



Kick-starting economic growth in developing countries

BUSINESS PLAN SUMMARY JULY 2004

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“... economic growth, without question, reduces poverty. And, therefore, achieving sustained and high rates of economic growth in poor countries is perhaps ... the most powerful mechanism for poverty reduction in years ahead.”

--Jeffrey Sachs, Columbia University Earth Institute

ApproTEC’s mission is to eradicate poverty in the developing world. However, in contrast to the many organizations that focus on alleviating the *effects* of poverty – hunger, disease, squalor and lack of empowerment, **ApproTEC addresses the root cause of poverty: lack of wealth.** With this vision, Nick Moon and Martin Fisher started the organization in 1991 in Nairobi, Kenya.

ApproTEC develops low-cost capital equipment and sells it directly to the poor who use it to start highly-profitable small businesses. This is a revolutionary approach to stimulating growth that results in a cycle of wealth creation, bringing poor people into the middle class and eradicating poverty from the ground up.

While ApproTEC has developed numerous types of capital equipment targeting rural Africans, the most successful product to date is the Super MoneyMaker (SMM) manually-operated irrigation pump. This pump enables farmers to grow high value cash crops in the dry season, increasing their farm income by a factor of ten.

35,000 families in East Africa have used ApproTEC technologies to start profitable new businesses and are generating more than \$37 million per year in new profits and wages. This is more than fifteen times ApproTEC’s annual budget. 750 businesses are started every month. The new businesses in Kenya generate the equivalent of more than 0.5% of GDP. These customers are now providing better education for their children, building houses, receiving adequate health care and reinvesting in their businesses for the first time.

It costs ApproTEC \$200 per family to provide a tool they can use to lift themselves out of poverty forever. On average, ApproTEC creates \$9 of income for the poor for every \$1 donated. In geographies where ApproTEC is more established, the ratio is more than 20:1. This return on the donor’s dollar is unprecedented among international development agencies.

ApproTEC’s ultimate vision is to help build a middle class from the ground up. When there are growing, thriving local economies, democratic institutions begin to function properly, which leads to better policies, improving investment conditions, ultimately resulting in growing, dynamic, successful states.

The ApproTEC approach: market driven solution to poverty

ApproTEC achieves these impacts by operating like a business, not a charity. We design low-cost capital equipment that allows poor people to greatly enhance the productivity of their primary asset – their land. This equipment is manufactured, marketed and distributed through private sector institutions. Just as in developed countries, only products with significant return on investment for the people who buy them will succeed in a developing economy.

ApproTEC uses the following process to develop markets for new money-making products in developing countries:

1. Conduct primary market research to **identify small business opportunities** that have very high return on investment and that can be exploited by thousands of poor entrepreneurs
2. **Design the required low-cost capital equipment**
3. **Develop a sustainable, profitable supply chain** by contracting with existing private sector manufacturers, wholesalers and retailers to mass-produce, distribute and sell the products in rural areas
4. **Mass-market the new technologies** to poor entrepreneurs, subsidizing the consumer marketing costs
5. Cease consumer marketing subsidies when a “**critical mass**” of buyers has been **reached** – when the products are well known and easily available throughout the country, and when sales continues to grow without heavy promotions.

Throughout the process, ApproTEC collects market intelligence and measures the impact and cost-effectiveness of our interventions by systematically measuring the new profits and wages earned by the newly started businesses and monitoring the change in economic wellbeing of customers.

Why ApproTEC is a nonprofit organization

The supply chain that ApproTEC establishes for its products is fully profitable and sustainable immediately. However, ApproTEC subsidizes the market development for new products in the early years. Significant marketing is required to sell high-ticket items to risk-averse customers – if an \$88 investment in an irrigation pump doesn't workout for a Kenyan making \$110 per year from his or her farm, his/her family will go hungry.

High market development costs force ApproTEC to operate at a loss for many years, which is why private companies have not entered this market. ApproTEC is remedying a market failure – tremendous net economic benefits result from our interventions, but no firm can capture enough of this benefit to be profitable.

Once a product reaches a “tipping point” in a specific market, product sales will continue to increase without market development subsidy. Based on the history of other products,

ApproTEC estimates this will happen when 20% of the market potential has been penetrated. For irrigation pumps, this will take 5-12 years, depending on the country. At this point, ApproTEC can stop subsidizing market development and focus donor funds on new products and new geographies.

