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ATI

Transforming Small Producer Economies

Annual Report 1994

Cover:
Looking to Beijing and the Fourth World Conference on Women in September 1995, ATI is organizing "In The Picture"— a photo/video contest focusing on women entrepreneurs. On the cover, Luisa Calle, a Bolivian alpaca producer participating in ATI's fiber processor program, in a shot taken from ATI's new video "Development That Works."

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A new world is emerging
in villages and towns,
farms and workshops
all around the globe.

A world where
lessons of the past
inform the future.

Where new businesses
are built,
assets and resources
honored,
and economies
transformed.

Here success is
measured
in economic accomplishment,
environmental progress,
and sustainable livelihoods
for the world's people.

This is development that works

a fresh look
and a promising new road
into the future.

Tanzanian dairy herder

TRANSFORMING SMALL PRODUCER ECONOMIES

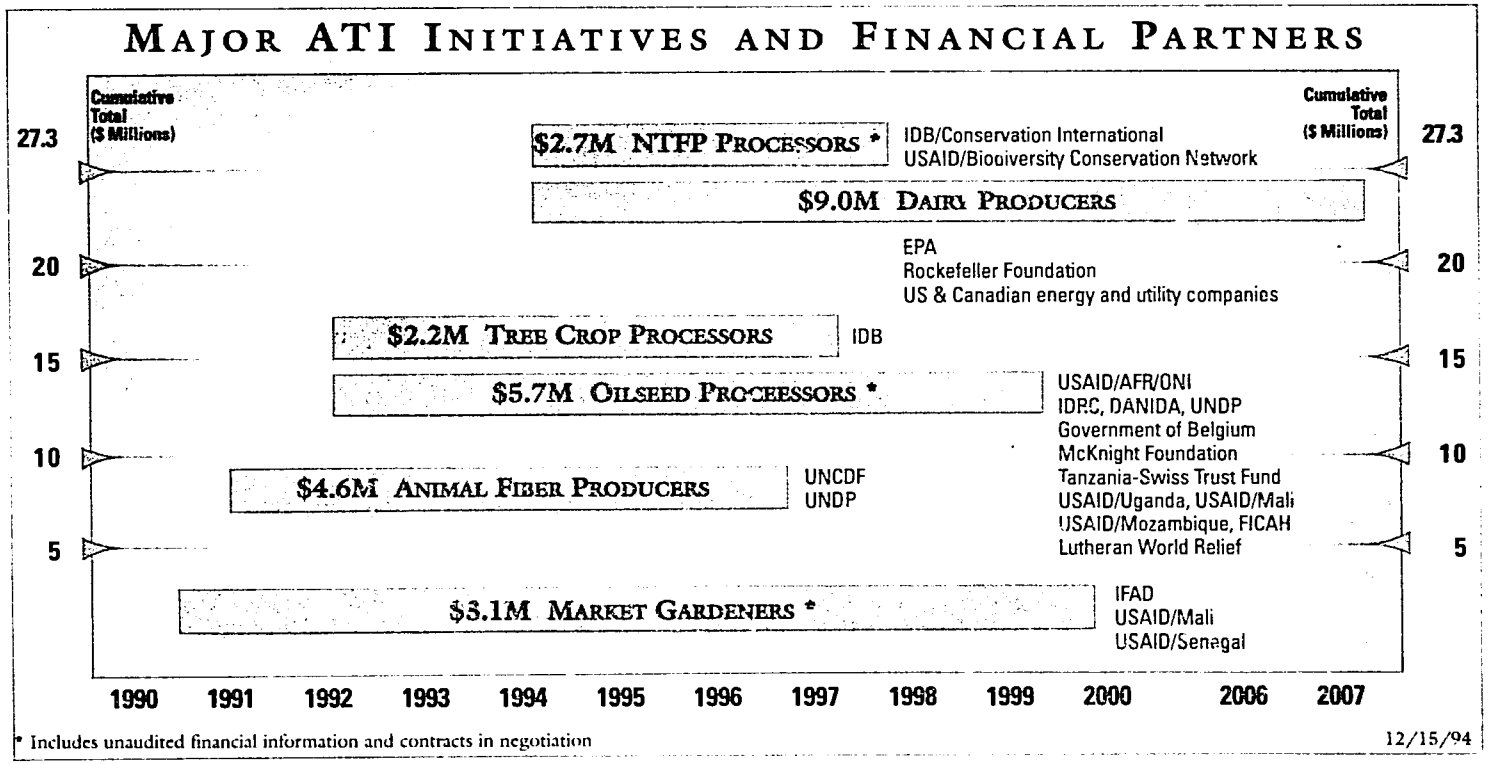
This document reports on the achievements of Appropriate Technology International, its partners, and — most of all — its clients during the past two years. It attests to "development that works" — not because ATI has all the answers, but because its small producer partnerships are learning to ask, and answer, the right questions.

