about the message but also about how the message is delivered.

A promotional message can be delivered many different ways—through radio and television broadcasts, traditional songs and dances, or a salesperson's direct pitch to a customer, for example. Nearly all of PATH's Safe Water Project pilot studies relied heavily on nonmedia communications channels, sometimes called “below-the-line” promotional activities. Examples include telemarketing, road shows, and displays in shops. Unlike

FIGURE 2:
ADVERTISING CAMPAIGN RELATIONSHIP



The relationship of the advertising campaign to Super Tunsai sales in Cambodian retail settings. Source: PATH

mass media or “above-the-line” advertising, these activities can target specific segments and deliver tailored messages in a more personal manner, heightening their impact. Most pilots used live sales presentations with individual households or in group meetings to prompt purchases. In group sales settings, the influence of key opinion leaders was also evident, affecting consumer behavior by directing product perceptions and advocating for products.

LESSON 4:
Recruiting motivated sales agents who are trusted by their community is essential.

The Cambodia pilot study showed that selling a new water filter was not just about marketing but also about the sales experience. Good interpersonal communication enhances the interaction between a sales agent and a potential customer and is more likely to result in a sale. When commissions were phased out and less-motivated sales agents left, the sales force became smaller but more effective.

LESSON 5:
The mass media play a crucial role in the marketing mix.

The pilot project in Cambodia underscored the power of the mass media in influencing consumer purchase decisions. Total sales of Super Tunsai ceramic purifiers doubled in retail settings during a memorable television and radio commercial campaign (Figure 2). The drawback is that mass media can be prohibitively expensive and difficult to tailor to specific audiences.

LESSON 6:
On the supply side, home water treatment products need to be widely available, well-designed, and—most importantly—affordable to satisfy demand.

Consumers must have easy access to water treatment products at diverse sales points, such as retail shops and weekly outdoor markets as well as through door-to-door sales agents. Choice and competition are essential, and the products themselves need to be carefully designed to meet the needs of low-income consumers. Above all, the products need to be *affordable*. PATH's pilot work demonstrated the need for financing (loans or layaway plans) to assist low-income consumers with purchases. Customers who have purchased treatment devices also need support when things go wrong—when assembly is unclear, a return needs to be made, a part breaks, or a consumable part needs replacement.

Influencing the push and pull forces in a market is fundamental in theory, yet often neglected in practice. Manufacturers or marketers may launch a new product or nonprofits may generate demand without parallel investments in appropriate and affordable services and products to fulfill that demand. Successfully expanding access to safe water products in developing countries requires a careful balancing act between generating demand and supply—creating desire for water treatment products while simultaneously building a robust market offering product choice. ■



Most women in Malawi had heard about WaterGuard, a chlorine water treatment product. But five years after the product was first introduced within the country, hardly any of them were using it.

With Malawi ranked as one of the ten poorest countries in the world, mothers in this country bring their children into the world with the odds of illness such as HIV, malaria, and malnutrition stacked against them. Diarrheal disease is a leading cause of childhood illness and death, with contaminated drinking water a major contributor and of particular concern to the Ministry of Health.



Hygiene kits were provided to pregnant women during antenatal visits and included a safe water container with a tap, soap, oral rehydration solution, and WaterGuard liquid chlorine. Photo: CDC/Anagha Loharikar

Working with the government of Malawi, the US Centers for Disease Control and Prevention (CDC), United Nations Children’s Fund (UNICEF), and Population Services International (PSI) (which markets WaterGuard) developed a strategy to distribute the product as part of free hygiene kits provided during routine antenatal care to 15,000 pregnant women in two districts. The women also received as many as three free refills of the liquid chlorine disinfectant during subsequent clinic visits.

The impact on use of WaterGuard after this intervention was immediate and dramatic, as shown in Figure 1. Before the antenatal care program began, just 1 percent of women used the product. Nine months later, 62 percent of Malawian women who received the hygiene kits—and 28 percent of their friends and relatives—were using WaterGuard.

Intrigued by these positive findings, PATH collaborated with the program to measure longer-term impact. We discovered that many mothers continued to treat their water long after the free samples ran out. Three years after the intervention, 28 percent of program participants and 17 percent of their friends and relatives were still using WaterGuard, while others had switched to a free chlorine solution distributed by the government.

When the antenatal care program was replicated in a third district with more than 23,000 women in 2010, the results were the same. WaterGuard

Combining safe water and hygiene promotion with antenatal visits was effective for reaching mothers in Malawi. Photo: PATH/Siri Wood

use climbed from zero to 69 percent of program participants and 29 percent of their friends and relatives one year later.

TRUSTING THE INFORMATION SOURCE

What explains Malawi’s sustained increase in home water treatment? Piggybacking safe water and hygiene promotion onto antenatal visits was a highly successful strategy for reaching women, including poor women, because most expectant mothers in Malawi seek antenatal care. The program also benefitted from the reputations of health workers as respected and credible sources

“I tell community members that they can also treat their water by buying WaterGuard... I tell them also that there is a big change in my household since the use of WaterGuard started, as there is no longer diarrhea among my kids and the whole family in general.”

— PROGRAM PARTICIPANT

of health information. Clinic-based health care workers educated pregnant women on water treatment and safe water handling during their antenatal visits. Health surveillance assistants (HSAs) followed up with home visits, reinforcing behavior change messages and offering practical advice on water treatment. At the same time, PSI continued to promote WaterGuard in the mass media, including on radio and billboards.

Other elements of the antenatal care program contributed to the success of this approach, including the free product trial. But interviews with participants conducted by PATH three years after the intervention suggested that face-to-face interaction was key. Women learned about WaterGuard from sources they trusted—health workers, relatives, and friends. Creating buzz about the product through word of mouth influenced them to try the product and supported sustained use and broader community adoption of the intervention.

Contacts with health workers—especially home visits by HSAs—had the greatest influence on women. Health care workers and HSAs gave women the motivation and confidence to use WaterGuard, offering a mix of educational messages, encouragement, and practical advice. In fact, the more home visits HSAs made, the more likely women were to use and purchase the product, as shown in Figure 2.

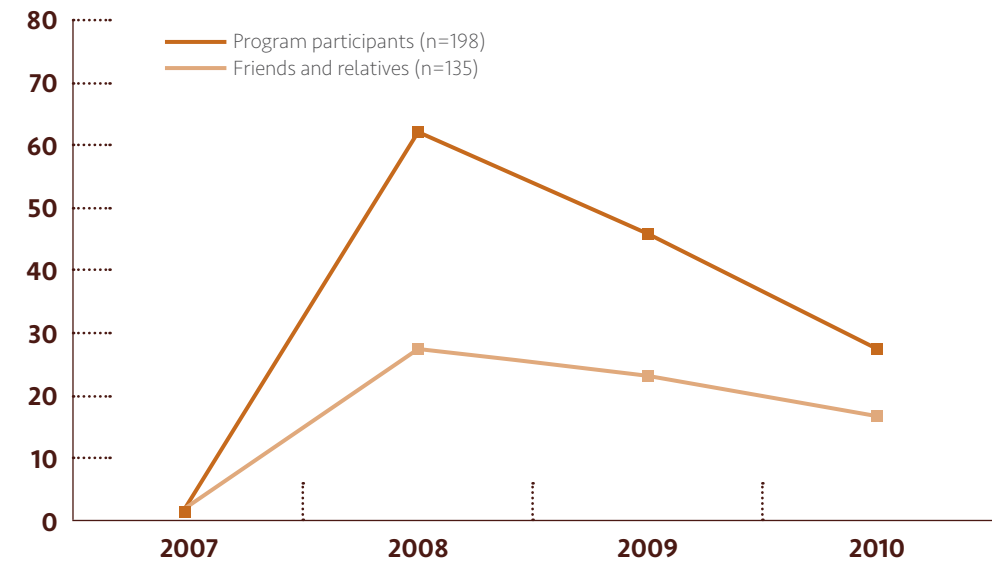
At the same time, dialogue within the family and the community—spurred by the antenatal care program—provided social reinforcement for home water treatment. Friends discussed home water treatment when they met at community boreholes and taps to collect water each day. Husbands and children began demanding treated water at home and reminded women to use WaterGuard when they forgot. Women told relatives and neighbors how using WaterGuard had decreased diarrhea episodes in their families, becoming influential role models and spokeswomen for home water treatment in the community.

THE MESSENGER MATTERS

Another lesson we learned is that not all messengers are equally trusted. Several other Safe Water Project pilots employed interpersonal communication with less success. In Uttar Pradesh, India, for example, traveling salesmen on bicycles marketed Aquatabs (chlorine tablets) to households and communities. Rural women regarded the young, male entrepreneurs with suspicion, viewing them as peddlers rather than health champions. Sales

After treating their household drinking water with WaterGuard, mothers saw a marked decrease in instances of diarrhea in their families. Photo: PATH/Siri Wood

FIGURE 1: CONFIRMED USE OF WATERGUARD AMONG RESPONDENTS



Current, confirmed use of WaterGuard among respondents to all three survey rounds. Source: Loharikar et al. 2008

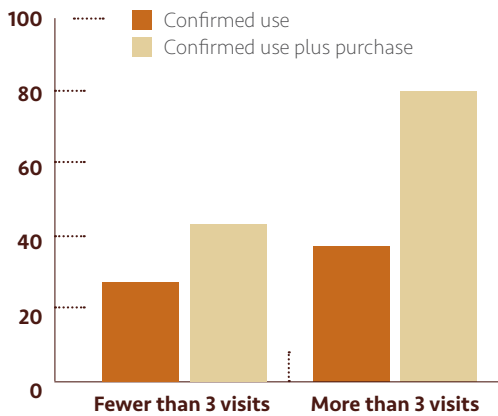
only took off when local health promoters, who had earned the trust of the community, organized group sales meetings and endorsed the product. Door-to-door sales of water purifiers in Cambodia were discontinued after the same pattern emerged.

Consumer and market research in Vietnam confirmed the lessons learned in Uttar Pradesh: findings showed that people look to local leaders and institutions for guidance on health matters and product safety and that they distrust door-to-

door salesmen and local shops marketing health products. Hence, PATH and our partners trained community health workers in Can Tho Province, Vietnam, to sell Aquatabs during home visits, in concert with community promotion events. Word-of-mouth marketing by community health workers, family, and friends proved effective at increasing awareness, more so than billboards or loudspeaker announcements, although uptake of the product was limited.



FIGURE 2: HOME VISITS INCREASE USE AND PURCHASE OF WATERGUARD



Confirmed use and purchase of WaterGuard by program participants (n=330), by number of HSA home visits, 2008 CDC survey. Source: Loharikar et al. 2008



Health workers influenced pregnant women in Malawi to treat water with WaterGuard by incorporating messages about the health benefits of clean water into antenatal visits, reaching them when they were especially open to information about protecting their children's health. Photo: PATH/Siri Wood

**PUBLIC-SECTOR CREDIBILITY,
PRIVATE-SECTOR MARKETING METHODS**

The work in Malawi offers another important lesson about reaching the poorest of the poor. The government actively collaborated on the implementation of the antenatal care program, rolling it out at public health clinics where most women seek care. In addition, initial use of WaterGuard was subsidized for an extended free trial period. These strategies helped reach low-income women, a segment often considered too poor to pay for commercial water treatment products despite a great need for safe water.

Ultimately, the antenatal care program was able to convert many of these poor households into active

consumers of WaterGuard and other chlorine treatment products. Repeated, persuasive messages from credible sources played an important role in convincing women of the value of home water treatment. But the program's novel approach in targeting consumers who were pregnant was a key factor in increasing product trial and long-term use. The success of this strategy demonstrates how segmenting and targeting a narrow, especially vulnerable audience such as pregnant women can increase uptake, even among the very poor. It also demonstrates how the public sector's credibility paired with private-sector marketing and distribution skills can be an effective means of reaching low-income households. ■

READ MORE

FACT SHEET

Promoting Home Water Treatment through Antenatal Clinics in Malawi: Qualitative Research Findings
www.path.org/publications/detail.php?i=1951

PROJECT BRIEF

Promoting Treatment of Water at Home Through Antenatal Clinics: Evaluating the Hygiene Kit Program in Malawi
www.path.org/publications/detail.php?i=1970

ARTICLE

Understanding why women adopt and sustain home water treatment: insights from the Malawi antenatal care program
www.ncbi.nlm.nih.gov/pubmed/22051403

POSTER

Understanding why women adopt and sustain home water treatment: insights from qualitative research in Malawi
www.path.org/publications/detail.php?i=2012

INFLUENCING CONSUMER BEHAVIOR

What's social marketing got to do with safe water?

The short answer is: everything.

Guest article by Nancy R. Lee, Founder and President, Social Marketing Services, Inc.

Social marketing is a proven strategy for influencing behavior and has had a profound impact on social issues in the areas of public health, injury prevention, and the environment.

Social marketing principles have been used in campaigns to reduce tobacco use, decrease infant mortality, stop the spread of HIV, increase recycling, and make wearing a bike helmet a social norm.

How can social marketing persuade people to properly treat and store their drinking water? A successful social marketing strategy starts by answering five key questions:

1. Who is the target audience—ideally a homogeneous segment ready for action?
2. What single, simple, doable behavior do you want them to adopt? Even if you have multiple desired behaviors, try addressing them one at a time.
3. What are their barriers to adopting the behavior?
4. What benefits do they want in exchange for adopting the behavior?
5. What strategies will reduce barriers and increase benefits associated with the new behavior?

Successful strategies usually involve the use of all four “Ps” in the marketing intervention toolbox: products, price (incentives), place (access), and promotion. After all, if words alone could change behavior, people wouldn't smoke, text and drive, or leave a loaded gun where a child could reach it.

Which question requires the most attention to influence behavior around water treatment? Number 3. Identifying barriers that keep people from properly treating and storing drinking water will help make the obstacles clear and inspire powerful solutions.



A model worth replicating:

Combining antenatal care and water treatment strategies

Guest article by Robert Quick, Medical Epidemiologist, US Centers for Disease Control and Prevention

Over the past 15 years, a number of studies have shown that household water treatment can improve water quality and prevent diarrhea (Clasen et al. 2009).

Despite the clear health benefits, however, scaling up water treatment interventions isn't as easy as one might think.

Evidence suggests that social marketing strategies can raise awareness of the need to treat drinking water and thereby stimulate sales of water treatment methods. But marketing alone is insufficient to reach the poorest or most vulnerable populations at scale.

New evidence suggests that distributing household water treatment and safe storage products as part of antenatal care visits can yield three-fold health benefits: increased use of antenatal

services, increased use of reproductive health services, and higher rates of water treatment (Sheth 2010). In Kenya and Malawi, water and hygiene kits, which include improved water storage containers, water treatment products, soap, and hygiene education, are given to pregnant women during antenatal care visits. Program evaluations in both countries have shown remarkable increases in the percentage of women seeking prenatal care four or more times, delivering their babies in health facilities, using postpartum family planning, treating their drinking water at home, and using proper hand-washing techniques. In these countries, social marketing strategies stimulate product awareness

and generate enough sales to offset distribution and promotion costs, while distribution of water treatment methods through antenatal care clinics permits free trials of water treatment products during the “teachable moment” of pregnancy.

While still not implemented at a national scale, the Kenya and Malawi programs offer promising models that show the potential impact of integrating water treatment with reproductive and maternal and child health services. As these programs grow, we hope they also reveal how integrated health interventions combined with social marketing strategies can contribute to improved survival and health of mothers and their babies. ■

Pregnant women in Malawi sought more prenatal care and treated their drinking water through their involvement with a program that integrated antenatal care services and promotion of household water treatment. Photo: PATH/Siri Wood

All consumers are not alike

Making sense of market segments

How do you begin to get acquainted with 4 billion people?

That’s the number of people in the world operating within the base of the economic pyramid—and the size of the potential market for safe water products. Billions of people with small amounts of disposable income add up to huge potential if we can reach them in the right way with the right products.

Tailoring products and approaches to diverse groups of consumers requires a nuanced view of each group’s behaviors, beliefs, and practices. Well-balanced segmentation research reveals recognizable and distinct characteristics across a large potential market. It also provides direction for designing and distributing appropriate products and delivering the right messages to trigger product purchase and use.

ANALYZING CONSUMERS ACROSS ASIA AND AFRICA

Under PATH’s Safe Water Project, we began our market segmentation work in India, a country of daunting size and complexity for any segmentation effort. Our segmentation studies focused on household expenditures, water treatment behaviors, and personal and family characteristics that could influence purchase and use. Results were shared with commercial partners and used to guide marketing strategies in our India-based pilots.

Subsequent segmentation activities in Southeast Asia and Africa were more structured and focused on habits, beliefs, and desires related to household water treatment. Studies in each region were customized to identify appropriate products, messages, and distribution channels that could be used in the pilots.

Findings from segmentation research in Cambodia, for example, revealed five distinct consumer segments that were relevant across both urban and rural settings. One of these five—the “not involved” segment, representing 12 percent of the population—was determined to be too difficult to reach with safe water products. The other four segments each displayed unique qualities that both private- and public-sector actors could use when developing marketing, distribution, and product development strategies.

In Vietnam, segmentation studies indicated that a segment called “practical nurturers” was the audience most likely to adopt water treatment behavior. Consumers in this segment placed a high value on the health and well-being of their family,



In Vietnam, a chlorine water treatment product was targeted to the “practical nurturer” segment—consumers who place a premium on family health but are not as picky about the smell and taste of their water (often a barrier to chlorine treatment). Photo: PATH

especially young children, and were likely to see treating water as a way to take care of their family’s health. Because they possessed minimal disposable income, they were less likely to be motivated by messages about status and technology.

Segmentation studies in Kenya and Tanzania revealed five segments in each country that were not driven solely by product price. Due to a less-developed market for household water treatment products in both countries, results suggested that consumers might benefit from the promotion of a variety of products and a “call to action” encouraging them to purchase safe water products. There also appeared to be room in each market for the introduction of a durable product such as a filter that could provide an alternative to boiling or chlorination.

TAILORING OUR PITCH

Segmentation findings across all countries allowed PATH to streamline our efforts and lay the groundwork for new opportunities. In Vietnam, for example, we were able to tailor our marketing campaign to the “practical nurturer” segment and attract the interest of mothers wanting to provide safe water for their families.

Understanding the daily routines, needs, and desires of low-income households in develop-

ing countries is not a static process. Economic and social trends are constantly shifting the consumer landscape across and within countries. Thus, what is true today about low-income consumers in any one segment may be different tomorrow—and that has important implications for reaching the billions for whom clean water could be life changing. ■

READ MORE

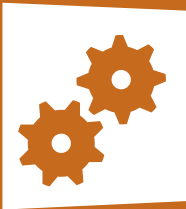
Going with the flow: Understanding the nuances of the HWTS consumer market
www.path.org/publications/detail.php?i=2011

Household water treatment and safe storage in Vietnam: Exploring commercial strategies to market safe water products
www.path.org/publications/detail.php?i=2044

Market Assessment of Household Water Treatment Products in Eight African Countries
www.path.org/publications/detail.php?i=1835

Market segmentation
sites.path.org/water/hwts/people/marketsegmentation/

Picturing the Customer: Developing Consumer Personas from Research on Household Water Use in Andhra Pradesh, India
www.path.org/publications/detail.php?i=1930



TOOLS

APPLY THESE YOURSELF



MARKET SEGMENTATION

A market segment is a subset of a market, made up of people with one or more characteristics that cause them to demand similar products or services based on qualities such as price or function. Market segmentation is often approached in two primary ways:

- Demographic: Grouping by sex, race, age, geographical location, wealth.
- Psychographic: Grouping by values, attitudes, behaviors, beliefs.

