

Agricultural Showcase #2: Water and the Other Three Revolutions Needed to End Rural Poverty

Guest lecturer: Dr. Paul Polak, president and founder of IDE (International Development Enterprises.)

Dr. Polak calls his mission "The Ruthless Pursuit of Affordability." Amy introduces him as a leading proponent of design for affordability, and highlights his work on irrigation systems as particularly noteworthy.

IDE "thinks about the poor as customers, rather than recipients of charity."

Dr. Polak asks the class, "What will your field experience be? What will the process be? Will you talk to the people about their problems, and devise solutions to the problem?"

"Today I had a problem. I transposed my flight's departure and arrival times, and missed my flight from Chicago. If you ask me now what my problem is, I will tell you I need a digital calendar minder system. BUT...this isn't really that big of a problem, ultimately.

We REALLY need a thresholding mechanism to screen the nature of problems. Solving a problem takes lots of time/energy/money; pick your problem wisely."

He lays these three questions, the so-called "Don't Start Trilogy," that must be answered before deciding to take on a problem.

- 1) Don't start unless you've talked to at least 25 farmers about the "problem."
- 2) Don't start unless you can sell at least a million units.
- 3) Don't start unless the solution will "pay for itself" in the first year.

Four Revolutions in Development

We need four revolutions in development theory and practice to end rural poverty. We need to recast our western experience and assumptions in the following ways.

Agriculture

Drive the small farmer toward diversified labor-intensive high-value crops. (pomegranate, baby banana, sweet lime, etc)

Rationale:

- There are 800 million dollar-a-day rural farmers. They need to triple their incomes.

- 70% of farms in India are smaller than 2 hectares, often not in a single contiguous plot due to repeated splits as land is passed down generations. We need to new agriculture practices optimized for ¼ acre plots to support this population.
- The green revolution's assumed goal was increased production. But this puts the small farmer in direct (and unfair/unsustainable) competition with high-volume commercial wheat farmers in North America.

Water

Small farmers need to gain control over water resources. Current drip irrigation technologies are geared toward 2,000 acre produce farms in California, not the ¼ acre plot.

Markets

The market assumptions and practices that we love in the West do not usually apply in rural developing regions. The structure of interaction between buyers and sellers, the role of entrepreneurs and ways to address inefficiencies/gaps/risks are quite different.

Dr. Polak cites the following examples of market structures that are appropriate to developing countries:

- IDE has sold >1M treadle pumps, created 1200 businesses to sell them, trained local repair/staff, and created marketing and promotion suited for this market.
- Within its irrigation program, IDE created a system to recycle old irrigation components, allowing dealers to buy back components for 25% of original price.

Design

We need to put affordability foremost. "Satisfy current needs of poor customers before satisfying some Board of Standards; step away from the lawsuit prevention mindset of the west, which leads to much overdesigning." IDE attempts to reduce the price of a redesign unit by factor of 5, and you can't achieve this with any overdesign.

For example, IDE's drip irrigation solution replaces an oversized electric pump system with raised tank + gravity feed. This places different stresses on tubing, so they offer 3 different tube thicknesses, along with information about the likely lifecycle for the tube. (1) maybe less than a full season (2) at least one full year (3) several years. Farmers are tending to buy tubes that last one year, to get them through the current harvest – they opt for the minimum capital solution! This also helps them reconfigure for different crops or other changes each year.

Class discussion

"Twenty four years ago, I set a goal to talk to at least 100 farmers per year. I have done this...talked with over 3,000 people about their lives. This has led to my conviction that we must give these people choices like the above. To not do so, to try to force a solution on them, is patronizing. To overdesign something out of our own fear of risk, out of our desire to give them the "best quality possible," is patronizing."

This is analogous to the sachet-model of shampoo sales that's been so successful in India.

Lots of discussion about the tradeoff of affordability vs. "quality"/"safety" that's inherent in design and marketing. Students find this conflict challenging...discussing the implications and value assumptions for about 15 minutes.

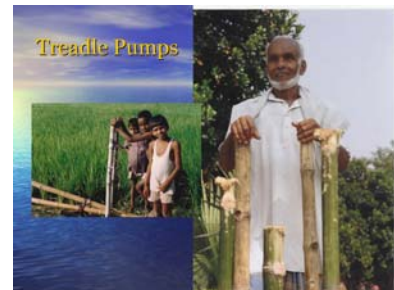
Slides

With just a few moments left in the class session, Dr. Polak gives a quick run-through of some lecture slides.

Treadle pumps

The treadle pump was originally developed by a Norwegian that wanted to create a pump one could buy for the price of a "sack of rice."

To market the treadle pump takes some innovative thinking, too. They hired a musician to write and perform song about the pump. Local distributors also leaflet, and a sample pump is often set up for folks to try.



IDE commissioned a 90 minute feature film by best director in Bangladesh to promote the system. A portable theater wheels into town, plays to average audience of 3,000. The plot? "Boy meets girl, they want to get married, girl's dad can't afford the dowry, bandit gets involved, near suicide...then the village dealer gets involved, dad buys the treadle pump, saves the day."

Drip Irrigation

In IDE's drip irrigation system, a double lined bag (\$0.30) replaces the original design's \$3 bucket. They now have a \$1 total system cost, and the system supports a household.



Low cost water storage

Drip irrigation could have a big impact in the west of India, where it's very dry. But it turns out only 40% of these farmers have any sort of water storage or non-rain source, thus the need for new storage solutions.

Initially, IDE's storage solution was a 1 m diameter cylinder placed in a dug trench. They had to refine the design after first year field test – lots of leaks, due to manufacturing issues and sunlight degradation etc. Improvements are continuing.

Here's the goal. The farmer points out the lowest spot in field. You dig the ditch, install this system, and the farmer stores monsoon water for following 6 months to cover the growing season. When it works, one can store 10,000 liters for ~\$10-20.