These include: Which groups of low-income farmers and entrepreneurs are most widely represented across the developing world? What are the primary bottlenecks to increased profits and value added in their production, processing, and marketing chains? What is the combination of cost-effective solutions that will best address these problems for the producer group as a whole? What are the local adaptations required to achieve success in one country, or on one continent, versus another? Which potential program and financial partners are best positioned to help design, fund, and implement these initiatives locally, regionally, and globally? Which strategies for sustainability will ensure a high level of impact well into the future?

ATI's new logo reflects the staff's consensus on the few best words to describe ATI's mission. "Transforming small producer economies" requires a great deal more than appropriate technology, or micro-credit, or training in entrepreneurship and marketing skills, or policy change. Any one of these interventions by itself is a partial solution; economic transformation requires them all. For proof, we ask you to look further into the faces, maps, charts, and illustrations in this report.

The young dairy herder on the opposite page lives in Tanzania; ATI's research has identified the constraints to improved dairy production his family faces and explored similar problems experienced by dairy producers in Brazil, India, and Bangladesh. "Forging New Chains of Enterprise" (pp.14-36) describes ATI's evolving global approach to the production, processing, and marketing opportunities of dairy producers, animal herders and fiber processors, oilseed farmers and entrepreneurs, non-timber forest product collectors and processors, and tree crop producers.

Turn this page for details on the funds and financial partners involved in six major small producer initiatives, for which ATI has leveraged a total of more than $27 million since 1989. The fiber processing plant photographed under construction on page five is central to ATI's partnership with alpaca producers in Bolivia, with funding from UNCDF and UNDP. In the first year alone, this factory — owned and operated by some of the lowest-income people in the world — will generate close to $1.5 million in revenues, an amount roughly equal to ten percent of Bolivia's 1994 fiber exports. In Tanzania, ATI-assisted oilseed entrepreneurs are producing



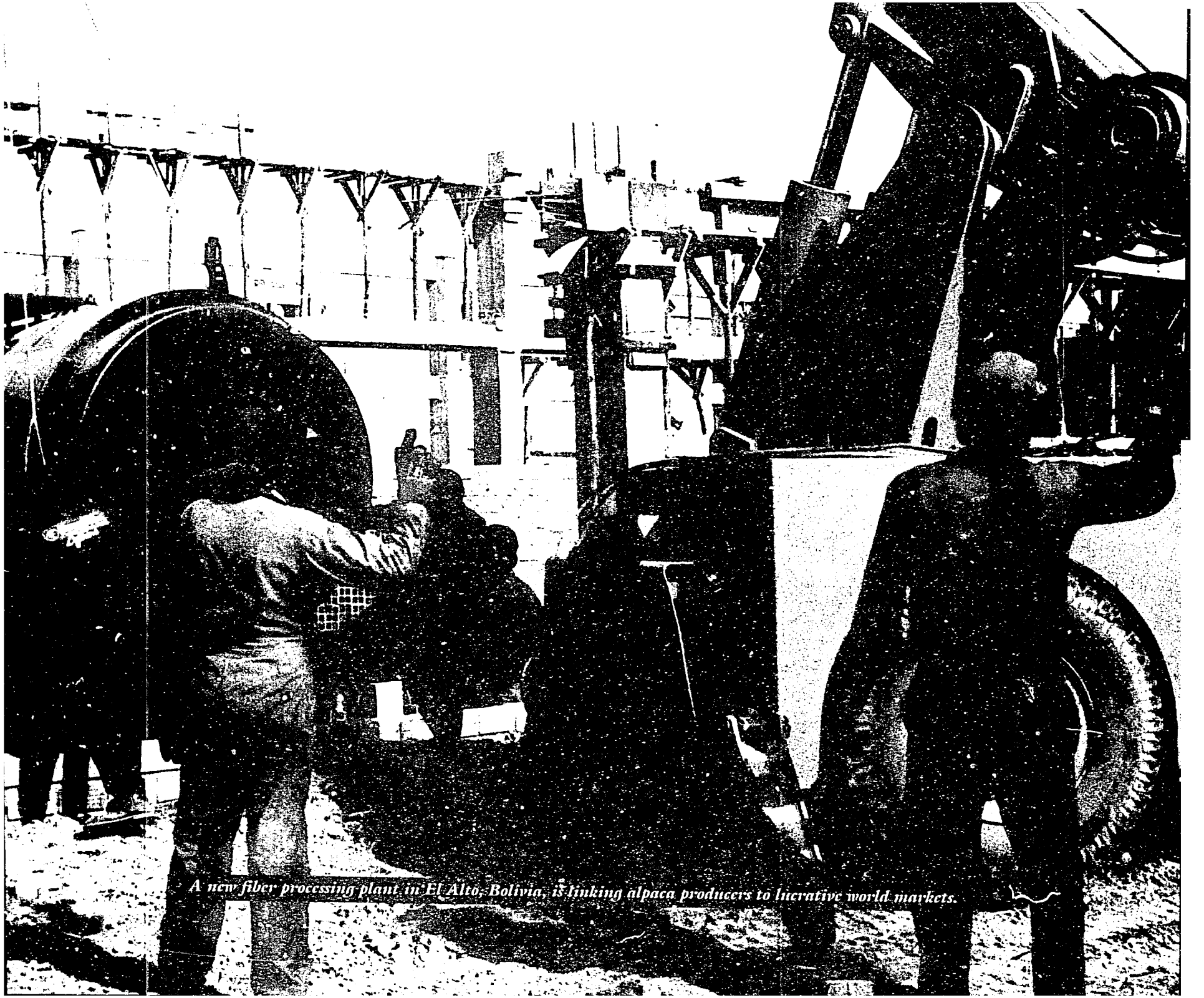
cooking oil equivalent to two percent of the country's total vegetable oil imports, with a three-fold expansion to be funded by UNDP, Swiss, and Belgian commitments over the next three years.

