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 into six sections:

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

This publication is a result of a new format 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
Commercial approaches to delivering household water treatment and safe storage products and solutions to low-income households
### Summary of PATH pilot projects in Cambodia, India, Kenya, and Vietnam

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<thead>
<tr>
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<th>UTTAR PRADESH</th>
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<td>CHANNEL PARTNER</td>
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<tr>
<td>MODEL DESCRIPTION</td>
<td>Sales of Aquatabs by newly recruited and trained bicycle entrepreneurs at weekly markets and door to door.</td>
<td>Sales of Aquatabs door to door by public-sector community health workers.</td>
<td>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.</td>
<td>Sales of two brands of ceramic water pots door to door by direct sales agents.</td>
<td>Promotion and sales of durable water filters through microfinance institutions with various micro-loan schemes and product price subsidies.</td>
<td>Sales of two durable water filters by retailers.</td>
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<td>POPULATION STRATA</td>
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<tr>
<td>PRODUCT PRICE</td>
<td>Initially 0.5 Indian Rupees (INR) (US$0.01) per Aquatabs, increased to 1 INR (US$0.02) halfway through the pilot</td>
<td>1,000 Vietnamese Dong (US$0.05) per Aquatabs</td>
<td>Two price points tested, both subsidized: + 1,000 Kenyan Shillings (KSH) (US$0.30) + 700 KSH (US$0.80)</td>
<td>Two products tested at two different prices: + 52,000 Cambodian Riel (KHR) (US$12.50) for Tunsai + 92,000 KHR (US$22) for Super Tunsai</td>
<td>2,000 INR (US$45)</td>
<td>Two subsidized price points tested: + 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</td>
<td>1,740 INR (US$39) for AquaSure Xtra and one replacement filter cartridge</td>
<td>Two products tested at two different prices: + 52,000 KHR (US$12.50) for Tunsai + 92,000 KHR (US$22) for Super Tunsai</td>
<td>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).</td>
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<td>LOAN SCHEME</td>
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<td>Layaway plan with monthly installments over 3 months was introduced but implemented by very few vendors</td>
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<td>Two loan repayment plans tested (in different areas): • 80 INR (US$1.80) per week for 25 weeks • 43 INR (US$0.95) per week for 50 weeks</td>
<td>Two loan repayment plans tested (in different areas): • 43 INR (US$0.95) per week for 25 weeks • 39 INR (US$0.87) per week for 37 weeks</td>
<td>Loan repayment plan: 250 INR (US$5.60) per month for 6 months, plus upfront payment of 250 INR</td>
<td>Loan repayment plan: 8,300 KHR (US$22) total interest, either 1.5 percent per month for 6 months or 11 percent annually</td>
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</tr>
</tbody>
</table>

**Photos:** PATH
TABLE OF CONTENTS

10 Household water treatment and health
Guest article by Tom Clasen

11 Market-based approaches and the very poor
Guest article by Mohamed Fadil

12 PATH’s 35-year history commercializing products for the poor

13 Improving access at the bottom of the pyramid

14 How we measure income

15 Stimulating commercial markets for safe water products

16 How we measure commercial viability

17 Bird’s eye view of PATH’s Safe Water Project

17 TOOLS: apply these yourself

20 Selling a need

21 Got Safe Water?

22 Closing the gap between supply and demand: lessons learned from three regions

24 Building buzz and trust: reaching pregnant women with a water treatment product

26 Influencing consumer behavior
Guest article by Nancy R. Lee

27 A model worth replicating: combining antenatal care and water treatment strategies
Guest article by Robert Gash

28 All consumers are not alike

29 TOOLS: apply these yourself

32 Looking for answers: understanding the landscape of HWTS technologies

32 Product effectiveness: what’s good enough?

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

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

36 Connecting the dots between safe water standards and products
Guest article by Jarrow Bartram

37 The importance of listening to users

38 Consumer designed, tested, and approved

39 Ceramic water pot makeover

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

43 TOOLS: apply these yourself

45 How do we measure impact

47 Reconciling academic and business approaches to learning

48 Pilot projects

57 How low can they go? Targeting the underserved with market-based safe water solutions

60 Direct sales: succeeding by learning from failure

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

62 Micro-loans overcome key access barriers

63 Product subsidies: a cautionary tale

64 To engage commercial partners, play the probabilities

65 TOOLS: apply these yourself

68 Is the private sector an appropriate place for public health investment?

70 OPINION: Why the middle poor matter

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

72 OPINION: Promising strategies to reach the world’s poor with household water treatment and safe storage products

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

75 TOOLS: apply these yourself

78 How do you get health-enhancing products to scale in hard-to-reach, low-income areas?

80 Attention to detail, effective operations drive successful business models

81 Market segmentation to advance health-enhancing consumer products and services

82 The value of the NGO in stimulating commercial markets

83 DIVE DEEPER: resources for the curious

INTERACTIVE PDF
This PDF document is interactive.
Navigate to articles directly from the TABLE OF CONTENTS.
> New window, click on the TOP LEFT CORNER to return to the Table of Contents.
> Exit the PDF, click on the TOP RIGHT CORNER to return to the Section Overview.
> Find additional information and resources by clicking on links in the READ MORE sections.
The pace of the spread of HWTS is rather slow and [appropriate, inexpensive] devices have yet to be made for poor countries.

