Presentation Overview

- PATH Overview
- Safe Water Context
- Household Treatment
- Project Approach
- Water Stories: India and Africa
Who is PATH?
PATH Facts

- PATH is an international, nonprofit NGO that is 100% donor supported
- PATH has a 30-year history of partnerships
  - Private corporations
  - Local NGOs
  - UN organizations (UNICEF, UNFPA, WHO)
  - Alliances (GAVI, ACCP)
  - Ministries of health
PATH Projects and Offices

28 Offices in 18 Countries; 539 Staff

PATH Office
PATH’s Mission

To improve the health of people around the world by advancing technologies, strengthening systems, and encouraging healthy behaviors.
PATH’s Proven Track Record

- PATH works in health technologies, maternal and child health, reproductive health, vaccines and immunization, and emerging and epidemic diseases.
- History of technology and program innovation
- We develop and introduce health technologies with partners
- 26 technologies commercialized
Safe Water Context
Water, Sanitation, Hygiene Issues

- Policy, property and human rights
- Environment, climate, development
- Behaviors, poverty, competing needs
- Public sector efforts now underway
- Water distribution, quantity, quality
Water Contaminants

- Bacteria
- Viruses
- Parasites
- Industrial by-products
- Heavy metals
- Excess turbidity
Health Impact of Diarrheal Diseases

• 1.8 million people die every year from diarrheal diseases

• 88% of diarrheal disease is attributed to unsafe water supply, inadequate sanitation, and hygiene.

• Improving the quality of household drinking water can lead to a reduction of diarrheal episodes by 35-39%.
Water Supply, Hauling and Storage
Point-of-Use Water Treatment

- Physical Removal
- Chemical Treatment
- Heat Disinfection
Locally Made Ceramic Filter (Nepal)
Kenya “Healthful Waters” Filter

Reid Harvey
purifier@localnet.com
Chemical Treatment: WaterGuard

- Dilute sodium hypochlorite solution in bottle
- Best suited for clear water
- One bottle treats 1000 litres of water
- Over 900,000 households currently using the product (source: PSI Trac survey)

Over 2.4 million bottles sold to date
Point-of-Use Water Treatment cont’d

- UV
- Combination
SODIS Application

1. Wash the bottle well the first time you use it.
   
2. Fill the bottle partly to 3/4 full with water.
   
3. Shake the bottle for 20 seconds.
   
4. Fill the bottle completely.
   
5. Place the bottles on a corrugated iron sheet.
   
6. Exposure on Roofs are adequate.
   
7. Expose the bottles to the sun from morning until evening for at least six hours.
   
8. The water is now ready for consumption.

Drink the Water from the Bottles.
How does SODIS work?

- Plastic bottles are filled with contaminated water and exposed to sunlight for 6 hours.
- Sunlight disinfects the water through two effects:
  - Radiation in the UV-A spectrum
  - Increase of water temperature
- Water temperature can rise to 50 °C and more
- Faecal coliforms are reduced by 3 - 4 log (99.9% reduction)

EAWAG – Martin Wegelin
A slow sand filter adapted for household use:

1. Height of the water above the sand is 5 cm
   - This allows oxygen to reach the biofilm layer that forms near the top of the sand

2. Sand removal is not required
   - A clean-in-place technique, called ‘swirl and dump’, allows the impurities to be removed without removing the sand

Flow Rate: ~ 30 litres per hour
Cost to Produce: 12 – 40 US$
Filters installed: Over 100,000 in 43 countries
Purpose: To help provide clean water for the 1.1 billion people without this basic need.
Bio-Sand Materials and Features

- Concrete Exterior
- Diffusion Plate
- Wooden Lid
- Tubing
- Sand Bed
- Fine Gravel
- Large Gravel

Bio-Sand Materials and Features
Processes of Filtration

1. Mechanical Trapping
2. Predation
3. Adsorption
4. Natural Death
# Technology Comparison

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- Green indicates the solution addresses well or consistently.
- Yellow indicates the solution addresses moderately well and/or sometimes.
- Red indicates the solution does not address or does not address well.

*Hart & Reck, 2004*
Our Approach

Facilitate private sector resources to meet public health needs
Our Guiding Principles

PATH’s Guiding Principles for Private Sector Collaboration

**INTRODUCTION**
PATH’s mission is to improve health, especially for women and children. To achieve this mission, PATH identifies, develops, and implements innovative and effective solutions to public health problems, particularly in low-resource settings. Collaboration—including collaboration with the private sector—is a key component of PATH’s approach.

PATH’s guiding principles for collaboration recognize that public health organizations and private-sector companies can complement each other. Collaboration with a private-sector company can lead to sustainable commitments and the development of innovative technologies that are in the public interest.

**PURPOSE AND SCOPE**
PATH developed these Principles for Private Sector Collaboration to:
- Articulate the institutional policies and priorities regarding PATH’s collaboration with private-sector companies.
- Provide a basis for evaluating and designing private-sector collaborations.
- Provide current and potential collaboration partners with an overview of PATH’s perspectives and expectations for collaboration.