ATI and its partners are working to achieve impacts of this magnitude in all its small producer initiatives, with learning teams dedicated to three key issues: partnerships, commercialization, and alliances with large private sector companies.

Over the long term, the most profound multiplier built into ATI's approach is the attraction and potential replicability of these value-adding transformations for small-scale producers worldwide.

William Drayton, Chairman

Andrew Maguire, President



A new fiber processing plant in El Alto, Bolivia, is linking alpaca producers to lucrative world markets.

THE PROOF IS IN THE PARTNERSHIPS

More than ever before, ATI's work is the sum of its partnerships. Since operations began in 1978, ATI has worked with 300 local institutions in 40 nations. The nature of this working relationship has changed, however, from donor/grantee to collaborators/co-investors.

Today partners help propel every stage of ATI's work — from analyzing problems and demonstrating solutions in "design phase" projects to adapting and replicating these interventions in mature "expansion phase" initiatives. Diffusing successful programs nationally, regionally, and globally — ATI's longer-term goal — will depend almost entirely upon alliances with institutions able and willing to carry the work forward.

ATI-led partnerships now are backstopping the work of large numbers of small producers in 15 nations across the developing world. Current program partners appear on pages 8-9. ATI maintains close contact with a much larger group of past and potential collaborators to share learning and discuss new partnership opportunities.

Three examples of small producer partnerships in action:

- A new dairy producer initiative in India, designed to reach more than 650,000 producers in Gujarat State alone, partners ATI with four leading development institutions: the BAIF Development Research Foundation (BAIF), the National Dairy Development Board (NDDB), the National Dairy Research Institute (NDRI), and the Self-Employed Women's Association (SEWA). At right, a SEWA extension agent interviews dairy producers on issues related to feed supplements and profitability.

- Based in Arusha, Tanzania, the Centre for Agricultural Mechanization and Rural Technology (CAMARTEC) plays a pivotal role in the growth of ATI's oilseed entrepreneur program within Tanzania — and its expansion to other African nations. Together, CAMARTEC and ATI engineers continue to refine the manual ram press technology, scaling down its size and price—while improving its durability and ease of use—to extend cooking oil and seedcake processing and marketing opportunities to a greater number of entrepreneurs, including women.

- ATI's comprehensive approach to production, processing, and marketing was inspired in part by its wool subsector collaboration with sheepherders, artisans, and the Foundation for the Integrated Development of Socioeconomic Programs (FUNDAP) — a business-oriented, nongovernmental organization assisting isolated communities in Guatemala's highlands. Now ATI is working with FUNDAP, NGOs from six other Central American nations, and bilateral and multilateral donors to create a regional development initiative in support of small producers.

ATI's dairy initiative in India targets 650,000 producers, the majority women.

These and other ATI initiatives described in the pages to come carry common trademarks. They begin with a global view of producer problems and opportunities, target existing and expanding markets, maximize the returns to low-income producers, make improved natural resource management profitable, foster participation and leadership by women entrepreneurs, and promote south-to-south sharing of locally developing expertise and insights. Above all, they help build newly productive industries in remote rural, and ill-served peri-urban, regions where poverty has been the rule.

These partnerships share another dimension: ATI-led fund leveraging efforts knit together a variety of local, national, and international donors with similar interests and commitments. ATI donors and financial partners appear on pages 42-43. The involvement of these institutions is crucial, extending far beyond their financial contributions to strengthen program design, outreach, and replicability.