They are no longer viewed as beneficiar-ies in need of our help and our technologies, but are engaged as economic actors and decision-makers, with needs, values, preferences, 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 it (a prodominantly 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, Niamia

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

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

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

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.

— WINAY SINGHAL
Principal, SJV Consultants

The fact is, few understand markets, and fewer still really truly care about market distortions. From collaborators who have been working in the water field for many decades. We asked them to share their thoughts about HWTS product.

— NED BRESLIN
CEO, Water for People

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 develop- ing-world solutions without impetus from PATH.

— KEVIN CALLAGHAN
Product Development Manager, Cascade Designs Inc.

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. Neverthe-less, we recognize that over the next ten-plus years, the growth in emerging markets is projected to surpass growth in our existing business.

— 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 inexpensive, 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 diarrheal morbidity and mortality resides. For those populations, I can’t see any way around free, or highly subsidized, product distri-bution. 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

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

TECHNICAL ADVISORY GROUP:

THOMAS CLASEN, JD, MSC, PhD  
Senior Lecturer in Water, Sanitation and Health, Department of Infection and Tropical Disease at the London School of Hygiene & Tropical Medicine

Makarand Phadke  
Senior Vice President, Evaluation, Deloitte Industries Ltd.

Robert Quick, MD, MPH  
Medical Epidemiologist, Enteric Disease Epidemiology Branch, US Centers for Disease Control and Prevention

Nancy R. Lee, MBA  
Founder and President, Social Marketing Services, Inc.

JAMIE BARTREM, PhD  
Director, Dimensities Distinguished Professor, Environmental Sciences and Engineering, Virginia Tech

GUEST CONTRIBUTORS

THOMAS CLASEN, JD, MSC, PhD  
Senior Lecturer in Water, Sanitation and Health, Department of Infection and Tropical Disease at the London School of Hygiene & Tropical Medicine

Makarand Phadke  
Senior Vice President, Evaluation, Deloitte Industries Ltd.

Robert Quick, MD, MPH  
Medical Epidemiologist, Enteric Disease Epidemiology Branch, US Centers for Disease Control and Prevention

Nancy R. Lee, MBA  
Founder and President, Social Marketing Services, Inc.

JAMIE BARTREM, PhD  
Director, Dimensities Distinguished Professor, Environmental Sciences and Engineering, Virginia Tech

COMMERCIALIZATION:

Kalpana Bissabhuthi  
India Partnerships

Benjamin Mandell  
Cambodia

Dimitra Patrikarakou  
Global

Debbie Tran  
Vietnam

RESEARCH & EVALUATION:

Jeff Berenson  
Institutional Monitoring and Evaluation

Elizabeth Blanton  
Research and Evaluation Implementation

MBAS WITHOUT BORDERS CONSULTANTS:

Andrew Beddoes  
Design Engineering

Kevin Flock  
User Experience Testing

Jennifer Foster  
Qualitative and User Research

Stephen Hilemy  
Technology Screening

JG Krishnamurthy  
India Partnerships

Pat Lennon  
Product Development

Jesse Schubert  
Quality Assurance

Robyn Wilmouth  
Engineering

Emily Lindsay  
Project Administration

Taj Munson  
Project Administration

Sunil Sachdeva  
Contract Support

Carolein Swann  
Leadership Support

Sara Watson  
Project Coordination & Facilitation

PROJECT MANAGEMENT & SUPPORT:

Rohan Badashah  
Project Support in India

Kendra Chappell  
Project Management

Breanne Crady  
Project Support

Jeff Hueltelman  
Project Administration

Marissa Kaiser  
Strategic Communications

Kate Katzman  
Project Support

Sontu Khin  
Project Support in Cambodia

Anna Larsen  
Stabilization Engineering

Dimitra Mandell  
Kenya

Deepali Wadhwa  
Qualitative Research

COMMERCIALISATION:

Shannon Cali  
India Partnerships

Tanya Dargan  
India Partnerships

Timothy Elliott  
Enterprise and Financing

Jody Garcia  
Demand Generation

Claudia Harner-jay  
Market Strategies

Thunvuth NOP  
Cambodia Partnerships

Jodie Laws  
India Market Strategies

Antara Sinha  
India Partnerships

Sidhnath Vermani  
India Market Strategies

HOA VO  
Vietnam Partnerships

CREC ZWISLER  
Platform Product Partnerships

TECHNOLOGY & PRODUCT SUPPORT:

Limin Qing  
Design Engineering

Kevin Flock  
User Experience Testing

Jennifer Foster  
Qualitative and User Research

SUMMARY OF PATH’S SAFE WATER PROJECT

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Consultants Marshall Bruner, Tara Herrick, Adrienne Kols, and Bill Snyder are much appreciated for their year 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, designers, developers, and implementers who continue to pioneer novel approaches to equitable access to safe water, sanitation, and hygiene products and services. Thanks to extensive experience, evaluation, research, and sharing a firm foundation for our all future work.