To learn more, see the Landscape: Market segmentation section of the commercialization toolkit.



COLLABORATING WITH KEY OPINION LEADERS

Every community has influential leaders to whom others turn for advice or guidance in making everyday decisions. Social enterprises benefit from the support of these key opinion leaders. Learn how to identify and collaborate with key opinion leaders to recruit staff, educate households about your product or service, develop distribution channels, and support continued use of your product or service. To learn more, see the Key opinion leaders section of the commercialization toolkit.



MARKETING

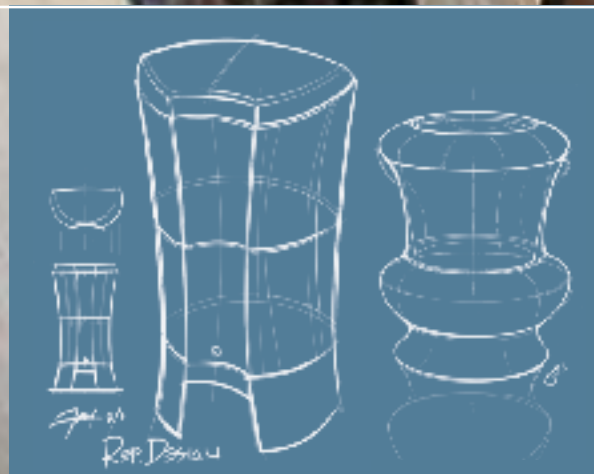
Even the best products and services will not be used if the target population is unaware of them or does not understand how they benefit their lives. Illustrating the value of your product or service and making it desirable is the role of marketing. The Marketing section of the commercialization toolkit offers guidance, tools, and case studies for enterprises in the following areas:

- Choosing the marketing mix.
- Determining the medium and the message.
- Working with media partners.
- Using marketing metrics.
- Sample marketing assets.

To visit PATH’s commercialization toolkit, go to: sites.path.org/commercializationtoolkit

PRODUCTS

THIS SECTION EXAMINES HWTS from a design perspective. It provides an overview of HWTS products and the many ways in which these products can and cannot meet the needs of low-income households. It demonstrates how commercial producers and households play important roles in testing and improving HWTS products, which allows choice and competition to be introduced into the landscape of products for low-income households.



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Photo: PATH/Quicksand Design

Looking for answers:

Understanding the landscape of household water treatment and safe storage technologies

The first step to building a better safe water product is to understand what’s already been tried.

And the best way to do that is to ask a lot of questions about what’s worked, what hasn’t, and why.

PATH’s Safe Water Project began its product development work by conducting a global landscape analysis of household water treatment and safe storage products to learn about the hits, misses, and nuances of existing safe water products.

Our project brief, “Global Landscape of Household Water Treatment and Safe Storage Products,” sparked a dialogue about product evaluation within the household water treatment and safe storage network and the broader water, sanitation, and hygiene sector. We found that asking a series of questions allowed our team to compare products and identify the best way to advance safe water products.

PRODUCT EFFECTIVENESS: WHAT’S GOOD ENOUGH?

How good does a water treatment technology need to be to ensure health impact?

Researchers are slowly addressing this persistent question. One thing is clear, technologies that meet higher performance standards come with higher costs and, often, higher levels of complexity.

Recent studies show that products at the lower end of the performance—and complexity—spectrum still provide significant health benefits, particularly when they are used consistently and correctly (Brown 2010). Given these findings, PATH prioritizes affordable and accessible products that are easy to use, even if they fall short of current US Environmental Protection Agency standards or World Health Organization water safety guidance, noting those standards were developed for better-resourced areas. We believe this strategy will help more people have clean water and better health when they cannot afford or find higher-end products.

THE BIG QUESTION	CATEGORY	SUBCATEGORY	FOLLOW-UP QUESTIONS
DOES THE TECHNOLOGY ADDRESS THE PROBLEMS IN LOCAL WATER SUPPLIES?	TREATMENT MECHANISM	FILTRATION	ARE WORMS OR PARASITES A COMMON PROBLEM?
		ADSORPTION	ARE THERE CHEMICALS IN THE WATER? HOW DO LOCAL FAMILIES EXPECT THEIR WATER TO TASTE? WHAT MINERALS ARE ALREADY IN THE WATER THAT AFFECT TASTE?
		DISINFECTION	WHAT CAN KILL THE SMALLEST MICROBES?
	PRIMARY TREATMENT EFFICACY	BACTERIA	WHAT MICROBES ARE CAUSING THE MOST SICKNESS?
		VIRUSES	ARE ANIMALS DEFECATING NEAR THE WATER SOURCE? WOULD THE WORLD HEALTH ORGANIZATION OR UNICEF APPROVE OF THIS PRODUCT?
		PROTOZOAN CYSTS	DOES THE PRODUCT TREAT AT LEAST TWO KINDS OF PATHOGENS?
	OTHER FACTORS AFFECTING TREATMENT EFFICACY	PROTECTION AGAINST RECONTAMINATION	DOES THE WATER STAY SAFE FOR DRINKING AFTER TREATMENT? HOW IS TREATED WATER STORED? HOW LONG IS TREATED WATER STORED? HOW ARE FAMILIES GETTING THEIR WATER? (Rainwater, well water, tap water, rivers/ponds/earthen dams, etc.)
		TURBIDITY	DOES THE WATER SOURCE CHANGE DEPENDING ON THE SEASON? WHAT IF MICROBES ARE NOT THE PRIMARY CAUSE OF SICKNESS?
		OTHER CONTAMINANTS	
IS FAMILY HEALTH IMPROVING?	PUBLIC HEALTH IMPACT	EVIDENCE OF LEVEL OF EFFICACY	ARE BABIES, CHILDREN, THE ELDERLY, AND THE SICK DRINKING TREATED WATER? HOW CONTAMINATED WAS THE WATER IN THE HOUSE BEFORE TREATMENT? DOES HEALTH VARY DEPENDING ON THE SEASON? ARE OTHER HYGIENE PRACTICES IN THE HOUSE CAUSING SICKNESS? IS THE PRODUCT USED PROPERLY AND CONSISTENTLY?

READ MORE



Global Landscape of Household Water Treatment and Safe Storage Products
www.path.org/publications/detail.php?i=1864

PROJECT BRIEF

THE BIG QUESTION	CATEGORY	SUBCATEGORY	FOLLOW-UP QUESTIONS
MIGHT WE DO MORE HARM THAN GOOD?	SAFETY	MEDIA TOXICITY	DO THE TECHNOLOGY COMPONENTS OR MEDIA INTRODUCE A NEW SOURCE OF CONTAMINATION?
		QUALITY CONTROL	WHO ENSURES THE SAFETY OF WATER PRODUCTS IN EACH COUNTRY? HAS ANYONE VISITED THE MANUFACTURER'S PRODUCTION SITE? DOES QUALITY ASSURANCE EXIST IN THE COUNTRY? IS ANYONE RESPONSIBLE FOR ENFORCING STANDARDS? HOW IS A MANUFACTURER PENALIZED FOR A POOR-QUALITY OR UNSAFE PRODUCT?
		INCORRECT USE	WHAT COULD POSSIBLY GO WRONG? WHO COULD BE HURT? HOW WOULD A FAMILY REPORT A HAZARD OR PROBLEM? CAN THE PRODUCT ACCUMULATE AND RELEASE TOXINS?
DO WE UNDERSTAND THE BARRIERS TO SUCCESS?	PRIMARY TECHNOLOGY FACTORS	TECHNOLOGY READINESS	ARE THE PRODUCT AND REPLACEMENT PARTS COMMERCIALY AVAILABLE? IS THERE ENOUGH OF THE PRODUCT TO MEET DEMAND? WHO DISTRIBUTES THE PRODUCT? IS THE PRODUCT MANUFACTURED CLOSE TO THE TARGET MARKET? CAN THE PRODUCTION BE REPLICATED IN OTHER COUNTRIES?
		ACCEPTABILITY BY USER	DOES THE WATER TASTE GOOD? IS THE PRODUCT AESTHETICALLY PLEASING? IS THE PRODUCT "TOO FLASHY?" IS THE PRODUCT EASY TO CLEAN AND MAINTAIN? IS THE FLOW RATE FAST ENOUGH TO MEET FAMILY NEEDS? IS THE FLOW RATE TOO FAST, CAUSING CONCERN ABOUT EFFICACY OF TREATMENT? DOES THE VOLUME OF TREATED WATER STORED IN THE PRODUCT MEET THE FAMILY'S NEEDS? HOW HARD IS IT TO FILL THE PRODUCT? IS DISPENSING WATER EASY? IS THE TREATED WATER TOO WARM TO DRINK?
		CAPACITY OF PRODUCT	HOW LONG DOES THE PRODUCT EFFECTIVELY TREAT WATER?
		ACQUISITION COST	DOES THE LIFE OF THE PRODUCT OFFER VALUE FOR MONEY?
		MAINTENANCE COSTS	WHO IN THE FAMILY DECIDES TO PURCHASE HOUSEHOLD PRODUCTS? WHO DECIDES HOW FAMILY MONEY IS USED? HOW DURABLE IS THE PRODUCT? HOW OFTEN DO PARTS BREAK? WHO VALUES THE PRODUCT THE MOST? WHO KNOWS WHEN THE PRODUCT IS BROKEN OR IN NEED OF MAINTENANCE? WHO FIXES THE PRODUCT? WHO PAYS FOR REPLACEMENT PARTS?
		UPTAKE AND CONTINUED USE	DO FAMILIES CONTINUE TO USE THIS PRODUCT BEYOND ONE YEAR? WHO IN THE FAMILY ACTUALLY USES THE PRODUCT?
	SECONDARY TECHNOLOGY FACTORS	SUPPLY CHAIN	HOW MUCH DOES DISTRIBUTION ADD TO PRODUCT COST? IS THE PRODUCT HEAVY OR BULKY? WHERE CAN YOU FIND THE PRODUCT? WHERE CAN YOU FIND REPLACEMENT PARTS? WHY SHOULD ANYONE REPLACE THE FILTER IF IT IS NOT BROKEN?
		TRAINING AND SUPPORT	DO FAMILIES UNDERSTAND HOW TO USE THE PRODUCT? DO FAMILIES UNDERSTAND HOW TO FIX THE PRODUCT? WHO IS RESPONSIBLE FOR TECHNICAL ASSISTANCE? WHAT ROLES DO NONPROFITS, GOVERNMENTS, AND PRIVATE COMPANIES PLAY? WOULD AND CAN FAMILIES ACTUALLY ACCESS TECHNICAL ASSISTANCE? HOW HELPFUL ARE THE HELP LINES NOTED IN THE PRODUCT BROCHURE? ARE WARRANTIES AND GUARANTEES TRULY PROVIDING PROTECTION FOR LOW-INCOME FAMILIES?



Getting it right: the role of product development in reaching low-income consumers

A good product development approach seeks to understand users and their stated and unstated needs, as well as the environmental and cultural factors that impact their lives.

This user-centered approach is fundamental to developing a solution that will be welcomed into users’ lives and lead to safe and consistent use.

Product development is especially important when designing technologies that can improve the lives of vulnerable families. These families often face the highest disease burden, and they both need and deserve well-designed products that can help them improve their health and well-being. Yet, traditional business approaches to product development typically do not meet the needs of poor families, who are not seen as a profitable market. Instead, existing products are often modified to reduce manufacturing costs and then sold to the poor.

In many cases, these products can have unintended consequences and actually interfere with efforts to improve health, increasing resistance to future adoptions of improved technologies. For example, a pit latrine installed without a mechanism for removing the waste may flood and distribute pathogens that can make people ill.

Similarly, a water treatment product that breaks under tough conditions of daily use may discourage a low-income family from investing again in a health technology. These kinds of poorly designed interventions, sometimes provided by well-meaning but under-informed organizations, frustrate or even endanger users and are quickly abandoned.

If product development is so important, why is it so often overlooked when designing new health solutions for low-income families? One answer may be that product development usually happens behind the scenes. When a product or service works, it isn’t always obvious why it was successful. Perhaps it was a committed implementing organization, a supportive government policy, or a new incentive scheme—all important components of success. But if all these components are replicated in the absence of a well-designed product, the investment of time and money may be lost.

Effective product development doesn’t just serve users. It also helps drive demand and support manufacturing, sales, financing, distribution, and

installation on a large scale. For example, PATH redesigned an existing ceramic water treatment device in Cambodia to support increased use. We created a more attractive design, evaluated multiple manufacturing options, tested retail and direct sales approaches, worked with our field partner to understand distribution challenges, and redesigned the product to pack into a smaller box. The result was a new version of the product that generated significantly higher demand and—importantly—more consistent use among households.

The Safe Water Project was fortunate to have sufficient funding to develop several health products informed by multiple disciplines, including user research, industrial design, design engineering, manufacturing engineering, and commercialization expertise. That kind of broad funding support is rare. Our experience shows that greater attention to product development and a multidisciplinary approach is likely to pay off for organizations and funders investing time and money in solutions to improve the health and well-being of underserved populations. ■

Users themselves must steer the product development process.
Photo: PATH/Siri Wood

How many engineers does it take to change a water filter?

The old joke about how many professionals it takes to change a light bulb is funny because changing a light bulb is so easy. PATH believes it should be that easy to replace a water filter.

To make that a reality, we studied how light bulbs, batteries, and other common household products evolved to the point that they are so easy to replace that to suggest otherwise is... funny.

There is nothing funny about PATH’s motivation for making it easier to replace water filters.

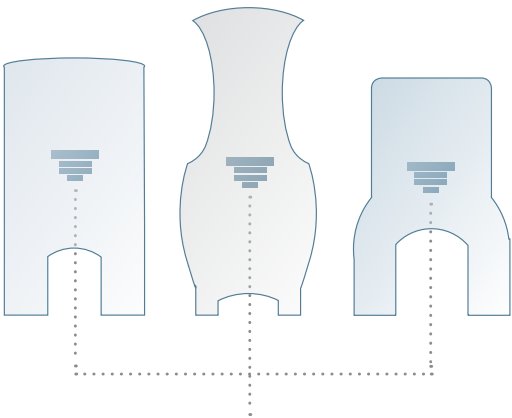
Unsafe water is a leading cause of diarrheal disease, which kills 1.5 million children each year.

To reduce the threat of diarrheal disease, water filters must be as easy to find, afford, and replace as a light bulb or flashlight battery.

Understanding how and why light bulbs and batteries evolved into “standardized,” interchangeable products helped us apply the benefits of that approach to water treatment products for the developing world. These benefits range from consumer choice at the time of purchase to rapid innovation driven by competition for replacement business. This approach is also better for



companies that make water treatment products and water purification technologies because it will lead more households to purchase water treatment products, just as it sped adoption of household lighting systems and consumer electronics in developed countries in bygone eras. It is a better way to provide household products that require periodic replacement of high-tech components.

How many low-cost, highly effective water treatment products will it take to reduce the burden of diarrheal disease in the developing world? Millions, in thousands of hard-to-reach villages. More products, in more places, than any one company can provide. A common interface among water treatment devices and their corresponding filters will allow hundreds of companies to join forces to develop and deliver affordable, effective water treatment products where they are needed most. ■



A common interface among different water treatment devices allows a filter to be used interchangeably within multiple devices.

READ MORE

-  **Product design strategy**
sites.path.org/water/hwts/technology/design_strategy/
-  **Newly designed ceramic water pot for low-income households**
www.path.org/publications/detail.php?i=2008
-  **Our end-users as co-designers: Development of the Safe Water Project Reference Design and Design Guidelines**
www.path.org/publications/detail.php?i=2009

Connecting the dots between safe water standards and products

Guest article by Jamie Bartram, Professor, Gillings School of Public Health, University of North Carolina

Safety standards for drinking water and household water treatment and safe storage (HWTS) products are addressed in a patchwork of policies, regulations, and studies.

The World Health Organization’s (WHO) water safety guidance, the Millennium Development Goals, data from the Joint Monitoring Programme for Water Supply and Sanitation, and the US Environmental Protection Agency all contribute to the regulatory and standards environment shaping new HWTS products.

But in the still-evolving field of drinking water safety, there is no clear, coherent, and consistent standard to measure the performance of HWTS products aimed at low-income households.

My colleagues in the scientific and policy communities have collaborated to develop testable performance benchmarks for HWTS products that reflect WHO water safety guidance.


These benchmarks recognize and value products that provide incremental improvement in water safety—products that strike a balance between technical perfection and real-world adoption and implementation to improve health.

Evaluating household water treatment options: Health-based targets and microbiological performance specifications describes a quantitative risk model that proposes three tiers of performance appropriate in different settings. The model can be verified by using test data from projects around the world.

By investing in this research, donors and policy-makers can help ensure that entry-level water treatment products are available to populations

in need, that they offer incremental improvement in water safety, and that manufacturers have targets for improving product performance over time.

READ MORE

-  **Evaluating household water treatment options: Health-based targets and microbiological performance specifications**
www.who.int/water_sanitation_health/publications/2011/household_water/en/

The importance of listening to users



1 In 2009, PATH worked with Quicksand Design to conduct in-depth ethnographic research among low-income households in India to better understand their experience with household products.



2 The study involved 20 households earning less than US \$5 per day per capita in four districts of Andhra Pradesh (Medak, Rangareddy, Warangal, and Mahbubnagar).



5 Children frequently helped less-educated adults make sense of both oral and written instructions for HWTS products. They became de-facto experts who assisted adults repeatedly during the initial setup and use, as well as later during cleaning and maintenance.

When PATH’s Safe Water Project sought to design products that would meet low-income users’ needs, we spent a lot of time visiting people’s homes and communities, talking with them about their lives, and watching how they prepare and store water for their families’ consumption.

In an extended user testing study in India, we worked with Quicksand Design to observe households as they interacted with existing household water treatment and safe storage (HWTS) products placed in their homes for six months. In our own product development shop, we assembled a range of commercial products and took them apart to understand their benefits and limitations. We also developed our own HWTS prototype and field-tested it with households in India.

What we found clearly illustrates that not all water treatment products are created equal. Devices that are difficult to assemble correctly do not ensure

safe water or promote sustained use. Products that can’t withstand the rigors of household use or that leave water with a bad taste or smell are not sufficient. And options that are too fussy, unfamiliar, or expensive will not be purchased in the first place.

To stimulate uptake and correct and consistent use, products must be appealing, affordable, and realistic for the populations they target. By listening and responding to the needs of low-income users, more companies can develop and refine several water treatment products that real people can use effectively, correctly, and consistently to provide safe drinking water for themselves and their families.



3 Water filters are novel products in this part of India—few participants had ever seen a filter before. Those who had some awareness of filters had seen them in a friend’s or neighbor’s house or at the market.



4 When researchers asked participants to rank household appliances by their perceived value, most participants ranked a generic HWTS product below a television, mobile phone, bicycle, pressure cooker, and fan.



6 Units that were shipped disassembled took users more time to set up and presented more opportunities for assembly errors, but participants gained a better understanding of how these filters worked.



7 Most households filled their HWTS products every morning and evening. Water that was more than one day old was discarded or used for washing.

Photos: PATH/Quicksand Design



8 Product accessories such as back-flushing filter cartridges helped users remember to periodically perform special cleaning procedures; however, these accessories proved fragile and frequently broke in use.



9 The extended user testing helped PATH understand user experience and preferences for HWTS products over time; we leveraged that information to design appropriate HWTS products.

Photos: PATH/Quicksand Design

Design guidelines for effective, low-cost HWTS products

Product development for any new product or consumer group is a long, expensive process. It is rarely as simple as adapting an existing product meant for other consumers.