ATI Program Partners 1993-1994

Animal Herders and Fiber Processors

Foundation for the Integrated Development of Socioeconomic Programs (FUNDAP), Guatemala
Integral Association of Camelid Producers of the High Andes (AIGACAA), Bolivia

Ceramicists And Metalworkers

Association of Diambar Stove Manufacturers, Senegal
Association of Diambar Stove Sellers, Senegal
Foundation for the Integrated Development of Programs Socioeconomic (FUNDAP),Guatemala

Dairy Producers

Baif Development Research Foundation (BAIF), India
National Dairy Development Board (NDDB), India
National Dairy Research Institute (NDRI), India
Self Employed Women's Association (SEWA), India

Market Gardeners

Association Conseil pour l'Action (ACA), Senegal
Association Senegalaise d'Etudes, de Recherches Appliquees et de Developpement (ASERAD), Senegal
Association for the Study of Appropriate Technologies (AETA), Mali
Association of Treadle Pump Manufacturers, Senegal
Katsina Rural Agricultural Development Authority (KATARDA), Nigeria
Kunafoni Services, Mali
National Agricultural Extension and Research Liaison Service (NAERLS), Nigeria
Sokoto Agricultural and Rural Development Authority (SARDA), Nigeria

Non-Timber Forest Product Collectors and Processors

Agricultural Development Bank Nepal (ADBN), Nepal
Asia Network for Small-Scale Agricultural Bioresources (ANSAB), Nepal
Conservation International (CI), Guatemala
EDA Rural Systems, India
G.B. Pant Institute for Environmental Studies, India
Himalayan Action Research Council (HARC), India
Humla Conservation and Development Association (HCDA), Nepal
Institute of Forestry (IOF), Nepal
Small Industries Development Bank of India (SIDBI), India
United Tribes of Palawan (NATRIPAL), Philippines
Upland NGO Assistance Committee (UNAC), Philippines
Yayasan Dian Tama (YDT), Indonesia

Oilseed Farmers and Entrepreneurs

Africa Now, United Kingdom
Africare, Zambia
CARE, Lesotho
CARE, Mozambique
Catholic Relief Services (CRS), The Gambia
Centre for Agricultural Mechanization & Rural Technology (CAMARTEC), Tanzania
Christian Services Committee, Malawi
Food for the Hungry International (FHI), Mozambique
Groupe de Recherches et d'Applications Techniques (GRAT), Mali
International Development Research Centre (IDRC), Canada
Lira District Development Association (LIDDA), Uganda
Lutheran World Relief (LWR), Tanzania
Natural Resources Institute (NRI), United Kingdom
Rural Oil Manufacturers Association (ROMA), Zimbabwe
Small Industries Development Organization (SIDO), Tanzania
Uganda Cooperative Alliance (UCA), Uganda
Uganda Oilseed Processors Association (UOPA), Uganda
World University Services of Canada (WUSC), Canada

Resource-Poor Farmers

Asia Network for Small-Scale Agricultural Bioresources (ANSAB), Nepal
Bina Swadaya, Indonesia
Botanical Enterprises, Pvt. Ltd., Nepal
Eurasia and United Corporations, Indonesia
Hindustan Biofertilizers, India
New Era, Nepal
Nitrogen Fixation for Tropical Agricultural Legumes (NIFTAL), Hawaii
Philippine Council For Agriculture, Forestry & Natural Resources Research & Development (PCARRD), Philippines
Philippine Department of Agriculture, Philippines
Plenty Canada, Sri Lanka
P.T. Bahana Usaha, Indonesia
Seameo Biotrop, Indonesia
University of the Philippines Los Baños, BIOTECH, Philippines

Tree Crop Farmers

Antipuluan Small Coconut Farmers Producers Cooperative (ASCFPC), Philippines
Association ANAI, Costa Rica
Cooperativa de Caficultores Grano de Oro de R.L., El Salvador
Department of Trade and Industry (DTI), Philippines
Export Producers Association (EPX), Honduras
Marinducare Foundation, Inc. (MFI), Philippines
Marsur, Honduras
Pakisama, Philippines
Southern Leyte Coco-Charcoal Industries Association, Inc. (SOLECIA), Philippines
Southern Leyte Integrated Agricultural Processors Federation, Inc. (SLIAPFI), Philippines
Unión de Cooperativas de Cafetaleros de El Salvador (UCAFES), El Salvador
University of the Philippines Los Baños (UPLB), Philippines

Special Initiatives

Population and Community Development Association/Rural Small-Scale Industries (PDA/RSSI), Thailand

Central American Small Producer Initiative (ORAPECA):