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

ACKNOWLEDGMENTS
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.
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 (Ahluwalia 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 unrelenting 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.

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 (Clason 2005). 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 2009).

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 2000). 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 2000, Hutton 2004).

In 2000, WHO and UNICEF announced a seven-point strategy for the treatment and prevention of diarrhoea among children that expressly includes HWTS (WHO 2000). 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 available, affordable, and acceptable to the target population. Boiling predominates worldwide because of its effectiveness, availability, and acceptability (Box 2001), 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 unclean water can vitiate much of the potential health impact (Brown 2004).

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 source resources on remote and lowest-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.

"*A citation in Perspectives is kind of the ‘Vive la difference’ section at the end of the magazine.

"Photo: PATH/Glenn Austin

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


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.

Household water treatment and health

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

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 (Clason 2005). 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 2000, Hutton 2004, Clason 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 2000). 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 2000, Hutton 2004).

In 2000, WHO and UNICEF announced a seven-point strategy for the treatment and prevention of diarrhoea among children that expressly includes HWTS (WHO 2000).

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 available, affordable, and acceptable to the target population. Boiling predominates worldwide because of its effectiveness, availability, and acceptability (Box 2001), 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 unclean water can vitiate much of the potential health impact (Brown 2004).

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 source resources on remote and lowest-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.

*a citation in Perspectives is kind of the ‘Vive la difference’ section at the end of the magazine.

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

### 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. 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.

### 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 a scale 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.

### Photo: PATH/Patrick McKern

Women in Andhra Pradesh, India collect water twice daily.

### Photo: PATH/Sara Watson

Women in Andhra Pradesh, India collect water twice daily.
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.

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 marketplace, 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: make it easier to design products that meet the needs of low-income consumers; make it easier to design products that meet the needs of low-income consumers; and make it easier to design products that meet the needs of low-income consumers. The HWTS product category value chain provided PATH with a strategic framework to better identify gaps and assess opportunities.

**FIGURE 1: THE SAFE WATER PROJECT’S STRATEGIC APPROACH**

**FIGURE 2: HWTS VALUE CHAIN WITH GAP ANALYSIS**

**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.**

**THIS EXAMINED 200 MARKET-BASED SOLUTIONS, AND IDENTIFIED KEY SUCCESS FACTORS AND OBSTACLES TO SCALE, COMMERCIAL VIABILITY, AND SOCIAL IMPACT.**

**PATH 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.
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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 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:

TCR = Sales / 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 “Distribution” section to learn about our distribution and sales pilots). 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 diarreah and water-related diseases kill an estimated 1.5 million children each year (Parikh 1998). We then expanded 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 purchase, 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 progress across the four countries. These 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.

BE SUSTAINABLE

Based on commercial viability when reaching low-income populations without ongoing charitable subsidies.

DATA SHEET

INFLUENCE WATER TREATMENT BEHAVIOR on products are used consistently and correctly by target households over time.

REACH RESOURCE-POOR HOUSEHOLDS in the middle those wealth quintiles that are not currently served by existing commercial efforts.

TOOL

BE SCALABLE

and therefore able to reach millions of low-income households around the world.

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 diffus 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.

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

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.

In Cambodia, Kenya, and Vietnam to build upon our initial efforts in India, where the consumer market is relatively mature and diseases kill an estimated 1.5 million children each year (Parikh 1998). We then expanded our efforts into Cambodia, Kenya, and Vietnam to build upon our learning and validate adaptations of our approaches.

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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.

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.
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.

“Got Safe Water?” (the idea, not the wording) may be the type of campaign that is needed in many developing countries to raise 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 if 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 return to drinking unsafe water. Of course, this was only possible because there was another competitive product, subsidized bottled water, rather than three-quarters of them shifted to an alternative product, subsidised bottled water.

Individuals making only a few dollars a day have hardly been 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 may also 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 vary, but most often come with a commitment to generate demand for safe drinking water.

“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.

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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. Getting 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 devices. In Malawi, five 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 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 well as their lack of knowledge about the importance of treating drinking water.

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

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 peaks and pull in these markets.

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 Tansai 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 nonprofit 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 leading cause of childhood illness and death, with contaminated drinking water a major contributor to infant mortality. Mothers in this country run out of water by the second day of a three-day trip. The lack of clean water leads to increased illness such as HIV, malaria, and malnutrition. In Malawi, 62 percent of women who used the free product did so more than three times each month, compared to just 1 percent of women who used the product. Nine months later, 62 percent of Malawian women who received the hygiene kits—28 percent of their friends and relatives—were using WaterGuard.

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 12,000 pregnant women in two districts. The women also received a box of as few as two rolls 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—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 use climbed from zero to 60 percent of program participants and 20 percent of their friends and relatives one year later.