Low-income households have specific needs, desires, and constraints that must be fully understood and translated before developers can build an effective and desirable product. Because the profit potential in low-income markets is still unproven, it is difficult for companies to invest in products that specifically meet the needs of low-income users.

To minimize barriers to market entry, keep prices low, and stimulate competition among household water treatment and safe storage (HWTS) manufacturers at the low-income end of the market, PATH conducted extensive research and development work and compiled our learning in a set of design guidelines for effective, low-cost HWTS products. These guidelines are available online for anyone designing HWTS products for low-resource settings.

RESEARCH AND DEVELOPMENT PROCESS

The design guidelines were based on three years of research and development beginning in India in 2009, where five currently available HWTS products were placed in 20 different rural and peri-urban households for a period of six months. The products placed were gravity water purifiers (Rama, India), PureIt multi-stage filters (Hindustan Unilever, India), AquaSure multi-stage filters (Eureka Forbes, India), LifeStraw Family purifier (Vestergaard

Frandsen, Switzerland), and Rabbit ceramic water pots (Hydrologic Social Enterprise, Cambodia). This longitudinal ethnographic study on user experience revealed much about what works and does not work and helped identify key product attributes that might influence the adoption and sustained, correct use of future iterations of HWTS durable products.

We learned, for example, that products made from many complex parts are difficult to assemble correctly by household members. Tap heights that require the device to sit on an elevated surface do not allow water dispensing when placed on the ground, as is often necessary in poor households. Devices requiring cleaning methods inappropriate for low-resource settings become an additional burden to the household routine and a potential source of recontamination of water.







By observing these shortcomings and discussing the needs and desires of low-income users, we created a set of draft recommendations for how to tailor HWTS product designs to low-resource settings. Using these draft recommendations, we then developed our own prototype water filter and field-tested 15 prototype devices in a three-month longitudinal study in Andhra Pradesh, India. During the study, researchers met with families monthly to observe assembly and cleaning, and

to discuss use habits, attitudes, and behavior. Researchers also conducted water quality evaluations to track the relative contamination of each household’s treated and untreated drinking water over time.

The field tests informed, confirmed, and validated the recommendations in the design guidelines.

Although the guidelines were developed primarily from research in Andhra Pradesh, they represent the key types of information that developers would need to gather or validate in other regions of the world. As PATH continues to gain knowledge about the HWTS product category, the guidelines should evolve to reflect new learning, including work being done in Cambodia and sub-Saharan Africa. Continual improvement of the guidelines means continual improvement of water treatment products for low-income households. ■

READ MORE

-  **Extended User Testing**
www.flickr.com/photos/52774573@N04/sets/72157624739079444/
-  **Extended User Testing of Water Treatment Devices in Andhra Pradesh**
www.path.org/publications/detail.php?i=1841
-  **Findings From Investigation of User Experience With Household Water Treatment and Storage Products in Andhra Pradesh, India**
www.path.org/publications/detail.php?i=1620
-  **Our end-users as co-designers: Development of the Safe Water Project Reference Design and Design Guidelines**
www.path.org/publications/detail.php?i=2009
-  **Testing household water treatment products with users**
www.youtube.com/watch?v=_8KLC2Ke0sE&list=PL871BD18AA5DB0B42&feature=player_embedded
-  **User Testing of Household Water Treatment and Storage Products in Andhra Pradesh, India**
www.path.org/publications/detail.php?i=1949

READ MORE

-  **PATH’s HWTS design guidelines**
www.path.org/hwts-design-guidelines/index.php

Photos: PATH/Quicksand Design



FEATURE

CONSUMER DESIGNED TESTED AND APPROVED

A PRODUCT DEVELOPMENT SUCCESS STORY

In February 2011, PATH finalized agreements with three manufacturers to develop, produce, and sell gravity-fed household water treatment and safe storage (HWTS) devices with interchangeable replacement filter mechanisms—a potentially groundbreaking development that could significantly expand water treatment options for low-income consumers in Asia and Africa.

By seeking input from low-income consumers, PATH is developing products that suit the unique needs and preferences of low-income households. Photo: PATH

The manufacturing agreements marked the final step in an extensive process led by PATH and shaped by the consumers themselves.

USER-DEFINED FEATURES

What makes this success story unique is the important role that consumers played in refining and validating product design. The new devices are based on a gravity-fed filter prototype developed by PATH and honed through multiple stages of input by low-income users. They are all fitted with nonproprietary generic filters that customers can replace by purchasing from competing filter manufacturers.

Recognizing that choice is an important component of demand, we began soliciting input from

users in 2007 by simply trying to understand how low-income households in Asia relate to and use water. Using HWTS devices already available in Asia, we placed a range of products in low-income households to get specific feedback from users about product features and design elements. Our extended user testing in India provided rich evidence about what worked and what did not, what users grew to like and what they grew to dislike about the products, and how that affected their use over time.

Perhaps not surprisingly, we learned that no single product in the study satisfied users' needs. Users explained why each product was too expensive, too fancy, too simple, too complicated, or too fragile. Interpreting this feedback with our design

partners Quicksand Design and Cascade Designs Inc., we returned to users with a wide range of ideas for design concepts, including pumps and hanging filters—most of which were rejected outright by users.

We discovered that users wanted something simple with familiar styling, something that fit their mental model of what a HWTS device should look like. Thus, a simple, gravity-fed filter shaped the direction of our work.

Prototypes were refined and adapted, and finally, beta prototypes of a final design were tested in households at the end of 2010. The results of the beta testing led to final design changes and validation of concepts, all of which are captured in our

Urban and rural Indians from low-income households helped test early prototypes.
Photo: PATH



design guidelines (see “Design guidelines for effective, low-cost HWTS products” on page 37 or the HWTS guidelines webpage) and the final prototype.

WORKING WITH MARKET FORCES

In 2010, PATH screened more than 60 potential candidate companies in China to co-develop HWTS products based on our reference design and design guidelines. Nearly all the candidates were involved in contract manufacturing, making variations on a HWTS product known as the “Mineral Pot,” an affordable and attractive gravity-fed filter popular in Asia and the Middle East.

From these candidates, PATH identified three partners with a proactive and entrepreneurial business approach and an interest in developing their own products for the low-income market.

Since 2011, we have been working with the Chinese manufacturers to design three new products based on our design guidelines. Each manufacturer interpreted PATH’s reference design based on its own market knowledge, thus differentiating their products and creating competition among product lines. In this corner of the HWTS market, cost is king, and the new design concepts from our Chinese partners will compete directly with each other as well as with the myriad variations of the Mineral Pot at an agreed starting price of around US\$12.

COMPETING FOR MARKET SHARE

The three Chinese manufacturers received technical support from PATH to develop, manufacture, and sell variations on our reference design. Each variation is compatible with a common filter interface, which allows users to replace the filter mechanism

to meet their water quality needs and budget. The water filter devices themselves must compete head to head in trade shows, and will differentiate themselves based on design features and price. The products are being marketed to distributors who typically buy water treatment devices from the Chinese, brand them, and sell them in Southeast Asia, South Asia, the Middle East, and Africa.

Our expectation is that these new products will lay the groundwork for a new category of HWTS devices and expand water treatment choices for low-income households. The new products will also help spur much-needed competition in the low-income market for HWTS devices and replacement filters, leading companies to compete on design, price, and outreach strategies to target consumers. ■



PATH is partnering with device and filter element manufacturers to create new devices that will accept a range of filter elements.

READ MORE

-  **New water filters for low-income households**
www.path.org/publications/detail.php?i=1992
-  **Our end-users as co-designers: Development of the Safe Water Project Reference Design and Design Guidelines**
www.path.org/publications/detail.php?i=2009
-  **PATH's Prototype Water Filter for Household Water Treatment**
www.path.org/publications/detail.php?i=1996
-  **Three water filters interchange the rules: Working together to increase access to safe water for low-income families**
www.path.org/publications/detail.php?i=2010

CERAMIC WATER POT MAKEOVER:

PATH AND HYDROLOGIC
GIVE THE CERAMIC
WATER POT A NEW LOOK

FEATURE



PATH worked with Hydrologic Social Enterprise to develop and introduce an improved ceramic water pot to suit the needs of low- and middle-income families. Photo: PATH

Ceramic water pots are among the most humble, ubiquitous, and easy-to-use household water treatment products. They can be found in Africa, Asia, and Latin America and are often made by local craftsmen. They have been the filter of choice for many charitable efforts to scale up household water treatment; however, uptake has been frustratingly slow.

The product consists of a terra cotta ceramic pot nested inside a large plastic bucket with a tap. Although users find it easy to operate and maintain, they complain that the pot itself is fragile and too easy to break. Also, ceramic quality is often inconsistent. For the manufacturer, distribution is challenging because of the sheer size, weight, and fragility of the device.

THE UGLY DUCKLING

PATH took a special interest in the ceramic water pot (CWP) after low-income households in India took a liking to it during our extended user testing studies in 2009. In these studies, households were given one of several low-cost brands of household water filters and asked to provide feedback over six months. One of the products tested was a CWP made in Cambodia. This particular CWP is sold under the brand name Tunsai and has been produced since 2001 by International Development Enterprise’s social enterprise, Hydrologic.

Although households that received the Tunsai brand CWP were generally disappointed that they did not receive one of the flashier products, families eventually grew to like the CWP. More importantly, they began to use it consistently and correctly over time. In the end, households rated the CWP more highly than other available products and stated a desire to make it their primary source of water treatment.

Encouraged by these findings, PATH hypothesized that a more aesthetically pleasing exterior shell for the CWP, based on preferences identified by



These product sketches were developed based on popular Cambodian household products and influential Cambodian artwork to ensure the appropriateness of their aesthetic. Photo: PATH

users themselves, might increase initial sales—and ultimately use—of the product among low-income households.

A FRESH NEW LOOK

In partnership with Hydrologic and CAD-Based Solutions, a Seattle design firm, we sought to redesign Hydrologic’s CWP. Our goals were to develop a product that would have the positive characteristics of the original—a simple device that produced clean water in a reasonable amount of time—but would be more attractive, easier to ship and store, and priced right for the low- to middle-income consumer.

As work progressed, we defined another goal: making the design flexible enough to work with ceramic pots of various sizes that might be available from different manufacturers or in different countries. We met the final goal by introducing a new element: the adaptor ring. The adaptor ring and the ceramic pot, together, form an interoperable platform interface. Different-sized adaptor rings allow ceramic water pots of different sizes to sit within the cosmetically improved exterior shell. This filter platform allows PATH and others to promote use of the design in diverse settings, while allowing manufacturers to make use of

locally available ceramic pot filter elements of different sizes.

After the cosmetic upgrade, the CWP was reborn as the Super Tunsai and given a jazzed-up label featuring a healthy, athletic rabbit (Tunsai) in jogging gear. Colorful new packaging and promotional materials were created for further consumer appeal.

BETTER SALES

The Tunsai and the Super Tunsai were sold side by side in retail sales and direct sales models in Cambodia to assess relative uptake and consumer preferences. Despite the Super Tunsai’s substantially higher, unsubsidized price (US\$22, compared to US\$12 for the Tunsai), the redesigned product outsold the previous model by 2.5 to 1 during the time period of the pilot project. When consumers were offered a US\$5 coupon to help cover the higher cost of the Super Tunsai, the sales ratio was even higher, at 11 to 1. Current sales numbers show that ratio at 25 to 1 in favor of the Super Tunsai. Increasing the coupon to US\$10 (making the two products equal in price to the consumer) resulted in essentially all sales going to the Super Tunsai. The results show that improving appearance may be an important factor in increasing uptake of a reliable, low-cost, and easy-to-use water treatment device. ■



PATH combined positive characteristics of the original Tunsai with new components that make the Super Tunsai more attractive and appropriate for low- and middle-income users. Photo: PATH/Benjamin Mandell

READ MORE

-  **New Design of the Ceramic Water Pot Design**
www.path.org/publications/detail.php?i=1993
-  **Newly designed ceramic water pot for low-income households**
www.path.org/publications/detail.php?i=2008
-  **Piloting retail and direct sales models for household water treatment products in Cambodia**
www.path.org/publications/detail.php?i=2181

One step closer: standardizing manufacturing practices for the ceramic water pot



More than 30 years ago, Dr. Fernando Mazariegos recognized the importance of increasing access to safe water to prevent severe diarrheal disease and other health problems in developing countries.

His solution: engaging local artisans to manufacture a ceramic water filter that could be distributed in rural communities. After two years of research and field trials, and with funding from the Inter-American Development Bank, the ceramic water pot (CWP) filter was born. This filter met the objectives of being produced with local raw materials, at low cost, using earthenware pottery, and with local workers.

Potters for Peace, a nongovernmental organization founded by Ron Rivera, redesigned the CWP manufacturing process in the mid-1990s and promoted filter manufacturing in more than 20 countries. CWP filters, now produced at 35 independent factories in 18 countries, are the highest-rated product for rural water treatment (Smart Disinfection Solutions 2010).

Each artisanal factory, however, is limited by locally available materials, equipment, and resources. This results in unavoidable production variations, not only between factories but also within each factory. Rates of breakage and rejected filters are often high enough to compromise profitability and limit useful life.

CHALLENGES TO STANDARDIZATION

CWPs are made by pressing a mixture of clay and a combustible (burnout) material into the

filter shape, allowing it to dry, and then firing it in a kiln. The flow rate of the fired filter is measured for uniformity, and colloidal silver is often added as a bactericide.

Although the production process seems straightforward, the process and materials are not standardized among manufacturers. The primary challenge of standardizing the process is the art of working with clay, a highly intuitive craft process. Factories adjust production practices according to experience, continually trying to improve their process and end product. Maintaining quality control standards in decentralized production facilities is also difficult.

To help factories produce the most effective filters possible at the lowest cost, PATH and the US Centers for Disease Control and Prevention provided funding for members of the Ceramics Manufacturing Working Group to complete a set of best practices and recommendations for manufacturing ceramic water filters. This group consists of leading CWP experts from international health organizations, universities, and manufacturing groups. The best practices cover factory setup, selection of raw materials and processing methods, employee training, and workplace safety. They also cover quality control considerations at each step of

Factories that manufacture ceramic water pots can improve their processes by using Best Practice Recommendations for Local Manufacturing of Ceramic Pot Filters for Household Water Treatment, compiled by the Ceramics Manufacturing Working Group. Photo: PATH

the production process, including testing and validation.

The product of this collaboration is *Best Practice Recommendations for Local Manufacturing of Ceramic Pot Filters for Household Water Treatment*.

AN ONGOING TASK

Although the new recommendations address many challenges concerning standardization, additional research is needed to refine the guidelines. PATH has begun research into manufacturing variables. We and members of the Ceramics Manufacturing Working Group have also discussed developing standardized training materials and establishing a quality assurance program to assist manufacturers. PATH is working to identify funding to support marketing and business development activities in partnership with CWP factories and the working group.

READ MORE



REPORT

Best Practice Recommendations for Local Manufacturing of Ceramic Pot Filters for Household Water Treatment

waterinstitute.unc.edu/media/Best%20Practice%20Recommendations%20for%20Manufacturing%20Ceramic%20Pot%20Filters%20June2011.pdf



TOOLS

APPLY THESE YOURSELF



PRODUCT SCAN

A product scan looks at competing products available in a given market, their price and popularity, where or how they are being sold, and what target customers like and dislike about them. A product scan confirms that there is a demand for your product and that it fulfills a need in the market. To learn more, see the Product and service section of the commercialization toolkit.



DESIGN GUIDELINES

To foster the development of appropriate household water treatment and safe storage products for low-income users, PATH created a set of guidelines with evidence-based criteria for effective, commercially viable products that meet or exceed user expectations for long-term use. They take into account the unique needs of users in the developing world. View PATH's HWTS design guidelines at: <http://www.path.org/hwts-design-guidelines/index.php>.



PRODUCT DEVELOPMENT PROCESS

The most desirable products and services are born from good product development processes. Microsoft, Apple, Boeing, and other successful companies have adapted development processes suited to their specific businesses and product needs to optimize quality and profit. The development process for products in emerging markets should follow much the same approach. To learn about PATH's product development process, see the Product and service: Product development process section of the commercialization toolkit.

To visit PATH's commercialization toolkit, go to: sites.path.org/commercializationtoolkit

DISCOVERIES



PATH AND OUR PARTNERS LAUNCHED EIGHT commercial pilots to test different business models for reaching the rural poor with appropriate and affordable household water treatment and safe storage (HWTS) products. This section provides an overview of our commercial pilots and examines the extent to which these HWTS sales and distribution strategies can be sustainable, scalable, and have an impact on health.

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Photo: PATH/Thunvuth Nop

How we measure impact

PATH worked with Emory University and Abt Associates to help develop a rigorous monitoring and evaluation framework for our pilot work.

The framework builds on existing monitoring and evaluation models from Population Services International and the US Centers for Disease Control and Prevention. It uses a combination of quantitative surveys, water quality tests, qualitative interviews and focus group discussions, and sales and distribution data from commercial partners to develop baseline, midline, and endline data. We then use the data to answer six key questions, as outlined here.

The pilot descriptions that follow merely skim the surface of our results. More data and granular detail can be found in documents referenced throughout this section and on the Safe Water pages of PATH's website (sites.path.org/water/).

¹ Target consumers are defined as households that fall into the middle three wealth quintiles. More information on wealth quintiles can be found in the "Implications" section of this publication.

READ MORE



REPORT

Lessons Learned from the Safe Water Project Pilots in India, Kenya, and Vietnam
sites.path.org/water/files/2012/09/cross-country-report.pdf

1.	What is the uptake rate among target consumers of HWTS products made available through commercial distribution channels and marketing?
INDICATOR(S):	Indicators on product purchase and repurchase of consumables.
DATA SOURCE(S):	Potential-user and current-user surveys.
2.	What is the extent of consistent and correct use among target consumers of HWTS products made available through commercial distribution channels and marketing?
INDICATOR(S):	Indicators reflecting consistent and correct use in the household (e.g., placement of water in correct part of the device, correct assembly of device, and longitudinal use in some cases).
DATA SOURCE(S):	Potential-user and current-user surveys with water quality tests of source water, pretreated household drinking water, and treated water.
3.	What are the triggers and barriers to trial and use of HWTS products made available through commercial distribution channels and marketing?
INDICATOR(S):	Indicators on proximal determinants of use (e.g., awareness, affinity, availability, affordability).
DATA SOURCE(S):	Potential-user and current-user surveys, qualitative interviews, and focus groups with people who do not try, try and discontinue use, and currently use the products introduced through commercial channels.
4.	Can commercial partners earn a profit from sales to target consumers?
INDICATOR(S):	Channel effectiveness, efficiency, and profitability.
DATA SOURCE(S):	Interviews and focus groups with commercial partners, distribution survey and financial data from commercial partners (cost recovery data, manufacturers, mobile salesmen, microfinance institutions, retailers, etc.).
5.	Will commercial partners continue and/or scale up the Safe Water Project pilot business model to reach target consumers?
INDICATOR(S):	No specific indicators; primarily qualitative analysis based on relevant quantitative findings that emerge.
DATA SOURCE(S):	Interviews and focus groups with commercial partners. Distribution data from commercial partners (manufacturers, mobile salesmen, microfinance institutions, retailers, etc.).
6.	What other efforts/inputs/incentives are needed to stimulate supply of and demand for HWTS among target consumers?
INDICATOR(S):	Qualitative analysis based on relevant quantitative findings that emerge (cost recovery data, observed continuation of model, replication of model).
DATA SOURCE(S):	Interviews and focus groups with commercial partners. Insights from consumer surveys, interviews, and focus groups. Results from quantitative data (consumer surveys).