Customer Value Proposition

East African farmers who buy the SMM irrigation pump easily recoup their investment in their first crop cycle and in Kenya are making more than \$1100 profit per year, increasing their annual farm income by a factor of ten and doubling or tripling their total income. For the first time they can properly feed and educate their families, pay for healthcare, invest in their businesses and plan for their futures. They are on an upward spiral of growth rather than a downward spiral of poverty.

Target market

The World Bank estimates that 1.1 billion people are living on less than \$1 per day, and 2.7 billion are living on less than \$2 per day. According to the United Nations Food and Agriculture Organization:

- Seventy-five percent of the world's poor and undernourished live in rural areas of the developing world
- Economic growth originating in agriculture is particularly potent in reducing poverty and hunger
- Irrigation is the most effective way to increase agricultural yields and incomes in rural areas
- Irrigation has the greatest impact on reducing hunger when it is labor-intensive and employs affordable, small-scale techniques.

ApproTEC operates in some of the poorest countries in the world targeting entrepreneurial people in rural areas, particularly with irrigation technologies. As in every population, there are entrepreneurial people among the rural poor in developing countries who can borrow or save a small amount of money to start a new business. However, these entrepreneurs face two major constraints.

First, without access to market research techniques and resources the developed world takes for granted, it is difficult for them to know what type of businesses to start. Second, even if they have a good business idea, they have no access to appropriate and affordable capital equipment. This type of equipment is simply not available in their village, and usually not anywhere in the world, where most technology is capital-intensive and labor-saving, the opposite of what a poor person needs to start a business. ApproTEC develops and distributes equipment to address this market need.

Significant geo-political changes have increased the demand for ApproTEC products in recent years. Since the Cold War ended, humanitarian aid to Africa has decreased,

resulting in a shift from subsistence based economies to cash-based economies. Many African governments no longer pay for basic services like health care and education. Families now have to provide these for themselves, yet wages and job opportunities have not improved. This shift has increased the economic burden on the poor and the need for money-making micro-enterprise opportunities is greater than ever. We estimate the worldwide potential market for manually-operated irrigation pumps alone is 40 million, which could lift 200 million people out of poverty forever.

Products

ApproTEC has identified, designed, developed and promoted capital equipment for several industries, including machines for processing cooking oil, baling hay and manufacturing construction materials. However, for the reasons noted above, our current efforts are concentrated on our best-selling irrigation pumps. ApproTEC's low-cost, leg-operated pumps enable poor farmers to:

- grow three or four crop cycles per year instead of only one or two;
- produce higher-value crops;
- obtain higher yields;
- sell produce in the dry season, when prices are high and supply is low.

Technology Development

Developing affordable income-generating products and continually improving existing ones will be a key to ApproTEC's future success. We have a team of engineers and technicians in Nairobi that identifies and designs new products based on primary market research. In addition to our many other products, ApproTEC has developed and released five different irrigation pumps since 1996.

Current development projects include:

- A manually-operated irrigation pump that can draw water from 2.5 times as deep as our existing pumps
- An ultra-low cost irrigation pump
- Manually-operated well drilling equipment
- The "Xtra-Cycle," a bicycle that can transport significant cargo.

The Technology Development group also manages our contract manufacturers, providing product specifications, tooling, training and conducting quality control.

Marketing and sales

Once a market has been identified and product developed, the greatest challenge ApproTEC faces is consumer sales and marketing because of the risk averse nature of our target customers. While ApproTEC's supply chain partners deliver the product to end-users, ApproTEC provides consumer marketing to stimulate demand. After years of

experience developing best practices, ApproTEC has identified the following successful methods of marketing to our target audience, rural farmers in East Africa:

- Product demonstrations
- Product guarantees
- Billboards
- Media (newspaper and local-language radio)
- Word-of-mouth promotions
- Credit programs

Impact monitoring

ApproTEC has developed a state-of-the art impact monitoring system to quantify the results of our programs.

- Warranty forms provide a database of all customers
- A statistically valid random sample of recent purchases is selected from this database
- Customers are visited within a month of purchasing the products before any impacts have been realized, then visited again eighteen months later.