**TRUSTING THE INFORMATION SOURCE**

What explains Malawi’s sustained increase in 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 benefited from the reputations of health workers as respected and credible sources 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’s use of WaterGuard. 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, dialogues 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 spokespersons 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 communications 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 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.

Consultant 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.

![Image](https://example.com/image1.png)

**FIGURE 1: CONFORMED USE OF WATERGUARD AMONG RESPONDENTS**

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

![Image](https://example.com/image2.png)

**FIGURE 2: HOME VISITS INCREASE USE AND PURCHASE OF WATERGUARD**

Confirmed use of WaterGuard by program participants (n=198) by number of HSA home visits, 2006–2010. CDC survey. Source: Loharikar et al. 2008

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“For the past three years, I have been blessed with easy access to a clean water supply. I feel more confident and secure now. Even my husband is happy that we have treated water, not just running water. Before, he would complain that our water is not safe. I also feel better knowing that we are doing something to protect the health of my children.”

— PROGRAM PARTICIPANT

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

“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
Ultimately, the antenatal care program was able to fill a great need for safe water. Commercial water treatment products despite a segment often considered too poor to pay for these strategies helped reach low-income women, a topic they had missed. By subsidizing for an extended free trial period, they were able to convince women of the value of home water treatment. The success of this strategy demonstrates how segmenting and targeting a group, especially vulnerable to the disease, 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.

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 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 change?
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: 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.

In Malawi, a successful social marketing strategy was employed that integrated antenatal care services and promotion of home water treatment: Insights from the Malawi antenatal care program. 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, and generating enough sales to offset distribution and promotion costs, while distribution of water treatment products 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.

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.
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.

Segmentation studies in Cambodia, Vietnam, and Kenya also showed that a nuanced view of consumers was necessary across both urban and rural settings. One of these three—the “just invoked” segment, representing 4 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, 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 chlorination treatment). Results suggested that consumers might benefit from the promotion of a durable product such as a filter or a water-treatment system.

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In Cambodia, segmentation studies indicated that a segment called “practical nurturers” was the audience most likely to adopt water treatment behaviors. Consumers in this segment placed a high value on the health and well-being of their family, 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 revealed four 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 services. Thus, what is true today about low-income consumers in one market segment may be different tomorrow—and that has important implications for reaching the billions for whom clean water could be life changing.

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 chlorination treatment).
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.
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 evaluations 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 move forward on 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 this performance—effectiveness 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 U.S. Environmental Protection Agency or World Health Organization safety guidelines, noting that these standards were developed for better-tooled settings.

To ensure this strategy will help more people have clean water and better health when they cannot afford or find higher-end products, researchers must ask:

- **What if microbes are already in the water?**
- **How do local families expect their water to taste?**
- **What can kill the greatest number of pathogens?**
- **What treatments are causing the most diarrheal disease?**
- **What can keep the greatest number of families healthy?**
- **What measures are causing the most diarrheal disease?**

**DO WE UNDERSTAND THE BARRIERS TO SUCCESS?**

Following up on these questions, it’s also important to ask:

- **Is there a common product?**
- **Is there subsampling in the market?**
- **How do local families make their water to be treated?**
- **What is the quality of the product that you have?**

**EVIDENCE OF LEVEL OF EFFICACY**

**PUBLIC HEALTH IMPACT**

**IS FAMILY HEALTH IMPROVING?**

### SUBCATEGORY

<table>
<thead>
<tr>
<th>THE BIG QUESTION</th>
<th>CATEGORY</th>
<th>FOLLOW-UP QUESTIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>TREATMENT MECHANISM</strong></td>
<td><strong>Filtration</strong></td>
<td><strong>Are women on peristalsis or cervical products?</strong></td>
</tr>
<tr>
<td><strong>Adsorption</strong></td>
<td><strong>Are there chemicals in the water?</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Disinfection</strong></td>
<td><strong>How do local families safely take water to their homes?</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Bacteria</strong></td>
<td><strong>What is in the water in the past?</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Viruses</strong></td>
<td><strong>What treatments are causing the most diarrheal disease?</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Protozoan cysts</strong></td>
<td><strong>What measures are causing the most diarrheal disease?</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Protection against recontamination</strong></td>
<td><strong>What can kill the greatest number of pathogens?</strong></td>
<td></td>
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<tr>
<td><strong>Turbidity</strong></td>
<td><strong>What treatments are causing the most diarrheal disease?</strong></td>
<td></td>
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<td><strong>Other contaminants</strong></td>
<td><strong>What measures are causing the most diarrheal disease?</strong></td>
<td></td>
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</table>

**SECONDARY TECHNOLOGY FACTORS**

**SUPPLY CHAIN**

**TRAINING AND SUPPORT**

**READ MORE**

[Global Landscape of Household Water Treatment and Safe Storage Products](http://www.path.org/publications/detail.php?i=1864)
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 we’ve 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 obvious why its success—perhaps it was a committed implementing organization, a supportive government policy, or a new incentive scheme—all important components.