By recognizing the complementary strengths and weaknesses of commercial (pictured left) and academic (pictured right) evaluation approaches, PATH attempted to find middle ground between public- and private-sector needs. Photos: (left) PATH/Benjamin Mandell, (right) PATH/Elizabeth Blanton

Reconciling academic and business approaches to learning

PATH's Safe Water Project was fundamentally a learning initiative. The project team sought to learn how the private sector can drive higher usage of household water treatment and safe storage products in ways that can be sustainably scaled.

To assess promising market-based approaches, we collaborated with a variety of evaluation experts to forge a marriage between public health and commercial indicators and evaluation approaches.

From the beginning, there was tension between the private sector's inclination to fail fast and iterate—with just enough real-time data for a directional sense of what works to allow for constant performance improvement—and public health experts' preference for more deliberate evaluation methods that enable greater accuracy and deeper understanding of what drives results based on analysis of qualitative and quantitative data. Some of our commercial partners, for instance, wanted to conduct three-month pilots, and we had to convince them to let the pilots run

for six to ten months to allow enough time to measure product uptake and sustained use over different seasons.

Another challenge was the reluctance of commercial partners to reveal certain information about the costs of doing business, which made it difficult to analyze the commercial viability of the models. In addition, global health professionals often design an evaluation to test a specific intervention within a defined geography. However, by their nature, entrepreneurs are inclined to iterate their approach and go where they can maximize sales. This makes it difficult to control for confounding of the evaluation results and challenging to reach the poorer households, which may be a harder sell. Recognizing these inherent tensions, PATH managed

to blend population-based survey data and qualitative data from interviews and focus groups with commercial data on sales closing rates to gain insights into what enabled or prevented people from purchasing products. Even more important, with cost recovery data, our commercial partners learned how they could expand their markets by meeting the needs of resource-poor populations.

READ MORE



PROJECT BRIEF

PATH Safe Water Project's Monitoring and Evaluation Framework: Testing market-based solutions in four countries
www.path.org/publications/detail.php?i=2042

PILOT PROJECTS

The table below summarizes quantitative results from all our pilot work. Pilots are grouped by type (direct sales, microfinance, and retail sales) and are organized in roughly chronological order, even though the timing of our pilots often overlapped.

Although PATH sought to apply rigor to our pilot evaluations, we designed our pilots to be flexible and adaptable to each environment and partner. New concepts and components were introduced as needs arose and unworkable ideas were quickly abandoned. This approach enabled us to find feasible models and refine them over time and across geographies.

Nonetheless, for each type of pilot (direct sales, microfinance, and retail sales), it was easy to observe a marked improvement in results in each subsequent pilot.

PILOT RESULTS: EFFECTIVENESS

	Direct Sales Model					Microfinance Institutions Model							Retail Sales Model
LOCATION	UTTAR PRADESH INDIA	CAN THO PROVINCE VIETNAM		NYANZA AND WESTERN PROVINCES KENYA	KAMPONG SPEU CAMBODIA*	ERODE (TN), INDIA	THIRUTANI (TN), INDIA	KANCHI-PURAM (TN), INDIA	NEEMUCH (MP), INDIA	NAGDA (MP), INDIA	WARANGAL (AP), INDIA	KAMPONG SPEU CAMBODIA*	KAMPONG CHAM CAMBODIA**
PRODUCT NAME	AQUATABS	AQUATABS		CHUJJO	TUNSAI AND SUPER TUNSAI	PUREIT CLASSIC					AQUASURE XTRA	TUNSAI AND SUPER TUNSAI	TUNSAI AND SUPER TUNSAI
Key Pilot Feature/ Variation	Entrepreneurs were hired to sell Aquatabs, covering a large geographic sales territory by bicycle.	ENHANCED MODEL ⁶ : Aquatabs water disinfection tablets were sold and free water containers were provided.	BASIC MODEL: Aquatabs water disinfection tablets were sold. Free water containers were not provided.	CWPs were sold in a basket-of-goods sales approach.	CWPs were sold door to door by a trained sales force called "Clean Water Experts."	Loan repayments: 42 INR (US\$0.95) per week for 50 weeks.	Loan repayments: 43 INR (US\$0.95) per week for 50 weeks.	Loan repayments: 80 INR (US\$1.80) per week for 25 weeks.	50 percent cost defrayment.	100 percent cost defrayment.	Loan repayments: 250 INR (US\$5.60) per week for 6 months.	Loan repayments: 8,100 KHR (US\$2) 1.5 percent per month for 6 months or 18 percent annually.	CWPs were sold in retail outlets at 3 different price points. The Tunsai sold for US\$12.50 and the Super Tunsai was sold at: US\$12.50, US\$17, 22.
Pilot Duration	12 MONTHS	7 MONTHS	7 MONTHS	6 MONTHS	4 MONTHS	10 MONTHS	10 MONTHS	5 MONTHS	1 MONTH	6 MONTHS	7 MONTHS	11 MONTHS	5 MONTHS
Product uptake at baseline (%) ¹	4	NO BASELINE CONDUCTED		2	7	5	1	0	<1	0	0	6	N/A
Product uptake at endline (%) ¹	3	5	2	1	16	30	7	7	7	44	5	43	N/A
Current use at endline (%) ²	<1	1	<1	<1	12	21	7	2	4	21	3	39	N/A
Correct use at endline (%) ³	N/A	N/A	N/A	N/A	10	18	5	<1	4	14	<1	32	N/A
Continued use among purchasers longitudinal follow-up (%) ⁴	N/A	N/A	N/A	N/A	N/A	25			32	38	N/A	N/A	N/A
% uptake within SWP target group ^{5,7}	N/A	N/A	N/A	N/A	N/A	12			8	38	3	93	N/A
% of units sold to SWP target group ^{5,7}	N/A	N/A	N/A	N/A	84	84			86	67	48	93	N/A
% of households in SWP target group ⁵	77	83	83	83	83	61	89	90	88	82	91	90	N/A

Notes:

1. Product uptake refers to purchase at baseline and endline for durable water filters and ever use for chlorine tablets. All increases were statistically significant at a 95 percent level.

2. Current use refers to self-reported use in the 24 hours preceding the survey.

3. Correct use refers to observed correct use: criteria included having a correctly assembled water filter present with water in the device or having a positive free-chlorine residual test for chlorine products.

4. Of the population that reported purchasing at endline, a sample was drawn for longitudinal follow-up. Of this sample, we report the rate of continued use at the last longitudinal follow-up visit (12 months after endline in Tamil Nadu and 6 months after endline in Madhya Pradesh).

5. SWP target group is households in the middle three wealth quintiles of the country.

6. In the "Enhanced" model in Vietnam, free water containers were distributed through the pilot. All else in the enhanced variation was the same as in the "Basic" model.

7. Due to lower than expected uptake rates in the pilots in Uttar Pradesh, India, Kenya, and Vietnam, the sample size in each of these pilot surveys was too small to allow for estimation of uptake in the SWP target group.

*Direct sales and microfinance were two different models tested together in one pilot project in Kampong Speu, Cambodia. They are described together in the subsequent pilot #7 summary.

**Due to low levels of uptake in the Cambodia retail pilot, only a qualitative evaluation was conducted.

CWP= Ceramic water pot
SWP= Safe Water Project

PILOT 01: UTTAR PRADESH, INDIA

A DIRECT SALES MODEL FOR WATER PURIFICATION TABLETS



Bicycle salesmen sold Aquatabs as a water treatment solution to households in Uttar Pradesh. Photo: PATH

MAIN QUESTIONS

Can local entrepreneurs be motivated to distribute and promote Aquatabs to rural consumers sustainably?

DESCRIPTION

In our first pilot, we partnered with Medentech, makers of Aquatabs water purification tablets, to penetrate the consumer market in India. At the time, the Ireland-based company had been primarily focusing on the disaster relief market and was motivated to learn how to reach households in low-income countries. To assist Medentech in reaching Indian

consumers, we hired a local rural marketing firm, MART, with experience selling brand-name, fast-moving consumer good products (such as soaps and shampoos) to rural households in India. MART recruited and trained a sales force of eight men to travel by bicycle to market and sell Aquatabs at weekly markets and through retail kiosks. Each entrepreneur covered a large target population of approximately 50,000 people in 20 villages and was compensated with a small stipend plus commission.

RESULTS

Awareness of Aquatabs increased slightly in the pilot population, but uptake and continued use were negligible. Key reasons included a perceived lack of need to treat water and lack of knowledge about the product. Salesmen were

unable to convince retailers to stock the product and they were left to cover huge territories door to door. They could not service even a fraction of households in their catchment areas, even though they were supported by fairly large marketing efforts. Ultimately, the pilot was not commercially sustainable.

INSIGHTS

Qualitative research conducted toward the end of the pilot revealed that many households in this pilot already had access to water near their homes and did not routinely store water. As a result, households were being asked not only to buy and use Aquatabs but also to procure water storage vessels and change water handling habits. Consumers in this area also stated strong objection to chlorine taste

and odor. Post-pilot interviews with the sales force revealed that training and sales support was helpful but could not overcome the challenge of selling a new product without a standing relationship with the community. Not only were direct (door-to-door) sales inefficient, they went against cultural norms in having a male salesperson approaching female householders. The most successful salesmen sought alternative approaches by engaging key opinion leaders in the villages and selling to groups.

REFLECTIONS

Though disappointing, this kickoff pilot offered many lessons that we carried forward into subsequent pilots. For example, the pilot was designed around the assumption that entrepreneurs would be able to focus their sales on

retail establishments and at markets. Given that fast-moving consumer products like Aquatabs rely on high-volume sales and low cost per sale to be commercially viable, we searched for highly efficient direct sales strategies. The best strategy we learned was to tap into affinity groups, gain approval from opinion leaders, and aggregate demand. We also learned the importance of hiring and properly supporting salespeople who are the appropriate gender and social status for the target customer. Lastly, as a new market entrant, Medentech sought to reach the most difficult consumers first. This approach, while noble, made it even more difficult for sales people to earn the trust of potential customers because the community had no prior brand awareness.

UTTAR PRADESH
INDIA



PRODUCT



PRODUCT PARTNER
MEDENTECH

DISTRIBUTION PARTNER
MART

READ MORE



FACT SHEET



PROJECT BRIEF

Bicycle model yields rich learning despite limited results: Microentrepreneurs try to sell new water treatment product in rural India
www.path.org/publications/detail.php?i=1969



REPORT

Distribution of Aquatabs through a Bicycle Entrepreneur Model in Rural India (Uttar Pradesh)
sites.path.org/water/files/2012/09/India-bicycle-model-report.pdf

PILOT 02: CAN THO PROVINCE, VIETNAM

A DOOR-TO-DOOR SALES MODEL TO SELL WATER PURIFICATION TABLETS THROUGH PUBLIC HEALTH CARE COLLABORATORS



Billboards like this one promoted Aquatabs for water treatment in Vietnam. Photo: PATH

CAN THO PROVINCE
VIETNAM

PRODUCT

PRODUCT PARTNER

MEDENTECH

DISTRIBUTION PARTNERS

ZUELLIG PHARMA and public health authorities including district medical centers and Commune Health Stations

MAIN QUESTIONS

What effect do incentive structures have on the sales of Aquatabs through Commune Health Station collaborators?

Do free water containers increase consistent use of water treatment products?

Does the cost of providing free storage containers justify their provision?

DESCRIPTION

When developing our pilot in Can Tho, Vietnam, we sought to build upon lessons from Uttar Pradesh and incorporate new insights gained from an evaluation of an interesting project in Malawi (see article: “Building buzz and trust: reaching pregnant women with a water treatment product”). Using the same chlorine-based tablet product, we recruited an existing network of government Commune Health Station (CHS) collaborators to distribute and sell Aquatabs in two districts of Can Tho Province. Half of the pilot households (the “enhanced” version) were given a free standard storage container, and half were not.

RESULTS

Uptake and use of Aquatabs in the pilot population was low, as was awareness of the product. Households cited concerns about the perceived taste and smell of water treated with the tablets and long-term health effects as barriers to uptake and use. However, consumers rated Aquatabs high on convenience and cost. The uptake and use of Aquatabs were higher in communes that received free water storage containers. However, due to the overall insignificant levels of product adoption, it was not possible to discern the effects of the containers alone on uptake and use of Aquatabs. Commercial viability, measured in terms of cost recovery of this pilot, was very low at only 10 percent.

INSIGHTS

As expected, the use of CHS collaborators as salespeople proved a good choice because people put high levels of trust in health staff. However, sales commissions for health collaborators proved to be too small to stimulate large sales increases, and the door-to-door sales approach in unfamiliar catchment areas greatly limited uptake. In addition, there was evidence from our commercial viability analysis that health center staff were overburdened with their regular duties and unable to commit to intensive sales of Aquatabs during the study period.

REFLECTIONS

Using health staff to sell water purification products is still a promising approach, but it requires a better incentive structure that financially rewards higher sales and more training and staff time to execute properly. A more acceptable product (e.g., a durable water filter) would also likely benefit the model, as consumers in this geographical area tended to distrust/dislike chlorine products and margins from individual sales were very low.

READ MORE

Distribution of Aquatabs through Commune Health Collaborators in Can Tho, Vietnam
sites.path.org/water/files/2012/09/Vietnam-health-worker-model-report.pdf

Promoting household water treatment through local health workers in Vietnam
www.path.org/publications/detail.php?i=2043

PILOT 03: NYANZA AND WESTERN PROVINCES, KENYA

A BASKET-OF-GOODS APPROACH TO SELL CERAMIC WATER FILTERS



Chujio water filters like this one were sold in a basket of goods to households in Western Kenya. Photo: PATH

NYANZA AND WESTERN PROVINCES
KENYA

PRODUCT

PRODUCT PARTNER

CHUJIO CERAMICS

DISTRIBUTION PARTNER

SAFE WATER AND AIDS PROJECT

MAIN QUESTIONS

Can ceramic water filters be sold in a commercially sustainable fashion at scale through a direct sales model centered around fast-moving consumer goods?

What is the impact of price on filter sales?

Is a subsidy necessary?

DESCRIPTION

In Kenya, we partnered with the Safe Water and AIDS Project (SWAP), a network of 800 female vendors who sell health-related products to approximately 56,000 households in Nyanza and Western Provinces. Expanding our focus to include durable products, we tested the feasibility of incorporating a locally manufactured ceramic water filter (Chujio Filters, Nairobi) into the vendors’ baskets of health products. We sold the product at two different subsidized prices, 700 KSH and 1,100 KSH.

RESULTS

The results from our baseline evaluation showed there were many favorable factors for the uptake of the Chujio filter within our study population. These included a high perceived need for water treatment and a number of perceived advantages of the Chujio filter over boiling and chlorine-based products, including ease of use, no chemical additives, ability to treat turbid water, and safety from recontamination. After six months, there was a significant increase in awareness of the Chujio filter in both the control and pilot areas. However, there was a negligible increase of about 1 percent in the purchase and use of the filter. Sales data showed 631 Chujio filters were sold within the pilot time

period. The pilot was moderately commercially viable: 41 percent of costs were recovered by commercial partners.

INSIGHTS

Several supply and demand barriers explained the low levels of uptake. On the supply side, SWAP vendors were independent entrepreneurs, and they lacked working capital to purchase filters up front, making stockouts and inconsistent supply a barrier to sales. Vendors also found it difficult and costly to transport the bulky and fragile ceramic filters. On the demand side, vendors felt that promotional activities were insufficient to generate demand. They also felt the price of the filter was too high for their customers.

REFLECTIONS

Despite low initial uptake, we believe there is significant potential for ceramic water pots in Western Kenya, as evidenced by the population’s high perceived need to treat their water and their perception that the Chujio was superior to other available water treatment products. Extending or replicating the pilot holds promise if supply-side issues are addressed and an appropriate financing mechanism can be offered. Despite low initial levels of uptake, SWAP has continued to offer the filters and has found a lower-cost manufacturer, allowing sales to become fully cost recoverable. A viable retail price point of 1,200 KSH (about US\$14) was chosen, and sales have been steady since the end of the pilot.

READ MORE

Distribution of Chujio Ceramic Water Purifier through a Basket of Goods Model in Rural Kenya
sites.path.org/water/files/2012/09/Kenya-basket-of-goods-model-report.pdf

Study of sales of Kenyan water filters shows promise: PATH partners with local agency to explore new ways to offer residents water filters
www.path.org/publications/detail.php?i=2067

PILOT 04: **TAMIL NADU**, INDIA

A MICROFINANCING PARTNERSHIP MODEL FOR DURABLE WATER FILTERS



Households in Tamil Nadu participated in microfinance institution meetings to learn about financing options for water filters.
Photo: PATH/Sara Watson

MAIN QUESTIONS

Do microfinance loans spur uptake of durable water treatment products?

Which loan scheme generates higher uptake levels?

Are the levels of uptake similar in urban and rural areas?

DESCRIPTION

This was the first of four pilots testing the use of microfinance loans to boost uptake of water filters. All variations of microfinance pilots involved the sale of durable water filters to rural and peri-urban consumers through an existing microfinance network. In Tamil Nadu, our commercial partner, Hindustan Unilever, joined forces with Spandana Sphoorty Financial Ltd., a large microfinance organization, to sell their PureIt brand multi-stage gravity filter in one peri-urban and two rural areas of the state. This enabled us to test two different loan payback schemes: 25 and 50 weeks.

RESULTS

Uptake rates ranged from 6.6 to 29.9 percent, with an average of 12.4 percent among microfinance institution members in all variants tested. Eighty-four percent of purchasers were in the target middle three wealth quintiles (for information on wealth quintiles, see article titled “How low can they go?”). The final evaluation showed 9 percent of purchasers were still using the filter at ten months. However, only 1.2 percent of users were using the PureIt consistently and correctly at a 12-month longitudinal follow-up. This pilot was found to be more than 100 percent cost recoverable.


INSIGHTS

Across all the microfinance pilots, the availability of financing proved to be a significant trigger for filter purchases. Among the two repayment schemes tested in Tamil Nadu, the highest uptake rates were found in locations that offered a smaller weekly repayment over a longer time period. Unfortunately, rates of correct and consistent use were lower than expected. By the final longitudinal follow-up, about 50 percent of users were no longer using the PureIt. We learned through qualitative interviews that the main reason for discontinuation was the high perceived cost of replacing cartridges and the unavailability of replacement cartridges due to operational issues.

REFLECTIONS


This pilot showed us that microfinance partnerships have the potential to effectively generate uptake in urban, peri-urban, and rural settings. The pilot also suggested that it might be possible to increase continued use if replacement cartridges and financing are more widely available and more affordable.

READ MORE



REPORT

Distribution of PureIt through a Microfinance Institutions Model in Urban and Rural India (Tamil Nadu)
sites.path.org/water/files/2012/09/India-tn-mfi-model-report.pdf



FACT SHEET

Microfinancing boosts uptake of water filters
www.path.org/publications/detail.php?i=2066

PILOT 05: **MADHYA PRADESH**, INDIA

A PARTIAL-SUBSIDY MODEL TO ENCOURAGE UPTAKE AND CONSISTENT USE



PureIt water filters were sold to households in Madhya Pradesh through a microfinance institution. Photo: PATH

MAIN QUESTIONS

Do product subsidies increase levels of uptake?

Does consistent use increase when replacement cartridges are bundled with the product?

Can cost defrayment be recouped through sales of the replaceable cartridge?

DESCRIPTION

In our second microfinance pilot, we worked with the same partners (Hindustan Unilever and Spandana Sphoorty Financial Ltd.) and attempted to increase the length of consistent use by waiving the cost of the filter and providing loan financing with weekly payments for two filter replacement cartridges. The main objective was to measure the effect of cost defrayment on sustained use and to determine if the free filter costs could be recouped through the sale of replacement cartridges.