Data collected during these visits include:

- The status of all farm activities
- Level of employment
- Who performs what tasks (family members vs. paid workers, men vs. women)
- Income generated
- Crops grown
- Wages paid
- Production costs
- All other sources of income
- Number of dependents
- Whether children are in school
- Physical assets owned

Based on these data we calculate the change in income and other social and economic indicators. Case studies are gathered from retailers and farmers that allow in-depth understanding of the farmers and their businesses.

The monitoring team employs culturally appropriate methods and uses multiple questions and observations of the individual, households and business to cross check and evaluate socio-economic conditions. For example, one person will ask how much land is being irrigated and how many cabbages were sold from that area. The other paces off the area and knows how many cabbages can be grown per acre.

ApproTEC's niche

ApproTEC's approach is unique among development agencies. Few organizations have tried to sell capital equipment and quantify the financial and social impact of their products on their customers.

IDE is one organization taking a similar approach. They have developed micro irrigation technologies primarily for rice farmers in Bangladesh and India. Their pumps are cheaper and they are operating in densely-populated areas that have been irrigating for generations, allowing them to sell more than a million pumps. However, the income generation capability of their pump is rather limited, with farmers earning an extra \$100 per year from their investment compared to \$1,000 per year for ApproTEC.

ApproTEC's growing economies of scale provides a competitive advantage. For other nonprofits involved in micro-enterprise, it makes more sense to partner with ApproTEC than to invest the capital required to design their own products, construct production tooling, and establish their own manufacturing.

For-profit companies have not attempted to serve our target market because it is not profitable. However, ApproTEC is in partnership discussions with the management of major US-based private corporations who could contribute to and benefit from the economic prosperity of ApproTEC's current customer base. While companies like these have significant financial and operational resources, ApproTEC's competitive advantage is our knowledge of how to serve this market. Private companies recognize this value and are more interested in partnering than competing.

ApproTEC's biggest competitor is the status quo. Innovative products with high and fast return on investment are required to compete with an existing solution. For example, a farmer in Kenya can use a bucket to irrigate approximately 1/8 an acre of farmland. The MoneyMaker Pump costs \$88, but it succeeds because a customer can recoup this investment within one crop season and make more than ten times his/her previous income.

History

In 1991 Dr. Martin Fisher and Nick Moon left ActionAid to found ApproTEC in Nairobi, Kenya. After developing and refining ApproTEC's high-impact, cost effective model, in 2001 they established a new program in Tanzania to demonstrate that the model was replicable. Despite being much poorer than Kenya, ApproTEC was able to build on best practices developed in Kenya to achieve even faster growth in Tanzania. Since then, ApproTEC has seeded the market for irrigation pumps in other African countries through exports to partnering NGOs and wholesalers.

In 2001 ApproTEC also opened its San Francisco office, which is raising money for ApproTEC's expansion, developing partnerships with several private companies, leading strategic planning, managing the global supply chain, and selling products worldwide.

Expansion strategy

Over the next three years, ApproTEC plans to enter six new African countries and sell nearly 100,000 irrigation pumps worldwide. Between them, the new businesses created will generate more than \$170 million in new profits and wages over the three-year life of the product.

ApproTEC's 3-year plan is based on the following priorities:

1. **Deepen our penetration** through increased marketing efforts in Kenya and Tanzania to reach the mass market and to create 39,000 new businesses;
2. **Create a supply chain and build the markets** in other African countries to create an additional 22,000 businesses;
3. **Begin penetration of the global market** by meeting increasing demand from other NGOs and wholesalers worldwide, selling 35,000 irrigation pumps.

Based on past results, the expected return on investment is \$170 million in new profits and wages for poor people from \$19 million contributed, a social dividend few, if any organizations can match.

Deepen our penetration in core markets

Our highest priority remains increasing the sales of our irrigation pumps in existing markets – Kenya and Tanzania. ApproTEC has successfully reached the early adopters, and now needs to enter into the mainstream of the farming population. To deepen penetration from 6% in Kenya and 2% in Tanzania to reach the tipping point of 20%, ApproTEC will continue to invest in marketing and promotion.

Increased investments in proven practices remain the cornerstone of our plan. Additionally, as we start to sell to more risk-averse and conservative buyers, ApproTEC will introduce new approaches – including promotions to increase word-of-mouth sales, better leveraging the experience of our retail and wholesale partners and developing innovative micro-credit plans at the retail level.