Perhaps it was a committed implementing organization, a supportive government policy, or a new incentive scheme—all important components. This user-centered approach is fundamental to developing a solution that we’ve welcomed into users’ lives and lead to safe and consistent use.

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.

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 connect the dots between safe water standards and products, PATH, with our end-users as co-designers: Development of the Safe Water Project Reference Design and Design Guidelines, has worked with our field partners 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, 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.

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 partners 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.

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The importance of listening to users

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 fuzzy, 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.

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

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 2008, when 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), Aquaforte multi-stage filters (Eureka Forbes, India), Lifeflow Family purifier (Varta/Agenda Frandsen, Switzerland), and Rabbit ceramic water filters (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. Top 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 inappropri- ate 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 it on 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 habits, attitudes, and behavior.

Researchers also conducted water quality evalua- tions 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.
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.

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 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.

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.

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.

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

**COMPETING FOR MARKET SHARE**

In 2011, PATH screened more than 50 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. These 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.

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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.

MAKEOVER: CERAMIC WATER POT

GIVE THE CERAMIC PATH AND HYDROLOGIC WATER POT A NEW LOOK

Photo: PATH

CERAMIC WATER POT

PATH AND HYDROLOGIC GIVE THE CERAMIC WATER POT A NEW LOOK

FEATURE

SPECIAL ISSUE

CERAMIC WATER POT

PATH and 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 choice 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 2001. 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—of time—but would be more attractive, easier to ship and store, and priced right for the low- to middle-income households.

As work progressed, we defined another goal: making the design flexible enough to work with locally available ceramic pot filter elements of different sizes.

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

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 3 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.

READ MORE

New Design of the Ceramic Water Pot Design

Newly designed ceramic water pot for low-income households

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

www.path.org/publications/detail.php?i=2188
www.path.org/publications/detail.php?i=2186
www.path.org/publications/detail.php?i=2189
www.path.org/publications/detail.php?i=2190


www.path.org/publications/detail.php?i=2181
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.

This 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. CWPs, now produced at 35 independent factories in 18 countries, use 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 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 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. To learn more, see the Product and service section of the commercialization toolkit.

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.

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
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.
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. 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, protected 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, affordability, availability).
   - **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).

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 poorest households, which may be a harder sell. Recognizing these inherent tensions, PATH managed to blend population-based survey data and qualitative data from interviewees 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.
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 unenvisaged 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.

Uptake, for example, started as low as 2.7 percent and 3.2 percent in direct sales pilots in India and Kenya, and then increased to 3.4 percent in a short pilot in Cambodia. We attribute the rise in uptake to improvements in almost every aspect of the direct sales model: an improved product, a more appropriate and better trained sales force, better outreach supervision and monitoring, more informed customers, and a highly motivated partner.

Our microfinance models showed an even greater improvement over time, from 6.5 percent in early pilots in India to 41.1 percent in later pilots in Cambodia. These changes, too, can be attributed to changes in the model, the product, the partner, and the geographic environment. By the end of our pilot work, we felt like we had landed on some good ideas that could be shared and replicated with other partners working in other areas.

The following pages describe each pilot variation in a bit of detail and provide insights and reflections on how and why various aspects of the pilot worked or failed. Even greater detail about our pilots can be found in reports referenced in this section and posted online.

PILOT RESULTS: EFFECTIVENESS

A DIRECT SALES MODEL FOR WATER PURIFICATION TABLETS

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 India-based company had been primarily focusing on the disease 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, MARK, with experience selling brand names, fast-moving consumer goods products (such as soap and shampoo) to rural households in India. MARK recruited and trained a sales force of eight people to travel by bicycle to market and sell Aquatabs at weekly markets and through retail distributors. Each entrepreneur covered a large target population of approximately 60,000 people in 20 villages and was compensated with a small stipend plus commission.

RESULTS

Assessment 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 use water. As a result, households were being asked not only to try and use Aquatabs but also to process water storage vessels and change water handling habits.

Consumers in this area also stated strong objection to chlorine taste and color. 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 direct (door-to-door) sales effort, they were 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 trusting and properly supporting entrepreneurs who are the appropriate microentrepreneur, but also to process water storage vessels and change water handling habits.

Consumers in this area also stated strong objection to chlorine taste and color. 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 direct (door-to-door) sales effort, they were 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.
PILOT 02: CAN THO PROVINCE, VIETNAM
A DOOR-TO-DOOR SALES MODEL TO SELL WATER PURIFICATION TABLETS THROUGH PUBLIC HEALTH CARE COLLABORATORS

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 existing 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 Stations (CHS) collaborators to distribute free Aquatabs to households (the “en- role”). This was an effort to ensure that all households were approached about the product at least once. We were able to engage CHS staff in the distribution of the product to their communities.

RESULTS

Uptake and use of Aquatabs in the pilot population was low, as were 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, a minority reported high levels of trust in health staff. Where sales commissions for health collaboration 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 the ‘water sales’ role during the study period.

INSIGHTS

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 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 chlorine products and imagine from individual sales were very low.