RESULTS

In this pilot, 44 percent of Spandana’s microfinance clients opted to take the loan for the filter and replacement cartridges. However, 35 percent of customers reported gifting or selling the device, and none were using it consistently after six months. Nearly three-fourths of purchasers were in our target group, the middle three wealth quintiles. Commercial viability analysis showed that our commercial partner in this pilot recovered 43 percent of their costs.


INSIGHTS

By subsidizing the cost of the filter and only requiring the loan for two replacement cartridges, we intended to encourage uptake and correct, consistent use over time. However, the opposite occurred: correct and consistent use dropped to zero by the end of the follow-up period. The full subsidy appeared to undermine customers’ perceived value of the product and made customers and salesmen unmotivated to learn the features and benefits of the product.

REFLECTIONS


Consumers living in this area expressed a low perceived need for water treatment, which did not change over the course of the pilot. Whatever sales pitches were given fell on deaf ears, and customers learned very little about the need to treat water and the benefits of water filtration products. This pilot strongly suggests that subsidies must be explored with caution and should be accompanied by additional behavior change communication about the need to treat water.

READ MORE



REPORT

Distribution of PureIt Water Filter through a Microfinance Institutions Model in Rural India (Madhya Pradesh)
sites.path.org/water/files/2012/09/India-mp-mfi-model-report.pdf



FACT SHEET

Microfinancing boosts uptake of water filters
www.path.org/publications/detail.php?i=2066

PILOT 06: ANDHRA PRADESH, INDIA

A MICROFINANCE MODEL WITH A LOWER-COST PRODUCT AND DIFFERENT LOAN TERMS



In Andhra Pradesh, households were able to purchase AquaSure filters through a microfinance institution. Photo: PATH/Gabe Bienczycki

ANDHRA PRADESH
INDIA

PRODUCT

PRODUCT PARTNER

EUREKA FORBES

DISTRIBUTION PARTNER

EUREKA FORBES

FINANCING PARTNERS

ACCESS and LUCKNOW
PRAGATI SEWA SANSTHAN

MAIN QUESTIONS

Are the uptake levels achieved through a monthly repayment plan broadly comparable to those achieved through a weekly repayment plan?

Are the uptake levels achieved through the Eureka Forbes-ACCESS-PSS partnership broadly comparable to those achieved through the Hindustan-Spandana partnership in another pilot?

DESCRIPTION

In Andhra Pradesh, we tested whether previous microfinance institution (MFI) pilot results could be replicated using monthly loan repayment terms, a different product, and smaller-scale MFI partners. The product was the AquaSure Xtra, manufactured by Eureka Forbes Ltd., our implementation partner was ACCESS, and our MFI partner was Pragati Sewa Sansthan (PSS)—a very small community lending association. This pilot was prematurely curtailed after seven months when the government put a temporary end to MFI lending in the state.

RESULTS

This pilot resulted in low-level increases in awareness of the AquaSure product (32.4 percent) and uptake of 5.1 percent. Correct and consistent use were 2.8 percent and 2 percent, respectively. A commercial viability analysis showed this pilot was 33 percent cost recoverable.

INSIGHTS

Our qualitative studies revealed that motivations to purchase AquaSure included a perceived need for water treatment, the involvement of the husband in group meetings and decision-making, and the product’s aesthetic appeal. Some barriers to continued use included the delicate appearance of the filter, repair and maintenance costs, and the inability of the product to treat brackish water and other product-related problems addressed by the manufacturer after the pilot.

REFLECTIONS

This pilot suffered from significant operational and external challenges, including a national investigation of microfinance practices, which resulted in the MFI partner being cautious about issuing new loans. In addition, salespeople had trouble traveling to distant villages and covering large sales territories, which suggested the need to limit sales territories to a salesperson’s perceived “sphere of influence” or familiarity. Product-related problems and perceptions led to a decline in AquaSure Xtra sales as well as a decline in consistent and correct use. Interestingly, the awareness generated from the pilot and increased perceived need to treat water impacted uptake of alternative options, such as filtered bottled water available in nearby areas.

READ MORE

REPORT

Distribution of Aquasure Water Filter through a Microfinance Institutions Model in Rural India (Andhra Pradesh)
sites.path.org/water/files/2012/09/India-ap-mfi-model-report.pdf

FACT SHEET

Microfinancing boosts uptake of water filters
www.path.org/publications/detail.php?i=2066

PILOT 07: KAMPONG SPEU PROVINCE, CAMBODIA

A DIRECT SALES APPROACH FOR A NEW AND IMPROVED CERAMIC WATER FILTER PAIRED WITH MICROFINANCE LOANS



Community Water Experts like this one talked to households about the importance of drinking safe water. Photo: PATH/Sara Watson

KAMPONG SPEU PROVINCE
CAMBODIA

PRODUCT

PRODUCT PARTNER

HYDROLOGIC SOCIAL ENTERPRISE

DISTRIBUTION PARTNER

HYDROLOGIC SOCIAL ENTERPRISE

FINANCING PARTNER

VISION FUND CAMBODIA

MAIN QUESTIONS

What was the difference (in uptake) between offering a ceramic water pot through a microfinance institution vs. door to door?

How does a redesigned product impact total uptake of ceramic water pots (Super Tunsai and original Tunsai vs. original Tunsai only)?

What impact did the marketing message and medium have?

DESCRIPTION

Our final direct sales pilot in Cambodia took place toward the end of our grant period and it gave us an opportunity to apply our learning from previous direct sales and microfinance pilots. Our commercial partner was a small ceramic water pot (CWP) manufacturer, Hydrologic Social Enterprise, which had just finished working with our product development team to produce an improved CWP called the Super Tunsai. Both the original Tunsai and Super Tunsai products were sold in this pilot through two mechanisms: door-to-door sales by trained sales agents and in microfinance institution (MFI) group meetings. During group meetings, Hydrologic introduced the product and our partner VisionFund offered a microfinance loan to purchase the product. Many lessons from prior pilots informed the pilot design.

RESULTS

A total of 5,031 CWPs were sold over 11 months. In a control group with no direct sales activities, uptake of the original and improved products together was 6.7 percent of households. In the direct sales area, 16.4 percent of households purchased either product. In the area where microfinance loans were available, 20.9 percent purchased either product. Among MFI members, 43.1 percent took a loan to purchase a filter. High rates of consistent use were observed among all purchasers (74 percent in direct sales areas, 81 percent in MFI areas). From a commercial viability standpoint, the direct sales variant was 54 percent cost recoverable, and the MFI model was 102 percent cost recoverable.

INSIGHTS

Both the direct sales and the microfinance mechanisms showed impressive adoption rates that were statistically significant compared to the control group. Interestingly, when microfinance loans were introduced, they quickly outperformed the direct sales model, with almost all consumers opting to purchase the product through loans. An independent analysis showed that 100 percent of borrowers repaid their loans.

REFLECTIONS

This pilot validated many of our previous hypotheses. First, it demonstrated that products designed to be more desirable among target populations can have a strong effect on uptake, even at higher price points. The Super Tunsai was sold at twice the price of the original Tunsai and yet outsold it 17 to 1. Second, the pilot confirmed that financing is a key trigger for purchase. Third, it showed us that commercial companies can be motivated by new ideas. Working together, Hydrologic and VisionFund are now scaling up the model without PATH’s assistance.

READ MORE

REPORT

Distribution of Ceramic Water Purifiers through Direct Sales and Retail Sales Pilots in Cambodia
sites.path.org/water/files/2012/09/Cambodia-direct-and-retail-model-report.pdf

FACT SHEET

Piloting retail and direct sales models for household water treatment products in Cambodia
www.path.org/publications/detail.php?i=2181

PILOT 08: KAMPONG CHAM PROVINCE, CAMBODIA

A HEAD-TO-HEAD SALES STRATEGY AT THREE PRICE POINTS



Tunsai and Super Tunsai ceramic water pots were sold in retail stores in Kampong Cham, Cambodia. Photo: PATH/Sara Watson

KAMPONG CHAM PROVINCE
CAMBODIA

PRODUCT

PRODUCT PARTNER

HYDROLOGIC SOCIAL ENTERPRISE

DISTRIBUTION PARTNERS

HYDROLOGIC SOCIAL ENTERPRISE and local independent retailers

- MAIN QUESTIONS
- What impact does the introduction of the upgraded Super Tunsai have on product uptake?

What impact do specific promotion/marketing campaigns have on product uptake?

How sensitive are consumers to changes in Super Tunsai pricing?

What is the operational viability of a retail coupon program for ceramic water pot products?

DESCRIPTION

In our only retail sales pilot, we partnered with Hydrologic to sell both the Super Tunsai and original Tunsai head to head through 31 retailers and to test the feasibility of using coupons in a simulated “smart” subsidy model. The Tunsai was sold at the market price of US\$12.50, and the Super Tunsai was sold at three different price points: US\$22 (92,000 KHR), US\$17 (72,000 KHR), and US\$12.50 (52,000 KHR), with coupons allocated to retailers in three areas.

RESULTS

A total of 391 devices were sold in the retail pilot, 6 percent of which were Tunsai and 94 percent of which were Super Tunsai. Because we were testing the feasibility of a coupon scheme and comparing price points, typical measures of uptake and cost recovery were not applicable. We learned that a coupon scheme at the retail level can be operationally effective. We collected 99 percent of coupons from retailers, and spot audits indicated that the price on the coupon was what purchasers paid. In addition, the price test demonstrated that the Super Tunsai was preferred 3 to 1 over Tunsai, even at the greatest price difference. When offered for the same price, virtually no consumers chose Tunsai.

INSIGHTS

Qualitative analyses suggested that sales figures could have been higher had Hydrologic retail sales agents been compensated with performance incentives instead of just fixed salaries. In follow-up discussions with sales representatives, they reported that they were rarely visited in the field by their manager. This minimal active monitoring also might have contributed to lower than expected sales.

REFLECTIONS

Although we did not measure every variant, it appears Super Tunsai did increase overall sales. The coupon program was shown to be a practical approach to accelerating filter adoption without distorting the commercial market as much as traditional subsidies. The retail sales model did not recover cost adequately to be continued after the pilot.

READ MORE

REPORT
Distribution of Ceramic Water Purifiers through Direct Sales and Retail Sales Pilots in Cambodia
www.path.org/files/2012/09/Cambodia-direct-and-retail-model-report.pdf

FACT SHEET
Piloting retail and direct sales models for household water treatment products in Cambodia
www.path.org/publications/detail.php?id=2181



Photo: PATH/Siri Wood

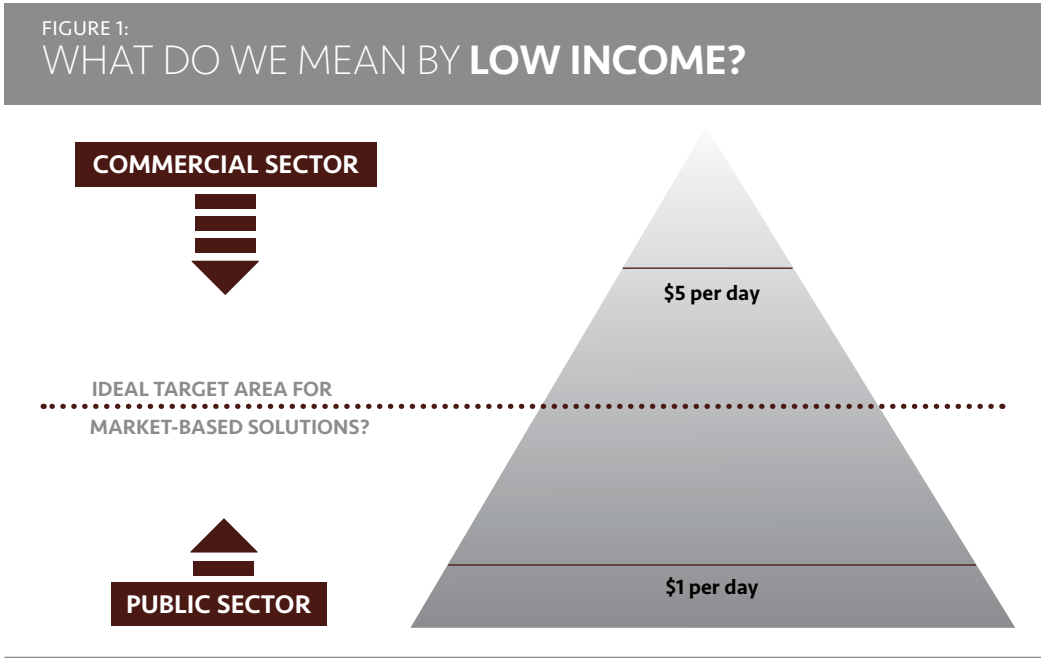
HOW LOW CAN THEY GO?

TARGETING THE UNDERSERVED WITH MARKET-BASED SAFE WATER SOLUTIONS

When looking at safe water solutions through the lens of the private sector, PATH’s Safe Water Project understood from the beginning that target households in this project would be those earning more than the subsistence level and with some discretionary income that could be used to treat drinking water.

We did not target the poorest households, as they may be better served by government assistance and subsidies rather than commercial solutions. And we did not target the wealthiest households because the commercial sector in developing countries is already serving their needs.

Our goal, then, was to drive the private sector toward families in the middle—the middle 60 percent of households that we believe can be served by commercially sustainable markets



Income levels and target population for the Safe Water Project’s market-based interventions.
Source: Adopted by PATH from “The Fortune at the Bottom of the Pyramid: Eradicating Poverty Through Profits” by CK Prahlad

in the developing countries where we worked. Ultimately, the private sector’s successes in reaching this middle segment could also open the door for public-sector initiatives to reach more of the poorest households by leveraging the extended reach of markets into under-served communities.

DEFINING OUR TARGET POPULATION

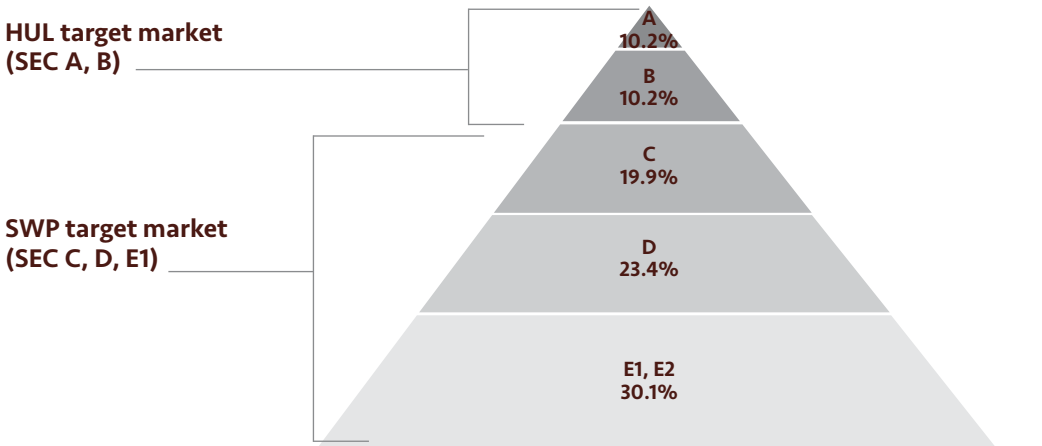
PATH revised how we defined our target population several times before settling on wealth quintiles. Initially, we identified lower-income households with per capita income of between US\$1 and US\$5 per day, as shown in Figure 1 (Rangan 2007). At the time of our assessment, the World Bank estimated that 1.2 billion people lived on US\$2 to US\$5 per day, and 1.6 billion lived on US\$1 to US\$2 per day (World Bank 2001).

This definition of our target population made sense in relation to the literature on lower-income consumers, particularly a case made in the Strategy+Business article, “The Fortune at the Bottom of the Pyramid,” on the market potential of lower-income consumers (Pralahad 2002). Yet it is not always easy to calculate per capita income. Households may not be able to accurately estimate how much they earn per day, and there are justifiable reasons why someone might misrepresent their earnings—for instance, in order to qualify for government assistance programs.

When we launched our pilot work in India, we shifted our target population definition toward that used by commercial firms in

India—the Socio-Economic Classification (SEC), which is based on the occupation and education level of the chief wage earner. SEC is used by most Indian brand managers to understand Indian consumers, and it allowed us to understand who our pilots reached in comparison to our partners’ normal target consumers. For instance, Hindustan Unilever normally targets households in the SEC A or B levels, which are higher than our target population, as shown in Figure 2.

This strategy also had drawbacks. While SEC is well-understood within commercial circles in India, it is not clear to public health audiences, and it is not relevant beyond India.



Percentage of Indian-Urban population in Hindustan Unilever’s (HUL) base target population for PureIt (SEC A, B) compared to the Safe Water Project (SWP) target population (SEC C, D, E). Source: IRS R2, 2009; SEC distribution in urban India

After seeing our preliminary pilot results from India, Lizette Burgers, Chief of Water Sanitation at the United Nations Children’s Fund (UNICEF), suggested that we use wealth quintiles to describe who we reached in Safe Water Project pilots. A wealth index is based on reported ownership of durable assets and housing conditions (Figure 3). This methodology, used around the world by the Demographic and Health Survey and the UNICEF Multiple Indicator Cluster Survey, places a household into one of five country-specific relative wealth quintiles. In our case, the core target consumer group for the Safe Water Project was made up of households from the middle three asset wealth quintiles in each country.

HOW LOW DID OUR PILOTS GO?

It was very important to PATH to understand whether we were reaching lower wealth quintiles and influencing the private sector to serve the needs of lower-income populations. According to evaluation results from Abt Associates, our eight pilot projects effectively targeted the core target consumer groups (the middle three country-specific wealth quintiles). Within each study area, 80 to 87 percent of households belonged to this core target group. This indicates that the selection of the pilot areas and the coverage of pilot interventions effectively targeted the project’s core group.

In terms of the people who purchased household water treatment and safe storage products through our India microfinance institution (MFI) pilot and our Cambodia

FIGURE 3:
ASSETS USED TO DETERMINE WEALTH

CAMBODIA ASSETS	INDIA ASSETS
TRANSPORTATION VEHICLE	
Bicycle	Bicycle
Motorcycle	Motorcycle
Car	Car
Boat (with or without motor)	Tractor
Oxcart	Animal-drawn cart
HOUSEHOLD COMPOSITION	
Material of floor	Material of floor
Material of roof	Material of roof
Material of walls	Material of walls
Type of windows	Type of windows
Number of rooms used for sleeping	Number of rooms used for sleeping
Land ownership	Land ownership
FURNITURE	
	Almirah/dressing table
	Chair
	Cot or bed
	Table
ANIMALS	
Water buffalo	Cows
Cows/bulls	Camels
Horses	Horses/donkeys/mules
Goats	Goats
Pigs	Sheep
Chickens/ducks	Chickens/ducks
AMENITIES	
Electricity	Electricity
Fuel source	Fuel source
	Water pump
Water supply	Water supply
Toilet facility	Toilet facility
Shared toilet	Shared toilet
HOUSEHOLD ITEMS	
Radio	Calendar
TV (color or black and white)	Mattress
Mobile telephone	Pressure cooker
Refrigerator	Electric fan
Wardrobe	Radio
Sewing machine	TV (color or black and white)

pilot, we achieved sufficiently high rates of uptake to enable an accurate estimate of the percentage of pilot purchasers who were in the target group. Among those who purchased filters through MFIs in India, 48 to 84 percent were from our core target group and 85 to 93 percent of purchasers in Cambodia were from the core target group (Table 1). Due to very low levels of uptake in other pilots (resulting in smaller than expected sample sizes), we were unable to determine the percentage of purchasers in those pilots from our core target group.