Build new markets

ApproTEC will expand into new markets in Africa where we have the highest likelihood of successful replication of our model. We will start by introducing our most successful product, our Super MoneyMaker irrigation pump. As our supply chain and brand name develop, we can begin introducing other products to the market, and even begin to develop products specifically targeted for that market.

To prevent exceeding our management capacity and to meet the challenges of expanding into a new market, we will enter no more than two new countries per year. Further, we will ensure that specific funding and operational requirements are met before we open a program in a new country.

Begin penetrating global markets

To meet increasing worldwide demand, ApproTEC is selling products to partners who have local knowledge and expertise to most effectively reach new markets. In addition to meeting explicit demand, ApproTEC will proactively stimulate latent demand outside our core markets through a sales and marketing effort aimed at other relief and development organizations. By leveraging the distribution and marketing infrastructure of other organizations, ApproTEC can take our products worldwide in impact many more lives.

Microfinance

To implement this deeper penetration of existing markets and pan-African and global expansion from our base in East Africa, ApproTEC must continue to innovate and develop new approaches to our business. Offering credit financing to our customers has the potential to both increase our social impacts and generate additional income, making us less dependent on donor funding.

The main obstacle for most farmers to buying our pump is the high up-front cost. Once the pump has been purchased, the return on investment for many farmers is several hundred percent in the first growing season alone, so they can easily afford to pay back any loan.

While microfinance has become a major movement in international development, rural microfinance is not yet well developed in Africa. Where there are banks available we will partner with them, but we are also developing innovative financing methods to meet this need.

In Tanzania we have already made credit available through the supply chain that is being passed on through retailers to many customers. In the fall of 2004 ApproTEC will launch a pilot program in Kenya that will make credit available for even more customers, making pumps affordable and increasing demand. This credit program will allow ApproTEC to raise the effective price of the product and reduce the cost of other promotion methods, enabling us to become less dependent on donor funds.

Global supply chain

To support the growing global market for these pumps, we are establishing manufacturing in China. As we open new programs in West Africa and sell products outside Africa, we cannot effectively support this demand from East African production. Because of the overhead costs involved, establishing local manufacturing in each market we enter is not practical, and still would not address the demand from countries where we do not have programs. Centralized production in an efficient, low-cost country is the best solution for our donors and most importantly, our customers. We estimate pumps made in China will be at least 25% less expensive than those manufactured in Africa. We can ship them to anywhere in Africa for 10% less than it costs to make them in Kenya.

Opening manufacturing in China allows us to serve global markets that we cannot serve competitively from East Africa. Lower prices and higher quality directly benefit our tens

of thousands of customers, and global supply means we can sell to other organizations to increase our impacts and generate income for ApproTEC.

Organization

ApproTEC has three offices worldwide with 75 employees and 75 full-time contractors in Africa and four employees in the US.

ApproTEC-International Headquarters, San Francisco, CA

ApproTEC's global headquarters is responsible for

- Fundraising from both individual and institutional donors
- Managing the organization's overall strategic planning efforts
- developing partnerships with private companies and universities
- Building of a world renowned board of directors
- Managing the global supply chain and selling products worldwide

ApproTEC-International Africa Office, Nairobi, Kenya

The African headquarters is responsible for

- Managing the African country sales and marketing offices
- Technology development
- Finance
- Impact monitoring
- Administration and human resources

(This office is currently part of the Kenya Country Office, but is in the process of separating.)

Country Offices

Country offices are primarily responsible for sales and marketing, essentially franchising our successful models and best practices. They establish the retail and wholesale networks in their respective countries, and put in place cost-effective marketing activities to support and grow sales. They each have finance, impact monitoring and administrative functions that report to the African headquarters. Sales and marketing coordinate with the headquarters to share best practices, but have more flexibility to adapt to local conditions.

We currently have country offices in Kenya and Tanzania and are opening one in Mali.

Management Team

ApproTEC has assembled a world-class management team in the US and in Africa:

Dr. Martin J. Fisher, Cofounder and Executive Director

A Stanford PhD, Martin was a Fulbright Scholar in Kenya before he joined ActionAid where he met Nick Moon. In 1991 they founded ApproTEC, and in 2001 Martin returned

to the US where he established the San Francisco office of ApproTEC to raise funds for ApproTEC's international expansion.

Nick Moon, Cofounder and Managing Director

Nick started and ran a successful business in London before selling his share and joining ActionAid in Kenya. Together with Martin he co-founded ApproTEC, and Nick currently manages ApproTEC's programs and operations in Africa. Nick has an MBA from Durham University in the United Kingdom.