REFLECTIONS

Despite low initial levels of uptake, we believe there is significant potential for chlorine water products in Western Kenya, as evidenced by the population’s high perceived need to treat their water and their perception that the Chujio filter was too high for their income. Although sales data showed a negligible increase in the Chujio filter, we found a significant increase in the perception that the Chujio filter was better than boiling water, and this perception was higher in villages with more perceived need for water treatment. We also found that the perceived taste and smell of water treated with the Chujio filter was also significantly lower than with boiling water.

PILOT 03: NYANZA AND WESTERN PROVINCES, KENYA
A BASKET-OF-GOODS APPROACH TO SELL CERAMIC WATER FILTERS

MAIN QUESTIONS

Can ceramic water filters be sold in a commercially sustainable fashion at scale through a direct sales model centered around food-related 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 400 female vendors who sell health-related products to approximately 50,000 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 1,200 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 easy of use, no chemical addition, ability to treat turbid water, and safety from contamination. 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 5 percent in the purchase and use of the filter (sales data showed 451 Chujio filters were sold within the pilot time period. The pilot was moderately commercially viable: 24 percent of costs were covered 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 filter was too high for their income. Although sales data showed a negligible increase in the Chujio filter, we found a significant increase in the perception that the Chujio filter was better than boiling water, and this perception was higher in villages with more perceived need for water treatment. We also found that the perceived taste and smell of water treated with the Chujio filter was also significantly lower than with boiling water.
PILOT 04: TAMIL NADU, INDIA
A MICROFINANCING PARTNERSHIP MODEL FOR DURABLE WATER FILTERS

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 payment schemes: 26 and 50 weeks.

RESULTS
Uptake rates ranged from 6.4 to 26.0 percent, with an average of 16.4 percent among microfinance institution members in all variants tested. Eighty-four percent of purchasers were in the target middle three wealth quintiles. 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. For correct and consistent use, one used a filter at least twice a week and was correctly using replacement cartridges. The final evaluation showed 16 percent of purchasers were still using the filter after ten months. However, only 3.2 percent of users were using the filter consistently and correctly at 16 months after their initial purchase. This pilot was found to be more than 100 percent cost recoverable.

INSIGHTS
This pilot showed 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 of replacement cartridges and financing are more widely available and more affordable.

DISCOVERIES

PILOT 05: MADHYA PRADESH, INDIA
A PARTIAL-SUBSIDY MODEL TO ENCOURAGE UPTAKE AND CONSISTENT USE

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 recovered 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 consumer 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 sales of replacement cartridges.

RESULTS
In this pilot, 48 percent of Spandana’s microfinance clients opted to take the loan for the filter and replacement cartridges. However, 26 percent of customers reported gifting or selling the device, and none were using it consistently. Discontinuation was the main reason for discontinuation was the high perceived cost of replacing cartridges and the unreliability of replacement cartridges due to operational issues.

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. Unfortunately, the opposite occurred—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.
PILOT 06: ANDHRA PRADESH, INDIA

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

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-Pragati Sewa Sansthan partnership broadly comparable to those achieved through the Hindustan-Andhara partnership in another pilot?

DESCRIPTION

In Andhra Pradesh, we tested whether previous microfinance institutions (MFIs)’ pilot results could be replicated using monthly loan repayment terms, a different product, and smaller-scale MFI partners. The product we tested 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 promoted and curated over seven months when the government put a temporary end to MFIs lending in the state.

RESULTS

This pilot resulted in low-levels increases in awareness of the Aquasure product (34 percent) and uptake of 1.1 percent. Cost and consistent use were 2.8 percent and 2 percent, respectively. A commercial viability analysis showed this pilot was 16 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.

PILOT 07: KAMPONG SPEU PROVINCE, CAMBODIA

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

MAIN QUESTIONS

- What was the difference (in uptake) between offering a ceramic water pot through a microfinance institution versus door-to-door sales?
- 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 CWPs 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 microfinance institutions (MFIs) group meetings. During group meetings, Hydrologic introduced the product and co-created a partner rollout plan. The MFI partner VisionFund offered a microfinance loan to purchase the product. Many lessons from prior pilots informed the pilot design.

RESULTS

A total of 1,100 CWPs were sold over 11 months. In a control group with no direct sales activities, uptake of the original and improved products together was 4.7 percent of households. In the direct sales area, 14.9 percent of households purchased either product. In the area where microfinance loans were available, 21.9 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 (95 percent in direct sales area, 81 percent in MFI area). From a commercial viability standpoint, the direct sales variant was 94 percent cost recoverable, and the MFI model was 90 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 customers opting to purchase the product through loans. An independent analysis showed that 69 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 by 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 saw new scaling up the model without BLM’s assistance.
PILOT 08: KAMPONG CHAM PROVINCE, CAMBODIA

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

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.

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.
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 methodolog y was used around the world by the Demographic and Health Survey and the UNICEF Multiple Indicator Cluster Survey, serves 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 (MFIs) pilot and our Cambodia 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, 84 to 93 percent were from our core target group and 89 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.