PATH’s Board of Directors and President fully endorse these principles. These principles convey both the broad direction and the specifics for who expects collaboration with public health programs.

The principles primarily address the following types of collaborations:

- **Vaccine Development and Delivery.** PATH develops new vaccines to improve the health and well-being of people around the world and to complement the efforts of international health organizations and governments.

- **Support for Product Development of a Collaborator’s Product.** PATH provides significant support in the development of new or existing technologies, including preclinical and clinical testing, for the development of new or improved products.

- **Support for Product Commercialization.** PATH supports commercialization of products that demonstrate significant public health impact, and these products are developed by private-sector companies.

**Clear link to mission**
PATH’s collaborations with private-sector companies must lead to positive impact on availability, accessibility, and affordability of important health products for public health programs in developing countries.

**Recognition of private-sector needs**
In collaborating with a private-sector company, PATH must recognize the company’s need for commercial benefit in order to ensure a sustainable commitment to the collaboration.
What PATH has to Offer

- Facilitating/brokering partnerships among:
  - Manufacturers, distributors, potential credit facilities
- Management of Intellectual Property
- Product improvement - testing, adaptation
- Investing in advertising and promotion
- Facilitating research and behavior change
- National and international policy evolution
Project Description
The Bill & Melinda Gates Foundation is making limited and focused grants to contribute to water, sanitation and hygiene in the developing world and to understand more about sustainable and scalable opportunities to reduce water-related diseases.
Project Approach through Partners

- Provide a portfolio of household water treatment and storage (HWTS) products that meet the needs of middle- and low-income consumers.
- Catalyze an independent, sustainable private commercial market that provides choice.
- Facilitate a market that services a range of market segments – allowing possible cross-subsidization.
- Introduce new market campaigns, behavior change approaches, supply chains using best practices.
• Eliminate a steady infusion of public-sector funding for this market to exist or expand.

• Work with public-sector entities to ensure supportive policies, incentives, and public messages.

• Identify gaps in a commercial model where public sector provision may meet the need.

• Develop a model market within a pilot country.
India as the Pilot Country

• The World Bank estimates 21% of communicable diseases in India are water related.

• Established industrial base

• Robust consumer economy

• Additional countries will be selected for parallel research to determine applicability of model
Project Structure

Five-year project

- 1 year foundational research
- 1 year development
- $\frac{1}{2}$ year scale-up, final pre-test, and roll-out
- 1 $\frac{1}{2}$ year “run time” for pilot market
- 1 year assessment, analysis, adjustment, and development of “road map” for expansion
Challenges and Opportunities

- Removing diarrhea pathogens may not be enough
- The best solution(s) may not be affordable for target consumers
- Consumers may not perceive a need or purchase products
- Commercial parties may not see benefit or provide products
- The solutions could be location-specific and not replicable

- 10 years of R&D in low cost POU options validated technologies
- Robust market in middle and upper income POU products in India
- Base of the Pyramid approaches are reaching very poor consumers
- Cost effectiveness data and evidence shows value of POU
- Public health messages and programs have sensitized many consumers
Project Vision

Households with unreliable and/or unsafe sources of water will have access to, purchase, and consistently use affordable and effective products to treat and store water in the home.
India Story

Real need, real opportunity
Eureka Forbes
Hindustan Lever
Africa Stories

Shades of Poverty, Entrepreneurs
Nairobi’s Kibera Slum

• Over 700,000 residents
• Multiple NGO projects for water, sanitation, and hygiene
• Vigilante police ensure security
• Robust entrepreneurial activity
As cities spread

Rusty roofs hide the desperation of Nairobi’s Kibera slums, a maze of shacks and open sewers where some 500,000 people live.

Driven by drought, war, or dreams of a better life, Africa’s rural poor are flocking to such slums. The continent’s population is expected to more than double by mid-century, mostly in urban areas.
KWASHO
SODIS!!
Join us in
free water treatment
And Hygiene Promotion
to Reduce Waterborne
diseases and
Improve Health
Korogoco Slum

- Many TB/HIV positive residents
- Water supply intermittent
- Security problems prevent aid agency access
- Lackluster economic activity
Tanzania Rural Setting

- Dry regions require network of water haulers
- Water sources serve large catchment areas
- Transport becomes a major issue
Outside of Project Scope

- New product development
- Provisioning of NGOs in providing HWTS products
- Hygiene, sanitation, and source improvement
Typical Stages of Market Adoption

Phase 1: Development Stage
- External Investment in Primary Country
- Commercial-Sector Investment in Primary Country
- 0 - 5 years: Begin replication and scale up in other countries

Phase 2: Introductory Stage
- 5 - 10 years: Market takeoff in primary country
- 6 years from market introduction

Phase 3: Growth Stage

Phase 4: Maturity Stage
- Total Sales - Global Market
- Total Sales - Primary Country Target Market
- 15 - 20 years