Costa Rican Association of Development Organizations (ACORDE), Costa Rica
Credit Foundation for Development and Social Service Institutions (FAFIDESS), Guatemala
Foundation for Development Assistance (CODESPA), Spain
Foundation for Economic and Social Development in Panama (FUNDES), Panama
Foundation for the Integrated Development of Socioeconomic Programs (FUNDAP), Guatemala
Fundacion Mujer, Costa Rica
National Foundation of the Development of Belize (FUNDEB), Belize
Nicaraguan Development Foundation (FUNDE), Nicaragua
Nicaraguan Association for the Development of Small, Medium and Microenterprises (ACODEP), Nicaragua
Panamanian National Rural Youth Organization (PANAJURU), Panama
Salvadorean Association of Medium and Small Businesses (AMPES), El Salvador

SMALL BUSINESS: COMMERCIAL AND SUSTAINABLE

Achieving commercially viable and environmentally sound productivity gains is ATI's goal for its small producer clients. ATI's "sustainability" test is a simple but powerful measure: if all ATI activities ceased tomorrow, would the enterprises assisted to date continue to operate profitably? ATI clients are increasingly able to answer this question in the affirmative, because of the sound business development strategies ATI and its partners apply.

All ATI programs depend upon moving new ideas and products from the prototype stage into the marketplace. Making business innovations "stand alone" is difficult under the best of industrialized world circumstances; in U.S. business parlance, this stage is said to be the "valley of death." The additional difficulties ATI-assisted entrepreneurs encounter are the basic problems of underdevelopment, poverty, and adverse government policies.

When introduced to a new market, any technology or business innovation intended to add value in an integrated chain of production must survive initial market testing and adaptation to specific local conditions and business requirements. Demand for the new technology must reach a sufficient level for profitable production and distribution. Reaching ATI's target clients requires demonstrating the advantages of the technology and associated business interventions, disseminating information, and providing training and technical assistance. These activities all carry costs, especially with ATI's more remotely-based and under-served clients. Costs diminish quickly, however, as the value-adding innovations become better known and more widely adopted, and new profits replace program investments. The hard and soft technology interventions ATI promotes are sustainable for their adopters because they: (1) produce — or save — significant amounts of income, and/or (2) conserve and replenish the natural resource base on which production depends.

Two examples:

- Alpaca producers in Bolivia participating in the ATI-AIGACAA fiber improvement program systematically upgrade the care, feeding, and genetic breeding of their herds and the shearing and processing of their fiber. The result: a tripling of producer incomes from higher prices for improved fiber, and pasture lands regenerating thanks to improved land management.

  In the start-up phase, the cost of veterinary services and other interventions necessary to increase the quantity and quality of fiber are borne by the program. This donor-funded support

gradually diminishes and is replaced with funds from private sector profits generated by the new processing plant.

- In India's Gujarat State, cooperative feed processing facilities start new regional business ventures based on an improved technology for manufacturing molasses-based feed supplements. These supplements increase milk production to raise dairy herder incomes by more than 30 percent; they also substantially reduce dairy cattle emissions of methane, a global greenhouse gas.

  To prove the viability of the enterprises to local banks and investors, this ATI program finances a major portion of the costs of establishing the first three facilities. To launch the village-based marketing of the supplements (principally by women to women), the program initially covers 80 percent of the marketing agents' salaries. Each year the stipend will be reduced, as sales commissions increase.

Identifying appropriate sources of financing for these activities is a continuing challenge for ATI; without financial resources, neither ATI nor its local partners can create value, no matter how inspired and innovative the business development design. ATI's highly effective fund raising — leveraging more than ten dollars for every one we bring to the table — is one measure of our success, including such original elements as corporate and utility funding for the dairy producers program.

Other ground-breaking financing mechanisms for ATI initiatives aim to tap the interest of private investors. ATI is a founding member of a consortium of microenterprise lending and development organizations whose goal is to bring two new investment funds to the public markets in 1995-96. One fund

Bolivian producer shears alpaca.

would make available low-interest loans to support ATI client borrowing requirements. The other, a mutual fund vehicle, would spin off modest amounts of unrestricted grant income to cover costs associated with program development. Each initiative is the first of its kind, and ATI is hopeful that success in these new avenues will further broaden and diversify the financial resource base for commercially and environmentally sustainable small business innovations.

The Senegal Success Story

Large numbers of low-income families — and their nation's natural resources — are benefiting from ATI's sustainable enterprise work with market gardeners, metalworkers, and ceramicists in Senegal.

Since 1990, with USAID/Senegal support, ATI has focused on promoting private-sector manufacture and distribution of productivity-increasing technological innovations — most notably, the treadle pump for small-scale irrigation by market gardeners and a fuel-efficient, ceramic-lined stove for household use.