In India, the majority of sales were to households in the fourth quintile because MFIs partners gave the majority of their loans to existing members with a good repayment track record, reducing their risk of default. However, in Cambodia, 43 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 does these results suggest to 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.

**TABLE 2** SALES PILOT MODEL

<table>
<thead>
<tr>
<th>Target Market</th>
<th>Sales in SWP target group (% of units sold)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cambodia</td>
<td>74% 67% 48% 74% 93%</td>
</tr>
</tbody>
</table>

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

**TABLE 3** ASSETS USED TO DETERMINE WEALTH

<table>
<thead>
<tr>
<th>Cambodia Assets</th>
<th>India Assets</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transport vehicle</td>
<td>Bicycle, Motorcycle, Car, Boat (with or without motor), Oxcart</td>
</tr>
<tr>
<td>Household composition</td>
<td>Material of floor, Material of roof, Material of walls, Type of windows, Number of rooms for sleeping, Land ownership, Almirah/dressing table, Chair, Cot or bed, Table</td>
</tr>
<tr>
<td>Furniture</td>
<td>ALUMINUM ALLOY, CARPET, COTTON, FABRIC, GLASS, LEATHER, LINEN, METAL, PLASTIC, WOOD</td>
</tr>
<tr>
<td>Animals</td>
<td>Cows, Camels, Horses, Goats, Sheep, Chickens/ducks, Horses/donkeys/mules, Pigs, Chickens/ducks</td>
</tr>
<tr>
<td>Amenities</td>
<td>Electricity, Fuel source, Water supply, Water supply facility, Shared toilet, Calendar, Mattress, Pressure cooker, Electric fan, Radio, TV (color or black and white)</td>
</tr>
</tbody>
</table>

Percentage of India-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, E1). Source: IRS R2, 2009; SEC distribution in urban India.

**FIGURE 1** WHAT DO WE MEAN BY LOW INCOME?

**FIGURE 2** TARGET MARKET COMPARISON BY SOCIO-ECONOMIC CLASSIFICATION OF INDIAN-URBAN HOUSEHOLDS

**FIGURE 3** ASSETS USED TO DETERMINE WEALTH

**FIGURE 4** INCOME TRENDS AND TARGET POPULATION FOR THE SAFE WATER PROJECT’S MARKET-BASED INTERVENTIONS

SOURCE: PATH FROM “THE FORTUNE AT THE BOTTOM OF THE PYRAMID: ERADICATING POVERTY THROUGH PROFITS” BY CK PRALAHAD.
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. They had been successfully 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, 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 direct 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 salespeople 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 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 that was a core competency (Hindustan Unilever in India).

Because gaining the trust of the customer is critical to any sale, we tried to build trust in these ways. First, we hired more appropriate salespeople, whether that meant young men and respected individuals or those who were 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 needed to be larger (Cambodia and Kenya), we established trust in unknown salespeople through meetings run by the salesperson (Cambodia). 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.

In Cambodia, PATH and partners worked 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 very well, visual aids were important. Compensation was tied more closely to sales. And a method of reporting that normalized 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.

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. Justify 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 Tusini 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 Aquafalls. One salesperson noticed better sales using this 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.

In India, trained bicycle salesmen delivered similar messages about the health benefits of clean drinking water to households and sold Aquafalls ceramic filters in a direct sales approach. Photo: PATH.
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.

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 inappropriately low 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.

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 awareness to create sustained demand for safe water.
Partnerships throughout PATH’s Safe Water Project resulted in strong learning for all involved. Pictured above are PATH staff with market research among low-income households to might expect for their own products in emerging market and showing potential partners what they could attract potential commercial partners by developing a clear understanding of needs and a “business case” that showed companies how they might improve the partnerships—often in a single, focused push.

The goal for each partnership was to improve the partners’ awareness of the marketplace and safe storage products and a strong desire to reach low-income, emerging markets. PATH is grateful to all its commercial partners, many of whom have with each customer. Examples of such flipbooks can be found in the Sales: Sales tools section of the commercialization toolkit.

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

**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 multinational company that manages more than 400 brands that are sold all around 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 factors 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 helps 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 rigorously evaluated partners for their reputation, track record, and commitment. These tools helped clarify the benefits of partnerships 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 companies 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. Those 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.

**MUTIPLE 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 build at our requirement for a common interface that would accept proprietary 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.
Is the private sector an appropriate place for public health investment?

OPINION: Why the middle poor matter

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

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

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

TOOLS: apply these yourself

Photo: PATH/Evelyn Hockstein
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 profit, 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 easiest 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 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, as 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 creation 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 trust 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 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 these 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

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 diarrhoeal 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 the rates of severe disease and death among the middle poor are lower than among the poorest, and the rates of severe disease and death among the middle poor are lower than among the poorest.

Commercial companies develop products, provide HWTS interventions, such as: improved water treatment and storage, and sustainable use of water treatment behavior, and targeted subsidies. We can focus its resources on meeting the needs of households too poor to provide for their own basic needs.