TABLE 1: PILOT MODEL					
	Tamil Nadu India MFI	Madhya Pradesh India MFI	Andhra Pradesh India MFI	Cambodia basic direct sales	Cambodia MFI
Sales in SWP target group (% of units sold)	84%	67%	48%	84%	93%

Percentage of Safe Water Project (SWP) pilot purchasers within our target group (middle three wealth quintiles).

In India, the majority of sales were to households in the fourth quintile because MFI partners gave the majority of their loans to existing members with a good repayment track record, reducing their risk of default. However, in Cambodia, 63 percent of MFI members who purchased a filter on loan were from the three lowest quintiles. Clearly, when the right product is made affordable through an installment loan, market-based approaches can serve the needs of lower-income families.

What do these results tell us about the potential of market-based approaches to meet the need for water treatment?

In pilots with statistically significant levels of uptake, the vast majority of sales were to households in the middle three wealth quintiles, according to the Abt Associates independent evaluation results. In India, Hindustan Unilever Ltd. confirmed that it reached below its usual target customer base. These results suggest that the private sector can address more of the need for water treatment by using approaches that overcome upfront cost barriers to improve household access to safe water products. For families in the middle three wealth quintiles, safe water products made available through market-based approaches allow them to be the final arbiters of the safety of their family’s drinking water. ■

Assets used to determine wealth quintiles in Cambodia and India.
Source: PATH

Direct sales: SUCCEEDING BY LEARNING FROM FAILURE



Chantrea looked down at the sales numbers and shook his head in frustration. Over the past three months, his direct sales team of 25 students in Cambodia had sold only 150 water filters.

Thousands of miles away, Indian entrepreneurs traveling door to door selling water purification tablets were facing similar challenges. Few had been successful convincing rural households of the need to treat their water. Was the problem the direct sales approach itself? Or was something else going on?

PATH and partners in Cambodia, India, Kenya, and Vietnam set out to discover why the direct sales approach was not working and whether anything could be done to improve it. Early failures in Cambodia and India were examined as rich learning resources. What about these efforts did not work? How did target households respond to the salespeople? How did the direct sales model compare to successful efforts in other places? What smaller successes existed that could be built upon?

Our initial review yielded valuable insights. First, we found that households in Cambodia and India often do not trust salespeople. This was demonstrated by relatively strong sales in the salesperson’s home or nearby village (where people knew and trusted the salesperson) but a stark dropoff when the salesperson traveled further afield. In Cambodia, the very young age of the sales-

people compromised their credibility with target customers, who were much older.

The need for a more robust and professional sales program was also clear, one that focused on recruiting, training, compensating, and managing a team for success. This was demonstrated in both earlier efforts, where recruiting, for example, may not have focused on the right kind of salespeople. In the case of India, the sales force consisted completely of men. When these men arrived at each house, a woman was often the only person at home. Because it is culturally taboo for men to enter a home in the absence of the man of the house, the sales call was terminated before it began. In both countries, the structure of a high base pay and small commission also led to a lack of motivation to make sales.

To test solutions to these challenges, PATH set up variations of the direct sales model in Cambodia, India, Kenya, and Vietnam. We worked with sales experts to develop an appropriate training and management program for developing-country contexts (in Cambodia, Kenya, and Vietnam) or partnered with an organization for which this was a core competency (Hindustan Unilever in India).

In Cambodia, trained Community Water Experts delivered messages about the importance of safe drinking water to households and sold household water filters in a direct sales approach. Photo: PATH/Thunvuth Nop

Because gaining the trust of the customer is critical to any sale, we tried to build trust in three ways. First, we hired more appropriate salespeople, whether that meant more mature and respected individuals or those who would be more culturally appropriate. Next, we matched the size of the sales territory with each salesperson’s “trust radius.” This was done by matching the size of the territory to the area where the salesperson had credibility or by recruiting trusted community members (e.g., volunteer health workers) to provide guidance on health issues. In cases where the sales territory

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PROJECT BRIEF

Bicycle model yields rich learning despite limited results: Microentrepreneurs try to sell new water treatment product in rural India
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FACT SHEET

Bicycle model yields rich learning despite limited results: Microentrepreneurs try to sell new water treatment product in rural India
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FACT SHEET

Piloting retail and direct sales models for household water treatment products in Cambodia
www.path.org/publications/detail.php?i=2181



FACT SHEET

Study of sales of Kenyan water filters shows promise: PATH partners with local agency to explore new ways to offer residents water filters
www.path.org/publications/detail.php?i=2067

needed to be larger (Cambodia and Kenya), we established trust in unknown salespeople through an endorsement by a key opinion leader in the community. This often meant seeding products with respected doctors at a local clinic (Kenya) or working with a village chief to organize group sales meetings run by the salesperson (Cambodia).

PATH also helped to develop professional sales programs in each country. This meant applying the right training, incentives, and management as well as recruiting appropriate salespeople. Training and sales tools were tailored to people’s capacities. Because salespeople or customers may not read well, visual aids were important. Compensation was tied more closely to sales. And a method of reporting that harmonized sales performance and compensation was combined with continuous feedback and reinforcement of training to ensure continued success.

These changes in sales approaches have put a smile on the face of Chantrea in Cambodia. With less than a third as many salespeople as his first team, Chantrea’s new crew has sold more than 10,000 filters, and they are getting almost half of all customer prospects to put a filter in their home. Once considered a failed model, direct sales has become the engine of Hydrologic’s growth and a great example of how learning from failure can lead to success. ■



In India, trained bicycle salesmen delivered similar messages about the health benefits of safe drinking water to households and sold Aquatabs chlorine tablets in a direct sales approach. Photo: PATH

Closing the sale: Effective strategies for improving sales of household water filters

Inspired by the idea that a motivated and effective sales force is essential to connect consumers with safe water products, PATH helped develop a simple training program and flipbook to improve sales success.

Working with our partners in Cambodia, sales training firm Whitten and Roy created a program using a framework known as CLEAR: Connect with prospects. Learn about their needs. Educate them about the product. Ask them to buy it. Resolve obstacles that prevent prospects from buying it.

The flipbook provides visual and written cues to guide salespeople through interactions with potential customers. In Cambodia, it was an immediate hit when used to help sell the new Super Tunsai ceramic water filter. It helped salespeople feel professional and trustworthy, gave visual weight to their offer, and enabled them to control and guide interactions with customers.

The flipbook and training sessions helped novice salespeople avoid common mistakes, like lecturing customers about healthy behaviors

or overemphasizing technical features of the product. They learned new strategies for building rapport with customers and tailoring their sales pitch. This led to a fivefold increase in sales in Cambodia, where teams now routinely close about one out of every two sales.


PATH also helped introduce the flipbook in Vietnam to support local health workers selling Aquatabs. One salesperson noticed better sales using the flipbook: “Messages conveyed by the pictures and photos in the book are stronger than my words. It helps strengthen my words and the trust of the people as well.”

We found that investing in these tools and training paid off in both markets, resulting in higher sales and expanded access to potentially lifesaving technologies.



Sales of household water filters in Cambodia increased fivefold once Cambodian salespeople started using an interactive flipbook like this one to convey the importance of treating drinking water. Photo: Zuellig

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FACT SHEET

Promoting household water treatment through local health workers in Vietnam
www.path.org/publications/detail.php?i=2043

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DISCOVERIES



FEATURE

MICRO-LOANS OVERCOME KEY ACCESS BARRIERS

Over the past decade, microfinance loans have helped low-income families buy many essential household goods, including cook stoves, solar lanterns, and cell phones.

Given the relatively high price of water filters (between US\$12 and US\$45 among brands used in our microfinance pilots), PATH sought to determine the degree to which microfinance institutions (MFIs) could help low-income families purchase and sustainably use household water filters.

Between 2010 and 2012, we helped launch several pilots with three manufacturers and MFIs in Cambodia and India. Uptake rates in the pilots were between 6 and 44 percent among target households. Although rates of purchase generally increased with wealth, manufacturers were pleased to attract households with incomes well below those of their typical customer base.

It turns out that MFIs and manufacturers can create a symbiotic relationship that benefits lenders, manufacturers, and consumers. Lenders can offer their members new, valuable products to improve health. Manufacturers can reach lower-income households efficiently and affordably through group sales to MFI members. Households can access water treatment technologies with payment terms they can afford. At its best, the model is a win-win-win.

But the model needs further improvement. In India, initial positive results were dampened by subsequent declines in correct and consistent use of water filters over the following year. Although

the reasons for the declines varied, the most significant was the inability or unwillingness of consumers to purchase replacement cartridges. Long-term use in Cambodia—with a product that requires no replacement parts—has been more stable. This is critical since consistent usage is essential to achieving health impact.

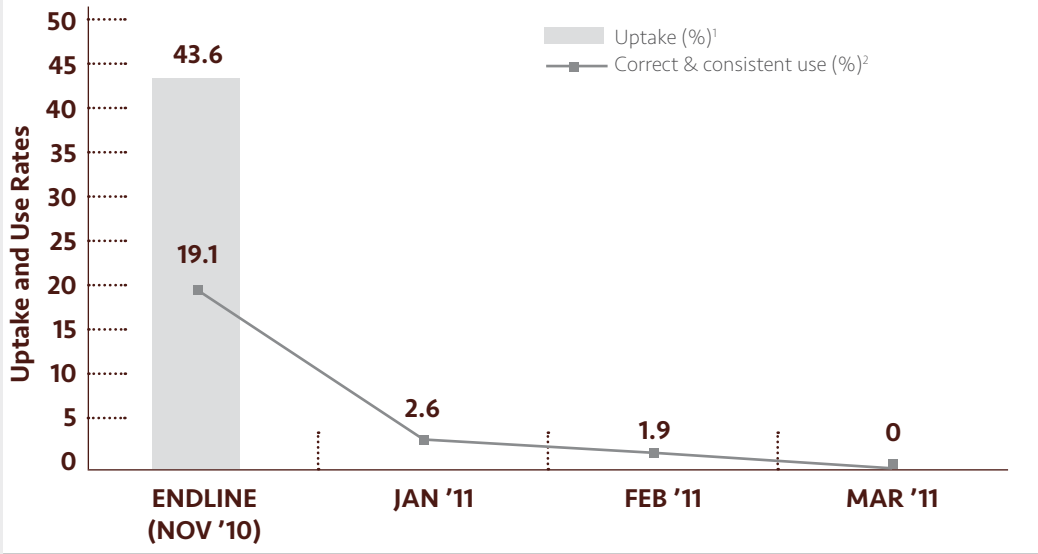
Manufacturers are now working to address identified problems and scale the model with zero donor support. As operational issues are worked out, partners expect to see an increase in correct and consistent use and stronger demand over time. ■

Community members meet to learn about loan options for purchasing ceramic water pots through a microfinance institution. Photo: PATH/Sara Watson

Product subsidies: a cautionary tale

The role of an effective clean water subsidy is to stimulate availability of options and demand for water treatment by those who need it most. But it is easier said than done.

FIGURE 1:
RATES OF **PRODUCT UPTAKE VS. CORRECT AND CONSISTENT USE**
IN NAGDA, MADHYA PRADESH, INDIA.



Although subsidies increased product uptake, they were linked to low rates of correct and consistent use.
Source: PATH

¹Uptake refers to purchase at endline for durable water filters.
²Correct use refers to observed correct use at the time of the endline survey. Consistent use refers to observed use at the time of the endline survey.

Development programs are often victims of the “giveaway syndrome,” where durable household goods are undervalued because subsidies have provided access to them for free or at a reduced rate.

This can lead to inappropriate product use or, worse yet, waste management problems when a product is not valued and simply thrown out. The results of the Safe Water Project subsidies show that access does not translate into use and that it is essential to nurture a willingness to use the product.


In rural Madhya Pradesh, India, PATH and Hindustan Unilever made water filters available for free in return for payment for two replacement cartridges. During the pilot study, we saw high uptake as people found it appealing to acquire a modern device at a price lower than retail. Salespeople were assigned to talk at local meetings about the importance of treating water to translate aspirations related to the product into a real need and to ensure continued use.

Traditional sales strategies failed, however, when customers took no interest in the sales pitch. Instead of explaining features and benefits, salespeople simply gave away the products for free. After the pilot, we observed a sharp decline in rates of use, with many beneficiaries giving or selling the devices to other households (Figure 1). After four months of follow-up, no household was correctly and consistently using a filter at every visit.

These results suggest the need to develop subsidies that are less distracting for potential customers and less disruptive to commercial market systems. PATH tested many “smart” subsidies across Cambodia, India, Kenya, and Vietnam. These subsidies came in the form of sales incentives, subsidized funds for filter loans, technical assistance, and generation of aware-

ness to create sustained demand for safe water. These interventions confirmed that development subsidies are more effective as enablers of boosting supply and demand for necessary goods rather than simple product giveaway as a means to increase access.

READ MORE

 **Microfinancing boosts uptake of water filters**
www.path.org/publications/detail.php?i=2066



To engage commercial partners, play the probabilities

Most companies are designed to do one or two things really well; they rely on partnerships with other entities to help them with the rest. NGOs are no different.

While PATH has expertise in commercializing products for use in developing countries, we have no means to manufacture or sell products in commercial quantities.

Throughout the Safe Water Project, PATH partnered with many different commercial companies. Several partners were very large and sophisticated. Hindustan Unilever Ltd., for example, is a large multi-national company that manages more than 400 brands that are sold over the world. Some partners were small and nimble. Hydrologic Social Enterprise, for example, makes ceramic water pot filters and sells them in the Cambodian market.

Before approaching commercial partners, we developed a clear understanding of needs and a “business case” that showed companies how they could address an unmet need in the marketplace. Next, we identified possible partners whose goals were likely to align with ours. When possible, we tried to cultivate multiple partner relationships simultaneously. These tactics reduced the risk of failure and increased the potential for success.

The goal for each partnership was to improve the risk/reward ratio for everyone involved—and to establish partnerships that presented favorable probabilities of a successful outcome.

A COMPELLING BUSINESS CASE

We attracted potential commercial partners by illustrating trends in the household water filter market and showing potential partners what they might expect for their own products in emerging markets. We then paired trend data with extensive market research among low-income households to reveal a credible and untapped market opportunity

of which many companies were not previously aware. This approach helped us attract a range of partners with appropriate household water treatment and safe storage products and a strong desire to reach low-income, emerging markets.

GOOD-FIT PARTNERS

Focusing on the right partners saves a lot of time and trouble. We based our initial vetting process on standard business methodology using a simple, but powerful mutual statement of goals and principles and a partner alignment checklist. We also rigorously evaluated partners for their reputation, track record, and commitment. These tools helped clarify the benefits of partnership and maintained transparency between organizations. In China, India, and Kenya, for example, we spoke with several companies and visited top prospects multiple times before proposing a partnership.

We chose companies that were already in the right business. For example, we chose companies already manufacturing water filters for developing-country markets. Sometimes companies that specialize in slightly different products or services may seem attractive and interested for reasons that sound strategic to both parties, but these types of partners are more likely to eventually prove unable or unwilling to do what needs to be done to succeed.

We also looked for companies that showed entrepreneurial leadership. Entrepreneurs like to take smart risks with their own money and overcome challenges to succeed. These qualities make a good partner. In many countries, we identified entrepreneurs by evaluating each firm's record and strategy, emphasizing risks, and asking firms to invest meaningfully.

MULTIPLE PARTNERS PURSUED SIMULTANEOUSLY

Cultivating a portfolio of partners is important for reducing risk and increasing the chances that at least one partnership will succeed. If several partnerships are successful, then the whole product category can expand quickly and competition can yield efficiencies and price reductions. In China and India, PATH was transparent in our intention to work with multiple partners. Because the Chinese manufacturing firms we identified already made products with interchangeable parts, they did not balk at our requirement for a common interface that would accept nonproprietary filter replacements. By working with both of the major water filter manufacturers in India (Hindustan Unilever and Eureka Forbes), we avoided the perception of favoring one over the other.

Although it takes a lot of effort to develop one good partnership, it takes relatively little additional effort to develop a few more similar partnerships. In all countries, we leveraged our travel, presentations, and agreement templates to efficiently establish multiple partnerships—often in a single, focused push.

PATH is grateful to all its commercial partners, many of which have taken our ideas to the next level and are expanding them on their own. That represents a good amount of luck. It also reflects our focus on partnerships that carried favorable odds. ■

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New water filters for low-income households
www.path.org/publications/detail.php?i=1992



New water filters focus on low-income consumers
www.path.org/news/an110929-water-filters.php

Partnerships throughout PATH's Safe Water Project resulted in strong learning for all involved. Pictured above are PATH staff with manufacturing partners. Photo: PATH/Greg Zwisler



TOOLS

APPLY THESE YOURSELF



PARTNERING

Very few organizations can succeed without creating at least a few strong partnerships. The question facing any small- or medium-sized enterprise or social organization is when, where, and with whom to partner. For detailed information and tools on selecting partners and establishing mutually beneficial agreements, see the Operations: Partnering section of PATH's commercialization toolkit.



RECRUITING, TRAINING, AND MANAGING A SALES FORCE

Because training and managing sales staff is a resource-intensive process, developing a successful sales program starts with recruiting the best people for the job (both fit and competency), training them appropriately, and giving them the tools to succeed. For a turnkey set of tools and advice on how to build a sales program, see the Marketing section of the commercialization toolkit.



SALES FLIPBOOK

Two examples of sales flipbooks used by PATH partners to sell water treatment products in Cambodia and Vietnam can serve as templates for the creation of your own sales flipbook, customized for your industry and product. The examples provide a guide to the proper flow of the conversation your sales team will have with each customer. Examples of sales flipbooks can be found in the Sales: Sales tools section of the commercialization toolkit.



FINANCING

For many entrepreneurs and commercial enterprises, financing (or a lack thereof) poses the largest barrier to entering new markets, developing new products, or taking the risks often required to reach low-income households. The financing module of the commercialization toolkit provides information on the types of financing available to different legal entities, the pros and cons of these resources, ways to access them, and ways to use them effectively. The module also discusses various options for providing consumer financing through credit, microfinance loans, and loans to self-help groups. To learn about financing, see the Financing section of the commercialization toolkit.



CHANNEL ANALYSIS

A channel analysis focuses on how and where a product should be sold. It starts with an assessment of the options for getting a specific product or service into the hands of the end-user. This typically happens in one of three ways: selling directly to consumers, selling to a retailer or wholesaler (middleman), or some combination of the two. To learn more, see the Landscape: Market research: Channel analysis section and the Sales: Sales model section of the commercialization toolkit.

To visit PATH's commercialization toolkit, go to: sites.path.org/commercializationtoolkit

IMPLICATIONS

THIS SECTION REPRESENTS our own perspective of what we learned, why it matters, and how it relates back to our key project questions. Here, we try to answer some of the tough questions about whether and how the commercial sectors can address the safe water needs of vulnerable families: Are private companies capable of reaching the rural poor with beneficial household products? What are the roles of the public and nonprofit sectors? Why are both essential pieces of the solution?



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Photo: PATH/Evelyn Hockstein



FEATURE

IS THE PRIVATE SECTOR AN APPROPRIATE PLACE FOR PUBLIC HEALTH INVESTMENT?

Over the past 30 years, private enterprises have successfully entered even the lowest-income markets in developing countries with an array of consumer products that include shampoos, soaps, cell phones, and sodas.

In the Safe Water Project, we sought to understand how the private sector could be leveraged to provide household water treatment and safe storage (HWTS) products to low-income markets.