ATI's approach has been methodical and has included multiple steps, including:

- assessment of market gardening and household energy subsectoral needs
- prototype development and testing in response to the needs assessment
- field and acceptability testing
- training of manufacturers to produce and market the new product
- full commercial production under a franchise-like arrangement
- promotion, including demonstrations and radio and television
- establishment of marketing and distribution networks
- development of new, complementary technologies addressing other related subsectoral needs, including the wrapped filter to improve well recharge rates in the case of market gardening and a fuel efficient stove in the case of household energy.

Within the context of this approach, ATI has acted as a catalyst, intensively assisting manufacturers at the beginning of an intervention and gradually withdrawing its support. The application of this approach has resulted in the sustainable manufacture and sale of treadle irrigation pumps and ceramic-lined charcoal stoves, spawning businesses actively procuring raw materials with their own resources, using their own equipment and labor, and selling and delivering their products unsubsidized by the project.

Indicative of the success of this approach is the fact that as ATI assistance has decreased over time, impact has increased. For example, during the first three years of project activity, when support was most intense, annual Diambar stove sales averaged 3,600 and pump sales 168. During the first two quarters of 1994, even though program funding levels had dimished, sales of stoves and pumps doubled. By mid-1994, more than 800 treadle pumps and 14,000 stoves had been locally produced and sold by Senegalese manufacturers and their sales agents.

The treadle pump occupies a market niche between the traditional rope-and-bucket system of water-lifting and capital-intensive motorized pumps. A small, imported motorized pump cost $680 in Senegal in 1994, compared to an average of $73 for the locally made treadle pump. Financial analyses show that treadle pumps are more profitable than motorized pumps for gardeners of 0.10 to 0.66 hectares, which includes the majority of market gardens in Senegal. A mid-1994 study found that farmers using the treadle pump had increased their median

Metalworkers construct treadle pump.

irrigated area by 68 percent and their median annual incomes from market gardening by $1,350 prior to the early 1994 devaluation. (The post-devaluation median annual increase in income was $590.) This is a significant gain in Senegal, where annual per capita pre-devaluation income averaged US$714 in 1993.

The treadle pump is better for the environment than motorized pumps since it does not consume nonrenewable diesel fuel and is less likely to adversely affect the water table. The alternative of large-scale irrigation projects has much higher capital costs — $5,000-$20,000 (pre-devaluation) per hectare in West Africa — and often results in serious negative environmental and public health impacts. Over the conservatively estimated six-year life, the pumps sold through September 30, 1994 will generate total benefits of $3.72 million at a program assistance cost of $690,000.

By burning an average of 1.6 kg less charcoal per day, Diambar stove-using householders are saving $119 (pre-devaluation) over the two-year life of the stove. They are easing environmental pressures. The total value of the charcoal savings as of September 30, 1994 has been $3.17 million achieved at a program cost of $664,700. About 2,070 hectares of forest land have been saved by stoves sold to date; air pollutants (including carbon monoxide, benzopyrenes, and particulates) from charcoal cooking also have been reduced.

People in the Dakar area benefit economically from this program in a variety of ways. Many women are given a fixed daily budget for food and cooking fuel. By saving money on fuel, they are able to improve the diets of their families. The metal claddings for the stove are made by small-scale informal sector artisans, who constitute one of the poorest groups in Senegal. Most of the ceramic liners for the stove are produced by a medium-scale ceramics enterprise but some are also made by a women's pottery group. By September 30, 1994 stove producers and their sales agents had generated gross incomes of $142,180 in stove sales.

FORGING NEW CHAINS OF ENTERPRISE

ATI's problem-solving approach is based on something economists call "the value chain." A sweater begins its existence as a sheep's wool, and cooking oil as a sunflower waving in a farmer's field. Hard work and precious natural resources go into producing, processing, storing, and transporting goods to market. Often, the lion's share of profit goes to intermediaries or larger businesses better positioned to pay for expert advice, access to credit, and new technologies that add value to crops and other raw materials. Because of a combination of variables out of their control, most small farmers and businesses receive little return for their resources and work and their enterprise doesn't become the engine for broad-based development that growing economies need.

TARGETED PRODUCER GROUPS 1993-1994

ANIMAL HERDERS & FIBER PROCESSORS
OILSEED FARMERS & ENTREPRENEURS
DAIRY PRODUCERS
NON-TIMBER FOREST PRODUCT COLLECTORS & PROCESSORS
TREE CROP FARMERS
MARKET GARDENERS
RESOURCE-POOR FARMERS
CERAMICISTS & METALWORKING ARTISANS
TEXTILE PRODUCERS

ATI-led value chain programs break this cycle of poverty and inequality by helping small producers create modern businesses that capture more of the value of their products. Oilseed farmers throughout Eastern and Southern Africa are finding a local market for their seed thanks to village-based enterprises able to process it into sought-after cooking oil and seedcake for livestock. Animal herders are adopting integrated fiber production and processing improvements, and linking with lucrative West European markets. Filipino coconut growers are commanding higher prices for improved copra and taking additional processing steps to maximize the profitability of their enterprises; so are other tree crop farmers in coffee growing regions.