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 behavioural researcher Matca Elena Figueras refers to as “getting to want.”

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

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

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. Non-governmental 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 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 low-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 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 behavioural researcher Matca Elena Figueras 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 everyone with 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.
Promising strategies to reach the world’s poor with household water treatment and safe storage products

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 HWTS products shows that consumer microfinancing models are among the most promising strategies for reaching low-income households.

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 Tansui is sold directly to consumers. The extra value that consumers attribute to the Super Tansui product design allows commercial and subsidized provision to coexist in the same market.

Another approach makes subsidies installable 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 week 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, and increased access to financing, increased consumer awareness and acceptance of products, and lasting changes in household water treatment and safe storage behaviors.
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 end-users. For example, in an area where chemical contaminants are a concern, users generally preferred traditional water vessel designs or the need to adapt existing products. In addition, these questions clearly illustrate the need to continually involve end-users in the on-going process of developing new products. Additional questions will be needed to provide guidance that is acceptable and desirable for the broadest range of prospective households.

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 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 their water is safe because it is "clean," 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 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.

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 the on-going process of developing new products. Additional questions will be needed to provide guidance that is acceptable and desirable for the broadest range of prospective households.

In Ethiopia, Tanzania, and Mali (photographed), 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.
How do you get health-enhancing products to scale in hard-to-reach, low-income areas?

Attention to detail, effective operations drive successful business models

Market segmentation to advance health-enhancing consumer products and services

The value of the NGO in stimulating commercial markets

DIVE DEEPER: resources for the curious

Photo: PATH/Jennifer Foster

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.
“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

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

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.

MARKET CONTEXT

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

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.
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. Stumbling 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.

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 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, where 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 low 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.

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 presented areas where commercial approaches could flourish. Our research in Cambodia, for example, identified a pocket 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.
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 “insert” 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.

Other partners have realized new potential applications for their technologies. Cascade Design Inc. (CDI), for example, is a family-owned business in Seattle that has previously made and sold water treatment products for the poor but also use a proprietary filter to make the products function safely and effectively. Their manufacturers in China have developed new HWTS products based on our design guidelines and will sell them in select markets in China starting in 2013.

We are testing a free trial of the PATH’sHWTS design guidelines (www.path.org/hwts-design-guidelines/index.php) and will sell them in select markets in Cambodia.

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

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The value of the NGO in stimulating commercial markets

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 proprietary filter to make the products function safely and effectively. Those manufacturers in China have developed new HWTS products based on our design guidelines and will sell them in select markets in China starting in 2013.

Working with an NGO also helps commercial firms form non-beneficial relationships. Mintel, 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 in the future.

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.

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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:


Market-based approaches:


Sanitation resources:


Water and Sanitation resources:


FACT SHEETS

- Household Water Treatment and Storage: Findings From a Distribution Channel Analysis (Cambodia).
- Household Water Treatment and Storage: Findings From a Distribution Channel Analysis (Vietnam).
- Household Water Treatment and Storage: Findings From a Distribution Channel Analysis (India).
- Household Water Treatment and Storage: Findings From a Qualitative Consumer Research Study (Cambodia).
- 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.
- Safewater: 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.
- Pilot testing and direct sales models for household water treatment products in Cambodia.
- Promoting Home Water Treatment through Antennal Clinics in Malawi: Qualitative Research Findings.
- Promoting household water treatment through local health workers in Vietnam.
- Study of sales of Kanyari 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.

PROJECTIONS 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 Antennal 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.
- 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.
- Supply and Demand for Household Water Treatment Products in Andhra Pradesh, Karnataka, and Maharashtra, India.
- Understanding Consumer and the Market for Household Water Treatment Products in Cambodia.
- Market-based approaches and pilot projects
- Bicycle model yields rich learning despite limited results: Microentrepreneurs try to sell new water treatment product in rural India.
- Distribution of Aquasure Water Filter through a Microfinance Institutions Model in Rural India (Andhra Pradesh).
- Distribution of Augustas through a Bicycle Entrepreneur Model in Rural India (Uttar Pradesh).
- Distribution of Augustas through Community Health Collaborators in Can Tho, Vietnam.
- Distribution of Ceramic Water Purifiers through Direct Sales and Retail Sales Pilots in Cambodia.
- Distribution of Chujio Ceramic Water Purifier through a Basket of Goods Model in Rural Kenya.
- Distribution of PureIt through a Microfinance Institutions Model in Urban and Rural India (Tamil Nadu).
- Distribution of PureIt Water Filter through a Microfinance Institutions Model in Rural India (Madurai District).
- Lessons Learned from the Safe Water Project Pilots in India, Kenya, and Vietnam.

ARTICLES


POSTERS

- Going with the flow: Understanding the nuances of the HWTS consumer market.
- Understanding why women adopt and sustain home water treatment: insights from qualitative research in Malawi.
- Three water filters interchange the rules: Working together to increase access to safe water for low-income families.
An interactive PDF with live links to additional resources can be found here: sites.path.org/water/

To learn more about PATH: www.path.org