While some private-sector HWTS manufacturers had been voluntarily targeting low-income markets already, most were not. The household water treatment market as a whole has not yet saturated higher-income markets, which continue to be the focus of private-sector efforts. PATH sought to direct this effort to lower-income households by forging partnerships and providing strategic investments in the commercial sector. Would such investments pay off?

Our answer is an unequivocal yes.

Photo: PATH

THE UNIQUE CONTRIBUTIONS OF THE PRIVATE SECTOR

Given the relatively limited funding available to address safe water access issues, donors and governments need to direct their resources to efforts with the highest likelihood of success. In the long term, there is widespread agreement that governments should provide reliable water supply infrastructure through pipes or wells. Until then, most donors and governments believe that multiple solutions need to be pursued simultaneously.

Compelling data show that consistent and correct use of HWTS products can reduce illness and disease related to unsafe drinking water and unhygienic water storage habits (Sobsey 2002, Clasen 2006). Although many nongovernmental organizations (NGOs) currently provide affordable or free HWTS solutions to low-income families around the world, their ability to reach even a fraction of the households in need of safer drinking water is severely limited.

The private sector offers the essential market “machinery” required to reach low-income markets, whether through public or private channels. With few exceptions, HWTS products are created in the private sector. Without these products, there really cannot be any public-sector HWTS programs.

The private sector also has a proven track record for building sustainable and efficient supply chains and distribution channels, especially when they can piggyback on other products and services already reaching low-income markets. This enables the private sector to increase access to health-enhancing products quickly.

Lastly, the private sector can tap new low-income markets without additional donor investments. In their search for profits, the private sector constantly looks for ways to generate efficiencies, both in product production and in the supply chain. They have strong incentives to find the truest path to scale and cost-effectiveness. Their efforts make products more available and affordable, whether the ultimate provision of those products is through public- or private-sector channels. Since completing our pilot work, for example, our partner Hindustan Unilever has scaled up HWTS provision

The private sector also has a proven track record for building sustainable and efficient supply chains and distribution channels, especially when they can piggyback on other products and services already reaching low-income markets.

to low-income households in 20 states in India, and is working with two additional microfinance partners to reach low-income households in two additional states, and has introduced a lower-cost model.

BUT THE PRIVATE SECTOR CAN'T DO IT ALONE

Our pilot efforts show that the private sector is not a panacea for ensuring HWTS access. It is limited in important ways. First, the private sector can't make a profit by directly serving the poorest of the poor, so it often won't even try without public-sector investment. The public sector, including governments and NGOs, must continue meeting the needs of the very poor if health products like HWTS are going to make a meaningful impact on global health.

Second, although the private sector is often willing to help achieve health goals, public health is not its primary focus or area of expertise. Without strong, health-focused partners, commercial companies can send confusing messages about water treatment or create and sell products that fail to convey health benefits.

Third, private-sector enterprises will scale sales efforts only as fast as profitability allows, and that is not always fast enough to address global, time-critical public health needs.

Some questions remain about the private sector's role and approach in addressing safe water issues. The private sector has not yet proven it can convert new HWTS customers to correct and consistent product users in large numbers. Profit-driven incentives do exist for companies selling products with replacement parts, but as products improve over time and the need for replacement parts is minimized, this incentive to encourage correct and consistent use may fade.

Also, only a few commercial providers recognize the value of collaborating with competitors across the product category to promote the practice of water treatment to those who do not currently treat their water. We believe such collaboration is necessary when approaching low-income markets that have no previous experience with water treatment products.

And finally, HWTS isn't a complete answer to preventing diarrheal disease. Solutions across the entire safe water, sanitation, and hygiene (WASH) spectrum—including water supply, sanitation products, and hygiene practices—need to be effectively deployed.

THE VALUE OF AN INCLUSIVE MARKET APPROACH

Given these limitations, we advocate an inclusive market approach that encourages both the public and private sectors to address the world's needs for HWTS and to do so in a collaborative manner. In our view, global and national public health

In many communities, public health workers alone hold the trust and authority to persuade people to try new hygienic behaviors and treatment to improve water safety.

systems must be involved in HWTS provision. The US Centers for Disease Control and Prevention and Population Services International's work in Malawi and Tanzania demonstrates how effective public health services can be used to reach potential users at key teachable moments, such as during pregnancy, during a child's treatment for diarrhea, and during HIV and maternal and child health counseling. In many communities, public health workers alone hold the trust and authority to persuade people to try new hygienic behaviors and treatment to improve water safety. Public health systems are able to detect outbreaks of waterborne diseases and teach communities how to protect themselves.

When the best that the public and private sectors offer is thoughtfully combined, the market for HWTS and other WASH products can thrive and serve those with the greatest need. Examples of synergistic partnering can readily be found in other health areas such as immunization, family planning, and HIV/AIDS. Fewer examples are available for HWTS and WASH solutions.

The Bill & Melinda Gates Foundation's investment in the Safe Water Project has already yielded better products and provision methods for poorer consumers than the private sector would have provided on its own. Our private-sector partners are now reaching significantly poorer consumers with products those consumers want and will use consistently. Several of these partners are now expanding HWTS provision on their own, independent of public-sector resources.

In the next decade, we hope the HWTS field will continue to focus on replicating successful strategies, scaling up profitable business models, adapting products and strategies to local contexts, and expanding its learning. Conscious coordination of investments and roles among private and public actors is needed. Donors such as the US Agency for International Development, the UK's Department for International Development, and the Gates Foundation can support coordination through the World Health Organization HWTS Network and the creation of harmonized performance standards to build an inclusive market that serves all equitably. ■

Why the middle poor matter

OPINION

Given that the commercial sector will probably never reach the world’s poorest and most vulnerable households, many have questioned the merits of spending limited public health resources on commercial efforts to sell household water treatment and safe storage to those within the middle three wealth quintiles. Do the middle poor matter?

People living in the middle wealth quintiles of very poor countries too often suffer from diarrheal disease because they lack access to safe drinking water. Providing them access to effective and appropriate household water treatment products is likely to lead to improvements in health. But the rates of severe disease and death among the middle poor are lower than among the poorest, and their ability to receive treatment or survive severe episodes of disease may be higher (Ahs et al. 2010).

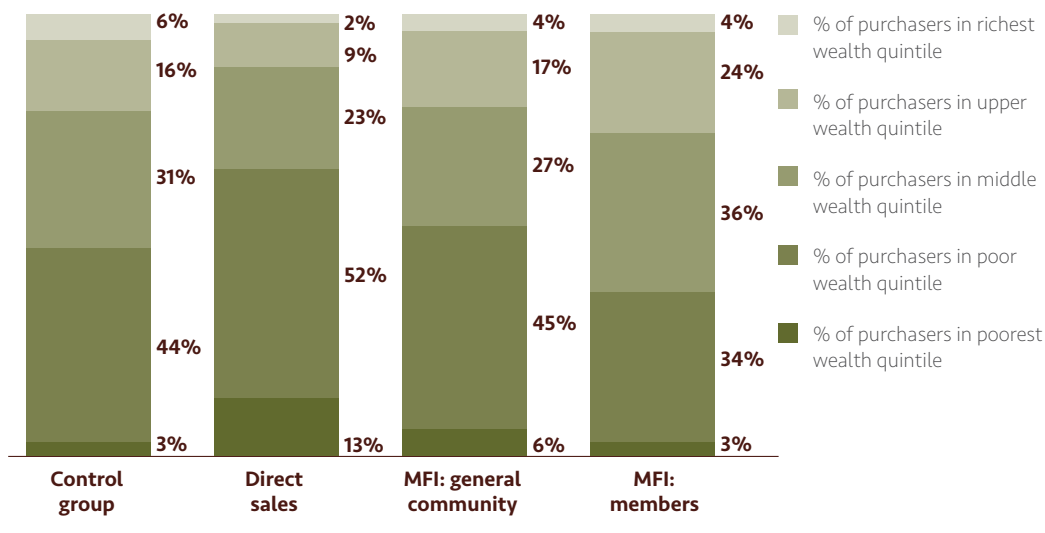
Nonetheless, the middle poor do matter. They matter to the very poor. The middle poor represent a bridge to technologies and products that will eventually reach the very poor, whether through commercial markets or direct provision by nonprofits and governments. Without market participation from the middle poor, companies will not design new products for low-income households or create stronger distribution channels into poor peri-urban and rural areas. This places an impossible design and distribution burden on public- and nonprofit-sector agencies that are not necessarily experienced or have capacity in these areas.

Without the middle poor to model social norms and aspirations, the lower poor have no mental model for water treatment practices, and no reasons to believe they should adopt new ones. This makes it harder for nonprofits and governments to convince households to treat their water, even if water treatment devices and solutions are provided free of charge.

When the needs of middle poor households are not addressed by the commercial sector, the very poor have fewer options for water treatment and limited understanding of the benefits of water treatment, and receive less attention from public-sector agencies that are spread too thin. When the needs of middle poor households are met by the commercial sector, as they were in some of our commercial pilots, we can see how certain models are able to reach lower-income households more effectively than others.

In our final commercial pilot in Cambodia (pilot #7), we measured the wealth level of households that purchased ceramic water pot (CWP) filters in three pilot variations. One pilot area received no special sales intervention, one area was targeted by direct sales, and one was offered microfinance loans. Uptake in the microfinance

FIGURE 1:
DISTRIBUTION OF CWP PURCHASERS BY WEALTH QUINTILE AT ENDLINE



This graph shows the distribution of ceramic water pot units purchased across wealth quintiles. The majority of households (85 percent or more) that purchased a ceramic water pot were in the middle three quintiles. Source: PATH

pilot variation was measured both among general community members and among microfinance institution (MFI) members.

Figure 1 shows which wealth quintiles were reached in each variation of the Cambodia pilots. These results are promising because they show that the great majority of CWP purchases in Cambodia are among the target wealth quintiles.

Given promising indications that lower wealth quintiles can be reached through the commercial sector, we believe that commercial strategies that aim for the middle poor can be leveraged by the public sector, and therefore are worthwhile beneficiaries of a small share of public-sector resources. ■

What is sustainable in the context of household water treatment and safe storage?

OPINION

Sustainability in the context of household water treatment and safe storage (HWTS) products has different meanings for different stakeholders in the marketplace.

The product user needs to learn and sustain correct and consistent use of water treatment behavior. The private sector needs to generate and sustain profits. Nongovernmental organizations (NGOs) and donors need to support innovative programs—but not indefinitely. And the government needs to invest limited dollars strategically for the benefit of constituents. As these examples show, sustainability can be measured in terms of practices, profits, investments, and policies that support HWTS use.

The results of PATH’s Safe Water Project show that private-sector actors can be motivated to reach “down market” toward lower-income consumers if the risk of exploring new markets and developing new models is shared. However, they cannot subsidize their products, maintain supply chains to remote communities, and conduct compelling marketing campaigns without at least recovering

needs of households too poor to provide for their own basic needs.

Inclusive market approaches can give households themselves flexibility. Some people can afford to pay outright for durable or consumable water treatment products if they are motivated to do so. As the microfinance institution (MFI) pilots have shown, consumer financing enables some lower-income households to purchase HWTS products at full price. Additionally, partial or full subsidies can encourage use. However, as we saw with the MFI pilot variation in which most of the price was subsidized, offering something for free does not mean people will value it enough to sustain their use of the product over time. People must be convinced of the benefits of treating their water—what behavioral researcher Maria Elena Figueroa refers to as “getting to ‘want.’”

Consumers are often skeptical of salespeople promoting a new kind of product. As shown in Malawi, having a trusted government representative such as a health worker promoting the practice of water treatment is highly influential in encouraging sustained use. Such influencers are also often able to identify those most in need of financial assistance.

Achieving the goal of sustainable access to safe water comes down to a question of who foots the bill for that access. While the focus is rightly on providing every household an improved water source, donors and governments need to consider how they want to apply their resources to achieve greater equity and positive health outcomes.

Donors and governments have limited options to provide HWTS interventions, such as:

- Pay for all promotion, product development, and distribution costs and provide HWTS for free to everyone. This would require an enormous investment in advocacy, drawing resources from other important initiatives such as water supply.
- Invest in social enterprises willing to serve poor communities and wait for the market to reduce prices and reach lower-income populations sustainably and at sufficient scale.
- Blend the best of both approaches.

As we saw with the MFI pilot variation, in which most of the price was subsidized, offering something for free does not mean people will value it enough to sustain their use of the product over time. People must be convinced of the benefits of treating their water.

The private sector is expert at product manufacturing, marketing, and distribution. The public sector can focus its resources on meeting the needs of the poorest households with policies that support inclusive market provision, promotion of water treatment behavior, and targeted subsidies. We believe that sustainability cannot be achieved without investments from individuals, companies, NGOs, donors, and governments working together to address a problem of this scale. ■

With 780 million people lacking access to an improved water source, the burden on the public sector and very-low-income households is unsustainable.

their costs. By itself, the private sector can only partially meet the needs of low-income markets.

Yet we believe the private sector’s role is critical. Commercial companies develop products, provide innovative financing, extend supply chains, and market products to lower-income populations. Without these commercial actions, the cost burden of reaching the poor with household water treatment options falls to governments, donors, and NGOs—and to households themselves. With 780 million people lacking access to an improved water source, the burden on the public sector and very-low-income households is unsustainable.

An inclusive market approach would allow the private sector to sell products at a price that meets its needs for cost recovery and some profits. This then allows governments to focus resources on providing piped and clean drinking water directly to communities. In turn, that allows NGOs and donors to focus their resources on meeting the

Promising strategies to reach the world's poor with household water treatment and safe storage products

OPINION

The Safe Water Project focused on the role that private enterprises can play in increasing access to household water treatment and safe storage (HWTS) products. Our results point to several promising business strategies for reaching low-income households.

They also show ways in which the private sector falls short in meeting public health needs. The most promising strategies for reaching the world's poor with HWTS, then, must leverage the best of the private and public sectors.

We believe the investments outlined below represent the best way forward to reach low-income consumers, including the very poor, with HWTS solutions.

UPSTREAM INNOVATION, EXPERIMENTATION, AND RESEARCH

The public sector routinely invests in basic research that becomes the basis for new technologies, whether for the military, space program, or other applications. In the case of HWTS, commercial partners have identified new materials and approaches that can produce high-quality water at a fraction of the cost of even the least expensive current methods. Continued investments in industry-wide design standards for HWTS products and nonproprietary filter mechanisms can steer the HWTS industry toward increased competition and higher-quality products at the low-income end of the market.

FINANCIAL INVESTMENTS AND INCENTIVES

Financial incentives are needed at both the consumer and supplier levels. PATH's work has shown that consumer microfinancing models for HWTS products enable cash-poor households to overcome initial price barriers. Feedback from micro-lending agencies indicates that combining HWTS with other household health products (such as cleaner cookstoves or toilets) in bundles or sequential loans could result in longer-term value for lenders, which may enable them to offer smaller loans for each product to lower-income clients.

At the supplier level, investing in social enterprises that simultaneously seek to achieve profits and social impact is a great way to improve access to HWTS by enabling these products to come to market more quickly with lower investment. These enterprises are already aligned with health goals and committed to sustainable business practices that minimize donor commitments. New approaches to results-based aid also offer a means for the public sector to steer private enterprises

toward populations with greater need by compensating them based on health outcomes achieved rather than activities performed.

SMART SUBSIDIES/INCLUSIVE MARKETS

Public-sector programs that subsidize products or give them away for free can distort commercial markets. They are one reason the private sector may hesitate to invest in socially beneficial product categories.

Smarter subsidies can grow the overall market. One approach to smarter subsidy is to differentiate commercial and giveaway products. For example, the two ceramic water filters sold by Hydrologic in Cambodia have identical functional filters. The plain-looking "NGO" product is sold in bulk for subsidized distribution, and the company's specially designed Super Tunsai is sold directly to consumers. The extra value that consumers attribute to the Super Tunsai product design allows commercial and subsidized provision to coexist in the same market.

Another approach makes subsidies invisible to consumers through hybrid financing and coupon/voucher programs. Under such programs, both subsidized and market-price products are distributed through the same channel, with the subsidy targeted to those most in need. Although voucher programs require additional effort to administer and monitor, they can also achieve greater equity and coverage.

SOCIAL MARKETING AND BASIC SUPPLY CHAINS FOR THE POOR

Regardless of funding cycles and changes in donor approaches and priorities, certain longstanding public-sector investments are worth continuing, albeit adapted for current conditions. With so much left to do to improve water, sanitation, and hygiene, it is important to recognize contributions of the public sector. For nearly two decades, the Safe Water System advanced by the US Centers for Disease Control and Prevention—with social marketing by Population Services International—enabled the first successes in using HWTS products to address cholera outbreaks. This work generated knowledge, awareness, and capacity that the global development community continues to leverage.

Community participation models have long been effective for changing behavioral norms related to water use. Communities have also been mobilized to manufacture and sell HWTS products such as the biosand filter (Centre for Affordable Water and Sanitation Technology) and ceramic water pots (Potters for Peace).

Nongovernmental organizations can also be an important conduit between HWTS product developers (whether public or private) and low-income communities. When product developers clearly understand local needs, interests, and affinity groups (self-help groups, village health clubs, etc.), they can more efficiently meet those needs and keep operational costs low.

THE NEXT CHAPTER FOR HWTS

We hope the next decade in HWTS is filled with examples of collaboration between private enterprises and public-sector programs. When interests between the two sectors can be aligned and the best of each sector can be mobilized, we believe the field will begin to see more effective treatment technologies, better product designs, lower prices, increased access to financing, increased consumer awareness and acceptance of products, and lasting changes in household water treatment and safe storage behaviors. ■

780 million people lack access to an improved water source. Household water treatment strategies are one way to address this problem. Photo: PATH





From Asia to Africa: the value of engaging potential end-users from different contexts

Household water treatment and safe storage (HWTS) products are not a one-size-fits-all solution that can be applied anywhere.

The desirability and value of individual products varies by location and context. Product developers therefore need to not only continue to engage with and understand differences among end-users but also evaluate the acceptability of HWTS products in different environments and contexts.

The goal of the product development team in PATH’s Safe Water Project was to expand choice—with products that are affordable, acceptable, and appropriate for low-income users. Although our prototype (or reference design) for a water filter and the redesigned ceramic water pot will play a role in expanding choice for HWTS products, particularly in India and Southeast Asia, these products may not address the needs of prospective users in all environments. For example, in an area where chemical contaminants are a concern, a device that removes only microbiological contamination will be insufficient to provide safe drinking water.

HWTS products have more in common with consumer products than with health products. Understanding the local customer and context is essential for HWTS products to be marketed successfully and used widely in different geographies. A consumer product designed for one group or population—such as the Super Tunsai ceramic water pot in Cambodia or PATH’s reference design in India—may be inappropriate or undesirable in other locations. Thus, even as products based on the

reference design were being developed by Chinese manufacturers, the Safe Water Project team started engaging with potential users in Africa to explore the needs, experiences, and preferences of an additional set of end-users.

There are several similarities between the Safe Water Project’s work in Asia and in Africa, including a focus on low-income users, low background rates of household drinking water treatment, and challenges with access to water. The research in Africa, however, has especially highlighted the importance of looking at a range of products and technologies rather than focusing on a specific product or solution, and paying attention to current behaviors (such as use of HWTS methods) as well as having the right product at the right time.

When asked to give feedback on different HWTS products, including three products based on the reference design, potential end-users in Africa had strong opinions about product shape, size, ease of cleaning, and perceived durability. End-users generally preferred traditional water vessel shapes. Also, because almost all users stored water in containers on the floor, they expressed concerns about the durability of the reference design products and the stability of the stands.