- Each ATI partnership targets a basic economic activity where large numbers of low-income people are working throughout the developing world.
- ATI, local partners, and producers themselves analyze the entire value chain or chains inherent in their work to identify and apply those interventions that best address the real stumbling blocks to success.
- The result: products worth more on local, national, and international markets, and a greater share of the ultimate value of products for small producers themselves.

Senior VP Valeria Budinich with Guatemalan wool artisans

The following pages focus on new "chains of enterprise" ATI is helping to forge with five groups of small producers in strategic subsectors across the developing world. (For ATI's work with market gardeners, ceramicists, and metalworkers, see "The Senegal Success Story" on page 12.)

Two of ATI's leading programs have reached what ATI terms the "expansion phase." These offer value chain solutions for animal herders and fiber processors and oilseed farmers and entrepreneurs. Both are now building on lessons learned in successful "design phase" initiatives to reach substantial numbers of producers within countries and across borders.

ATI is not alone in considering these programs role models for "development that works." The International Center for Research on Women (ICRW) has chosen ATI's regional oilseed entrepreneur program in East and Southern Africa as one of four case studies on integrating women into development it will present at the World Conference on Women in Beijing in 1995. Bolivian President Sánchez de Lozada has called the production and processing improvements ATI is implementing with alpaca fiber producers one of his nation's "best development projects."

The global potential of ATI's dairy producer program in India (which builds on the pioneering value chain work of India's National Dairy Development Board) emerges clearly from initial research in Bangladesh, Brazil, and Tanzania funded by the U.S. Environmental Protection Agency. Improved feeding strategies may vary, but always in service to the same results: substantial income increases for dairy producers, significant decreases in ruminant livestock emissions.

ATI's two newest programs tap the value-adding potential of collectors and processors of non-timber forest products (NTFPs) and small-scale coffee producers. Like the dairy program, they are "win-win" environment/development initiatives designed to generate sustainable livelihoods. Their initial roots are in the Indian subcontinent, the Philippines, and Central America, but their global growth potential is great.

ANIMAL HERDERS AND FIBER PROCESSORS

Current Programs:

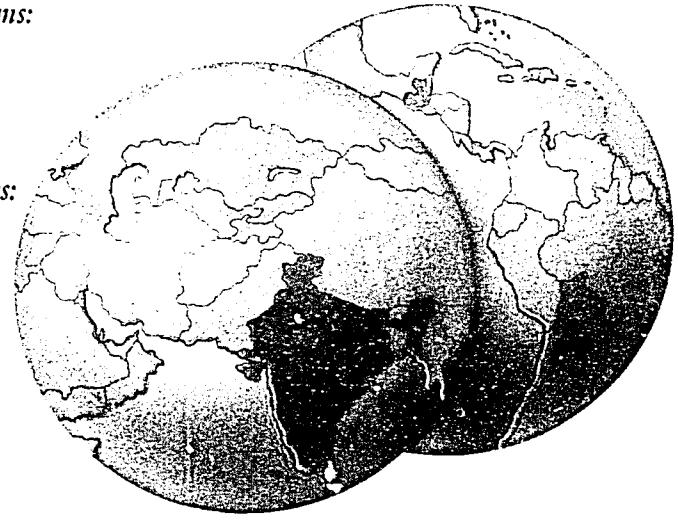
Bolivia

Guatemala

1995 Initiatives:

India

Nepal



Future Study:

Kazakhstan

Kyrgyzstan

Tajikistan

Uzbekistan

In the fall of 1994, ATI and its Bolivian partner, the Integral Association of Camelid Producers of the High Andes (AIGACAA), inaugurated a state-of-the-art processing plant that holds great promise for thousands of low-income alpaca herding families living under harsh conditions at 15,000 feet. The $1.2 million alpaca "tops" factory — located in El Alto, not far from La Paz — is the latest, largest step of a $4.3 million UNCDF/UNDP-funded program designed to link Bolivia's alpaca producers to lucrative markets in Europe and elsewhere around the world.

Lidia Katari de Cárdenas, wife of the Vice President of Bolivia, pressed the button to officially start the plant running in a festive November 18 inaugural ceremony broadcast across the continent by CNN International. Sra. Cárdenas addressed the crowd in her native language of Aymara, praising the innovative partnership between ATI and AIGACAA, which is enabling the people of the altiplano to build a profitable and sustainable fiber processing enterprise.

National project manager Luis Ticona speaks to the empowering nature of the plant for AIGACAA's 1,000 members and other local producers. "This will be the first agro-industrial plant on the *altiplano* to be organized and managed directly by *campesinos*," Ticona notes, "and the profits will return to these same communities." The plant will be managed by the Camelid Products Company, Inc. (COPROCA), a for-profit entity owned by AIGACAA.