Tracey Pettengill, Chief Financial Officer

Tracey is the cofounder and former CEO of 4charity, a technology solution provider for the Philanthropy industry. She holds an MBA from Stanford University.

Aaron Slettehaugh, Director of Business Development

Aaron was a product manager at Novellus Systems in Silicon Valley and before that a product designer for Bridgestone in Tokyo. He holds an MBA from Stanford University.

Financing Strategy

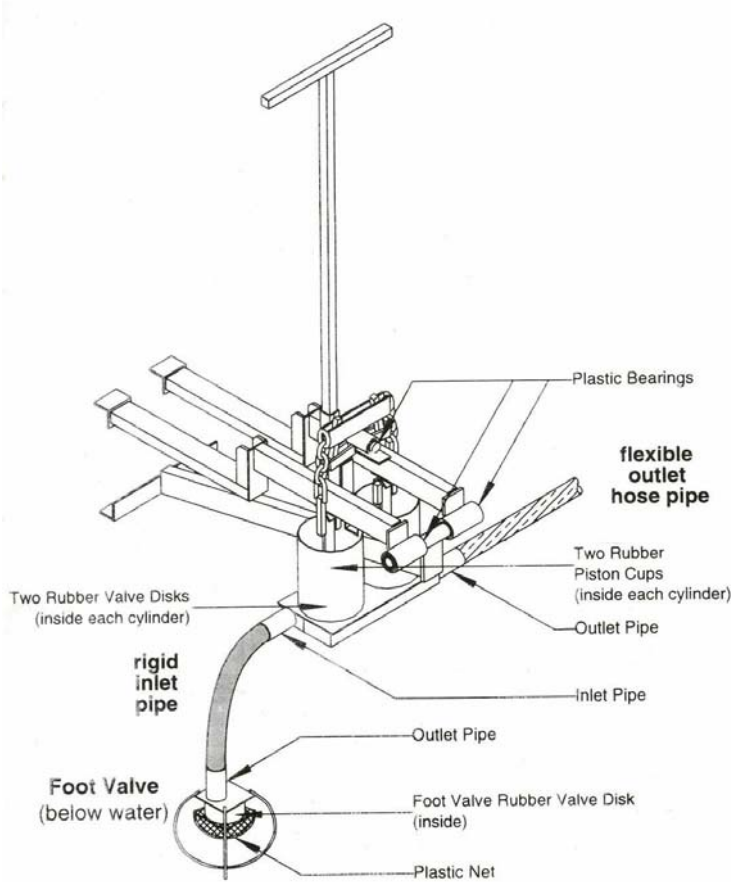
Approximately 15% of ApproTEC's current budget is generated from product revenues, and the rest from USAID, high net worth individuals and foundations.

ApproTEC's original funding came primarily from government agencies, but we are now diversifying funding sources by shifting to more private sector donors. While government sources represented nearly all our funding in 2001, it accounted for 75% in 2002, less than 50% in 2003, and in 2004 we expect it to be less than 20%.

Financial Plan

(\$'000)	<u>Yr 1</u>	<u>Yr 2</u>	<u>Yr 3</u>	<u>Total</u>
Revenue from sales	\$430	\$1,240	\$2,660	\$4,340
Cost of good sold	\$310	\$820	\$1,720	\$2,840
Expenses:				
Kenya	\$1,180	\$2,000	\$2,250	\$5,440
Tanzania	\$890	\$1,320	\$1,610	\$3,820
Mali	\$460	\$510	\$570	\$1,530
Ghana	\$500	\$1,200	\$1,600	\$3,300
Malawi	\$0	\$920	\$880	\$1,800
Uganda	\$0	\$440	\$1,220	\$1,660
Rwanda	\$0	\$90	\$790	\$880
Mozambique	\$0	\$0	\$1,020	\$1,020
Partner-led markets	\$130	\$170	\$450	\$750
Fundraising required:	\$3,040	\$6,230	\$9,440	\$18,700
Total pump sales	10,500	28,700	57,200	96,400
\$ spent per pump sold				\$190
New profits/wages created				\$172,400,000

Super MoneyMaker manually-operated irrigation pump



Basic Specifications

- Maximum pumping rate 1.5 liters per second
- Irrigate one acre per day