Understanding awareness of the link between water quality and health is essential. Having the right product(s) is not enough. If people believe

In Ethiopia, Tanzania, and Mali (pictured here), PATH gathered information about user preferences by watching as participants sorted images of water filters based on aesthetic likes and dislikes. Photo: PATH/Siri Wood

their water is safe because it is “clear” or has “already been treated,” then demand for HWTS products will be low. If there is concern about the health impact of HWTS solutions such as chlorine, then consumer uptake of a chlorine product will also be low.

Understanding access—both to markets and resources—is another important factor. Although fast-moving consumer goods—such as chlorine tablets—can be an appropriate and acceptable solution, if a distribution system is not in place and the cost of traveling to buy tablets is substantial, then tablets will be a viable option. Also, if access to an adequate quantity of water is a primary concern, quality may be a secondary issue.

READ MORE

Extended User Testing of Water Treatment Devices in Andhra Pradesh
www.path.org/publications/detail.php?i=1841

Our end-users as co-designers: Development of the Safe Water Project Reference Design and Design Guidelines
www.path.org/publications/detail.php?i=2009

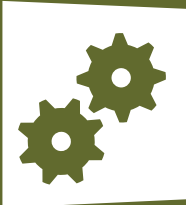
To expand choice for potential end-users, it is essential to both understand and meet customers where they are. To scale up the Safe Water Project’s work to new geographies and to truly expand choice for low-income consumers, product developers need to ask a set of questions for each location:

- What is the level of awareness—both of the need to treat water and of water treatment products?
- What products are appropriate and/or desirable?
- What products or mix of products makes sense right now?
- How do/will products get to people?
- What mix of distribution methods is needed?

The answers to these questions may suggest new product designs or the need to adapt existing products. In addition, these questions clearly illustrate the need to continually involve end-users in work to expand choices, improve health outcomes, and increase access to safe drinking water for all. For end-users in Africa, the reference design and ceramic water pot redesign may expand choice. Additional solutions will be needed to provide choices that are acceptable and desirable for the broadest range of prospective households. ■



PATH observed Indian households as they sorted images of household commodities based on preference to gain understanding about user needs and desires. Photo: PATH/Quicksand Design



TOOLS APPLY THESE YOURSELF

Name of Vendor or Household	Household Address	# in HH	Items	# Purchased	Total Price Paid	Assumes Not Purchased on-Net Purchased
1. Mr. K. K. K.	1. K. K. K.	4	1. 1. 1. 1.	1	1. 1. 1. 1.	1. 1. 1. 1.
2. Mr. K. K. K.	2. K. K. K.	4	1. 1. 1. 1.	1	1. 1. 1. 1.	1. 1. 1. 1.
3. Mr. K. K. K.	3. K. K. K.	4	1. 1. 1. 1.	1	1. 1. 1. 1.	1. 1. 1. 1.
4. Mr. K. K. K.	4. K. K. K.	4	1. 1. 1. 1.	1	1. 1. 1. 1.	1. 1. 1. 1.
5. Mr. K. K. K.	5. K. K. K.	4	1. 1. 1. 1.	1	1. 1. 1. 1.	1. 1. 1. 1.
6. Mr. K. K. K.	6. K. K. K.	4	1. 1. 1. 1.	1	1. 1. 1. 1.	1. 1. 1. 1.
7. Mr. K. K. K.	7. K. K. K.	4	1. 1. 1. 1.	1	1. 1. 1. 1.	1. 1. 1. 1.
8. Mr. K. K. K.	8. K. K. K.	4	1. 1. 1. 1.	1	1. 1. 1. 1.	1. 1. 1. 1.
9. Mr. K. K. K.	9. K. K. K.	4	1. 1. 1. 1.	1	1. 1. 1. 1.	1. 1. 1. 1.
10. Mr. K. K. K.	10. K. K. K.	4	1. 1. 1. 1.	1	1. 1. 1. 1.	1. 1. 1. 1.

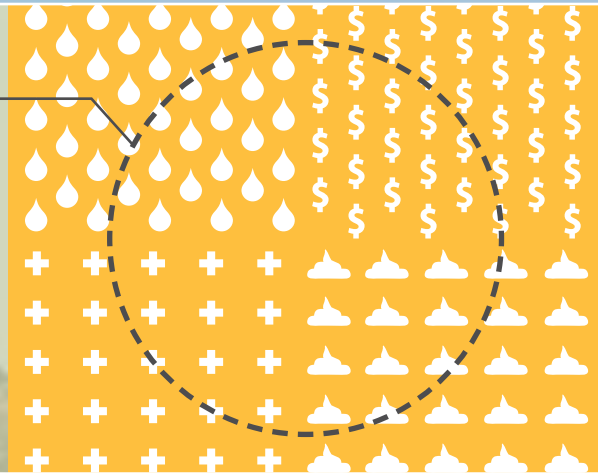
METRICS

Developing a reporting system to track performance and metrics is a critical component of the success of any small- or medium-sized enterprise or social organization. Without accurate information, it is difficult to know which activities and practices to continue and which parts of your operation you need to improve. To see a sample of the tools PATH developed to help commercial partners track and monitor pilots in real time, see the Reporting section of the commercialization toolkit.

To visit PATH’s commercialization toolkit, go to: sites.path.org/commercializationtoolkit

BEYOND

MUCH OF WHAT WE LEARNED in this five-year initiative can be applied in other countries with different needs and challenges and to any number of socially beneficial products. This section looks at our project from the perspective of other water, air, sanitation, and hygiene programs and explores how they might (or might not) benefit from collaboration with the private sector.



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Photo: PATH/Jennifer Foster



HOW DO YOU GET HEALTH-ENHANCING PRODUCTS TO SCALE IN HARD-TO-REACH, LOW-INCOME AREAS?



Photo: PATH/Siri Wood

Getting a product—any product—to scale in the commercial market is fairly simple if it is profitable to do so. As long as companies are making a reasonable return on their investments, they are usually quite eager to scale the product to untapped markets far and wide.

Getting a product to scale in hard-to-reach, low-income areas is more difficult simply because the returns are incrementally smaller and more difficult to achieve. Yet these lower-income areas are precisely the places where water treatment products may have the most positive impact on health. From PATH’s perspective, it is possible to both reach lower-income households and generate a reasonable return—more so if the following factors are in place:

“Our partnership with PATH and Hydrologic Social Enterprise proved highly workable and successful in the community. That’s why we had to scale it up by extending it to other provinces.”

— SAMPHEA SARTOP, VisionFund Cambodia

MARKET CONTEXT PARTNERS

Market context sets the stage for the success or failure of all subsequent activities. It is critical to consider not only the target market for a health product or service but also where that market is located and whether it is large enough to allow for investment. Can you achieve a “critical mass” of early adopters? Can you sustain supply and demand through sufficient access to the product? In most instances, initially aiming at the most difficult setting is not the best choice.

THE RIGHT SETTING

The right setting is one where a favorable enabling environment has been created through coherent regulations, policies, and practices that support commercial household water treatment and safe storage (HWTS) provision. For example, a number of countries have explicit policies encouraging provision of HWTS, waive import duties, and actively promote HWTS through clinics, schools, and category campaigns.

PRODUCT FAMILIARITY

Product familiarity and a trusted brand (or company) offer an entry point for customers considering a purchase. Consumers at the base of the pyramid often have a particularly low tolerance for risk because of their limited expendable income. Also, like consumers everywhere, they look for what they know and understand. Incorporating a local, trusted name or certification can also help to reassure consumers of the quality and value of any new product.



Partners at all levels are the lifeblood of any effort to introduce and market products. Established partners with a solid reputation can offer critical support for new efforts. Meanwhile, trusted partners (either organizations or individuals) at the community level can ensure success on a day-to-day basis. Great partners are willing to take some risk, be flexible in their approach, and recognize that their involvement will yield benefits beyond themselves.

A REPLICABLE APPROACH

A replicable approach allows a product or service to adapt and take root in new settings. The approach must have the right balance of generality and flexibility in its design to continuously improve while maintaining applicability to a population of adequate size. In developing-country contexts, this often translates to keeping things as simple as possible, from partnerships and action plans to products.

PATIENCE

Patience is perhaps the most difficult piece to incorporate, but it is also the most important. Positive results can be hidden by operational challenges. Determining whether something “works” requires enough time to test and refine, build momentum, grow organically, and realize returns. However, this window of opportunity must be balanced with the ability to recognize that a product or service may simply never sprout wings and take off.

Big things often grow from small beginnings. Good ideas must be nurtured and supported within the bounds of reasonable expectations, particularly in the short term. Getting something to “work” for both private- and public-sector interests takes a bit of time and effort, but when it works, the private sector has the tools and interest to make it scale. ■

Getting products to scale often requires the right setting, product familiarity among consumers, the right partners, a replicable approach, and patience. Photo: PATH/Siri Wood



Attention to detail, effective operations drive successful business models

In our pilots, we sought to discover scalable and sustainable business models for selling HWTS products to low-income households.

Our first pilots suffered from operational challenges. Humbling as they were, these challenges helped us focus on details that we had previously underestimated: well-networked salespeople, supportive supervisors, a rational flow of products and money, and relentless attention to detail. We began to realize that not all commercial companies have a clear understanding of their business environments; some have only a limited set of business resources and tools at their disposal. Without the necessary tools and expertise, several of the pilots were not

functioning as planned, and—not surprisingly—the business models were failing to generate results.

To address this problem, we found commercial mentors from the nonprofit group MBAs Without Borders to work with partners, address operational challenges, and develop tools that would help them address problems over time. We stripped more complex business tools down to their core components and adapted them to the local culture and capacity of partner staff.

Tools developed through the Safe Water Project are available online in a commercialization toolkit. Many of these open-source tools have universal application beyond use to advance household water treatment and safe storage and may benefit a broad range of social enterprises. Photo: PATH

In Cambodia, our commercial mentor, Benjamin Mandell, came to his assignment with extensive experience in sales and marketing. Working with demand generation experts at PATH headquarters, he helped our social enterprise partner develop a sales and marketing program that yielded effective television advertisements, retail product merchandising, and a sales flipbook to help direct salespeople initiate and close the sale. Versions of this flipbook have been adapted and used by PATH partners in India, Kenya, and Vietnam.

In Kenya, our commercial mentor, Jeremy Farkas, used his experience in market research to help our social enterprise partner design and implement rapid market assessment tools. This research improved our understanding of consumer preferences related to household water treatment and storage products and guided product pricing. In Vietnam, our mentor, Debbie Tran, created sales reporting and inventory tools that were simple, clear, and effective. Both the inventory and market research tools have now been adapted for partner use in other countries.

As a result of this mentorship, business operations started to function more efficiently in our pilots, and we were then able to identify business models worth replicating.

One of these emergent models was the microfinance partnership model in which consumers were offered financing to increase access to household water treatment and safe storage products. In nearly every location, the microfinance partnership model enabled cash-poor families to bring home a household water filter with very little upfront investment. In Cambodia, when microfinance loans were paired with an upgraded product—one specifically designed to meet the needs and preferences of low-income households—sales quadrupled in six months.

Our examination of a successful pilot in Malawi offered additional insights. Pregnant women were offered a free trial of a liquid chlorine product along with a storage container with a tap. The product itself was imperfect (many consumers disliked the taste of chlorine), but it was offered by a trusted health worker during a time in which women are highly receptive to health messages. This hybrid model with a public-sector approach to sales also generated impressive, lasting results.

These business models are promising strategies that partners are already expanding or replicating without donor investment. They work not only because they are effective models but also because they are operationally efficient. As social enterprises and entrepreneurial businesspeople enter the HWTS market, we hope they use and improve the tools we have shared so that operations are a help—not a hindrance—to scalable models. ■

READ MORE



Commercialization Toolkit
sites.path.org/commercializationtoolkit/

MARKET SEGMENTATION TO ADVANCE HEALTH-ENHANCING CONSUMER PRODUCTS AND SERVICES

When it comes to understanding a target market, people are not everything. Segmentation research not only uncovers information about individual practices and preferences but also opens the door to a broader understanding of the context in which individuals interact with the markets that surround them.

PATH's segmentation approach provided new insights into human factors that affect markets for water filters. It also improved our ability to craft the right messages to reach our target consumers and promote and sell new products.

Perhaps more important, segmentation pinpointed areas where commercial approaches could flourish. Our research in Cambodia, for example, identified pockets of consumers who had not been offered subsidized water treatment products in the past. Recognizing that these communities were ripe for commercial distribution, companies focused on them first to achieve a solid market foothold. Subsequent commercial activities built upon this success and focused on the next set of communities with low levels of prior subsidy activity.

PATH sees potential for our segmentation research methods to inform both public- and private-sector product development and distribution efforts across various categories of health-enhancing products and services. The need exists for better understanding of how to reach more people with items such as household latrines and cookstoves, as well as concepts such as handwashing. Yet formative research in these health areas is often confined to collecting user-focused data.

Segmentation research is another example of how “market-based approaches” have relevance beyond implementation. By examining the interaction of the individual with the technology or service, as well as the broader environment in which the technology or service is made available, we can more effectively design the proper solutions and realize lasting success and health impact.



Photo: PATH/Sara Watson

The value of the NGO in stimulating commercial markets

For several decades, nongovernmental organizations (NGOs) have worked alongside private-sector firms to stimulate interest and investment in low-income markets with uncertain returns.

The dominant strategy is to “sweeten” incentives and reduce up-front costs and barriers to reaching vulnerable populations. PATH does this by investing in market research, sharing what we know about low-income consumers, consolidating demand, testing products with low-income households, and seeking common ground between public- and private-sector goals. We look at markets from an industry-wide perspective and seek ways to improve overall market potential for all brands.

Through PATH’s Safe Water Project, some of our smaller commercial partners have learned how to work more efficiently and effectively in developing-country environments. To help build their skills in market research, product development, and other business areas, PATH developed a commercialization toolkit that anyone can download for free from our website (<http://sites.path.org/commercializationtoolkit/>).

“We had no prior experience in developing low-cost HWTS products for emerging markets. Expanding into this new area brought new challenges in all areas of our business: customer needs, design criteria, supply chain, distribution strategy, etc.”

— LAURA MCLAUGHLIN, Project Manager and Environmental Engineer, Cascade Designs Inc.

Other partners have realized new potential applications for their technologies. Cascade Designs Inc. (CDI), for example, is a family-owned business in Seattle that has previously made and sold water filters for the outdoor recreation and military markets in the United States and other developed countries. Through its involvement with the Safe Water Project, CDI has invested in developing and selling low-cost household water treatment and safe storage (HWTS) products for emerging markets, as well as several new community water treatment products.

Private and nonprofit manufacturers have benefited from our user-experience testing and design research. They may not only download detailed guidelines for developing durable household water filter products for the poor but also use a nonproprietary filter to make the products function safely and effectively. Three manufacturers in China have developed new HWTS products based on our design guidelines and will sell them in select markets in Asia starting in 2013.

Working with an NGO also helps commercial firms form new, beneficial relationships. Hindustan Unilever, Hydrologic Social Enterprise, and Eureka Forbes, for example, have established relationships with microfinance institutions, with PATH acting as a neutral broker. Each has seen that microfinance lending can boost sales and is pursuing microfinance relationships for future pilots or scale-up.

“The most interesting part for the Safe Water and AIDS Project [SWAP] was to be introduced to yet another HWTS option. The best part was that [our work] did not end with the pilot study. SWAP found a local supplier of ceramic filters in Western Kenya and continues to sell and promote the product. We are testing a free trial of the filter for two weeks...”


— ALIE ELEVELD, Country Director, Safe Water and AIDS Project

Collaborating with other NGOs has helped the private sector reach customers well below the usual income levels with far more attractive and appropriate HWTS products, at prices that customers can afford, in places with little previous market penetration. We see this as a promising start to what could be a long-term symbiotic relationship between commercial firms and the public sector. ■


“PATH’s consumer research, technical assistance, and financial support were instrumental in developing effective promotional approaches and finance mechanisms for ceramic water filters that are now being scaled up by Hydrologic in Cambodia.”

— MICHAEL ROBERTS, Country Director, iDE Cambodia


READ MORE


WEBPAGE

Commercialization Toolkit
sites.path.org/commercializationtoolkit/


WEBPAGE

Learn more about new water filters
www.path.org/projects/safe-water-filter-resources.php


WEBPAGE

PATH’s HWTS design guidelines
www.path.org/hwts-design-guidelines/index.php

DIVE DEEPER: RESOURCES FOR THE CURIOUS

CITATIONS

ORIGINS SECTION

From “Household water treatment and health”

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From “Stimulating commercial markets for safe water products”

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PEOPLE SECTION

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PRODUCTS SECTION

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From “One step closer: standardizing manufacturing practices for the ceramic water pot”

Bouman D, Novalia W, Hiemstra P. *Smart Disinfection Solutions: Examples of Small-Scale Disinfection Products for Safe Drinking Water (Smart Solutions Series)*. Amsterdam, Netherlands: KIT Publishers; 2010.

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There is a vast collection of literature on the topics of HWTS and market-based approaches. This section summarizes some of the publications that we found to be most relevant to our work.

Household Water Treatment and Safe Storage resources:

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PATH SAFE WATER PROJECT PUBLICATIONS

PUBLICATIONS AVAILABLE ONLINE AT [HTTP://SITES.PATH.ORG/WATER/RESOURCES/](http://sites.path.org/water/resources/)

Throughout the Safe Water Project, PATH authored numerous documents about our findings.

FACT SHEETS

Origins and formative research

Household Water Treatment and Storage: Findings From a Distribution Channel Analysis (Cambodia).

Household Water Treatment and Storage: Findings From a Qualitative Consumer Research Study (Cambodia).

Household Water Treatment and Storage: Findings From a Distribution Channel Analysis (Vietnam).

Household Water Treatment and Storage: Findings From a Qualitative Consumer Research Study (Vietnam).

PATH's Safe Water Project: Partnerships for Commercialization of Household Water Treatment.

PATH's Safe Water Project in Vietnam and Cambodia.

Safe Water: A Market-Based Approach.

Market-based approaches and pilot projects

Household Water Treatment and Storage: Findings From a Distribution Channel Analysis (Cambodia).

Bicycle model yields rich learning despite limited results: Microentrepreneurs try to sell new water treatment product in rural India.

Microfinancing boosts uptake of water filters.

Piloting retail and direct sales models for household water treatment products in Cambodia.

Promoting Home Water Treatment through Antenatal Clinics in Malawi: Qualitative Research Findings.

Promoting household water treatment through local health workers in Vietnam.

Study of sales of Kenyan water filters shows promise: PATH partners with local agency to explore new ways to offer residents water filters.

Products and product development

New Design of the Ceramic Water Pot.

New water filters for low-income households.

PATH's Prototype Water Filter for Household Water Treatment.

Sanitation: A Strategic Approach.

PROJECT BRIEFS

Origins and formative research

Activities and Stakeholders in the Global Water Sector: A Preliminary Analysis.

Commercial Approaches to Providing Safe Water in India: A Literature Review.

Consumer and Market Research on Household Water Treatment Products in Vietnam.

Echoing Success: Expanding Promotion of Home Water Treatment Through the Antenatal Water and Hygiene Kit Program in Malawi.

Findings From Investigation of User Experience With Household Water Treatment and Storage Products in Andhra Pradesh, India.

Formative Household Research in Andhra Pradesh.

Household water treatment and safe storage in Vietnam: Exploring commercial strategies to market safe water products.

Market Assessment of Household Water Treatment Products in Eight African Countries.

Picturing the Customer: Developing Consumer Personas from Research on Household Water Use in Andhra Pradesh, India.

Safe Water Situation in Four Countries: 2007 Findings in Brief.

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Market-based approaches and pilot projects

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