The Bolivia program draws on ATI's earlier value chain experience with wool producers and processors in the highlands of Guatemala — and Guatemalan partner FUNDAP (Foundation for the Integrated Development of Socioeconomic Programs) continues to consolidate the gains made there on behalf of shepherds and artisans.

In Bolivia, the plant is the last in an integrated series of

Altiplano pastures are improving and producer incomes are up 300 percent.

interventions that includes: systematic breeding of livestock and culling of herds, improved veterinary care, better fencing and pasture management, upgraded shearing and fiber classification techniques, an extensive fiber collection system, and a revolving credit program.

The plant is expected to be fully independent and self-

Animal Herders & Fiber Processors Value Chain—Potential Interventions

Fiber Production

Raw Fiber

Improve pasture

Establish animal health program

Introduce breeding program

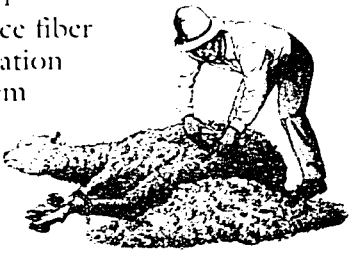
Facilitate access to resources

Primary Fiber Processing

Classified Fiber

Improve animal handling & shearing techniques

Introduce fiber classification system



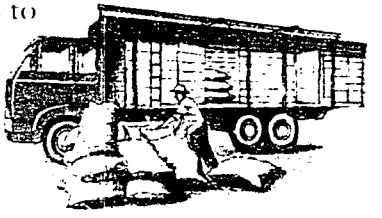
Fiber Collection

Compacted Fiber Bales

Improve animal handling

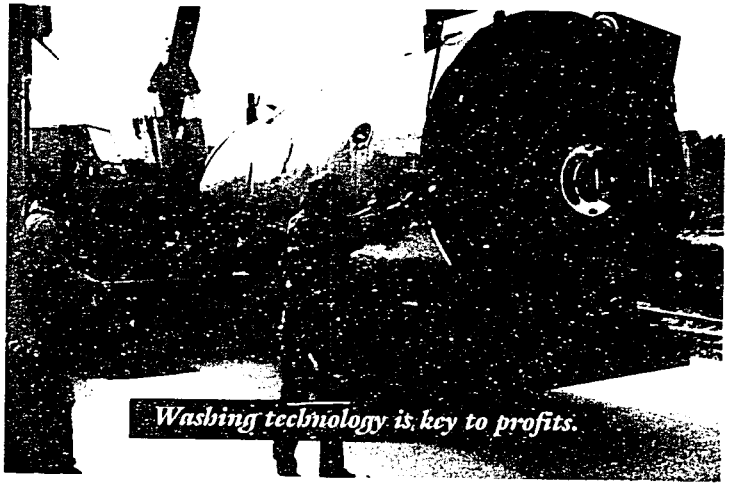
Establish fiber purchasing & packaging mechanism

Facilitate access to transportation



sustaining when the U.N. start-up funding ceases. Its entire first year production of alpaca "tops" (inch-thick cords of aligned fibers) has been contracted for sale to Italian fiber processors for $1.5 million — an amount roughly equal to 10 percent of Bolivia's fiber exports in 1994.

ATI has also begun to study small-scale animal herders in Nepal and India, with further possibilities to be considered in several newly-independent states of the former Soviet Union. Adapting the ATI approach to their specific problems and opportunities can help link these isolated, low-income producers to the economic mainstream — and further transform the fiber subsector in favor of many thousands of small-scale entrepreneurs.

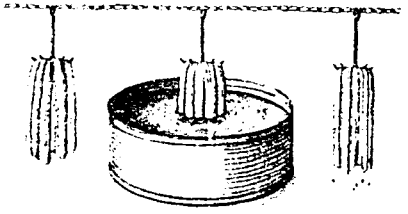


Washing technology is key to profits.

OFF FARM PRE-PROCESSING

Washed Fiber

Establish mechanized fiber washing & drying system

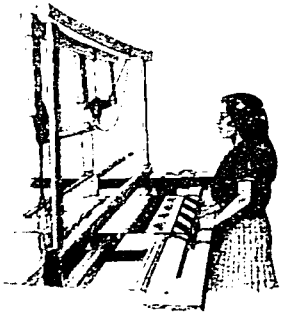


SECONDARY FIBER/ PROCESSING & MARKETING

Spun Fiber & Other Industrial Products

Design & implement marketing strategy

Establish industrial processing



FINISHED PRODUCTS/ PROCESSING & MARKETING

Handicraft Products, Cloth & Garments

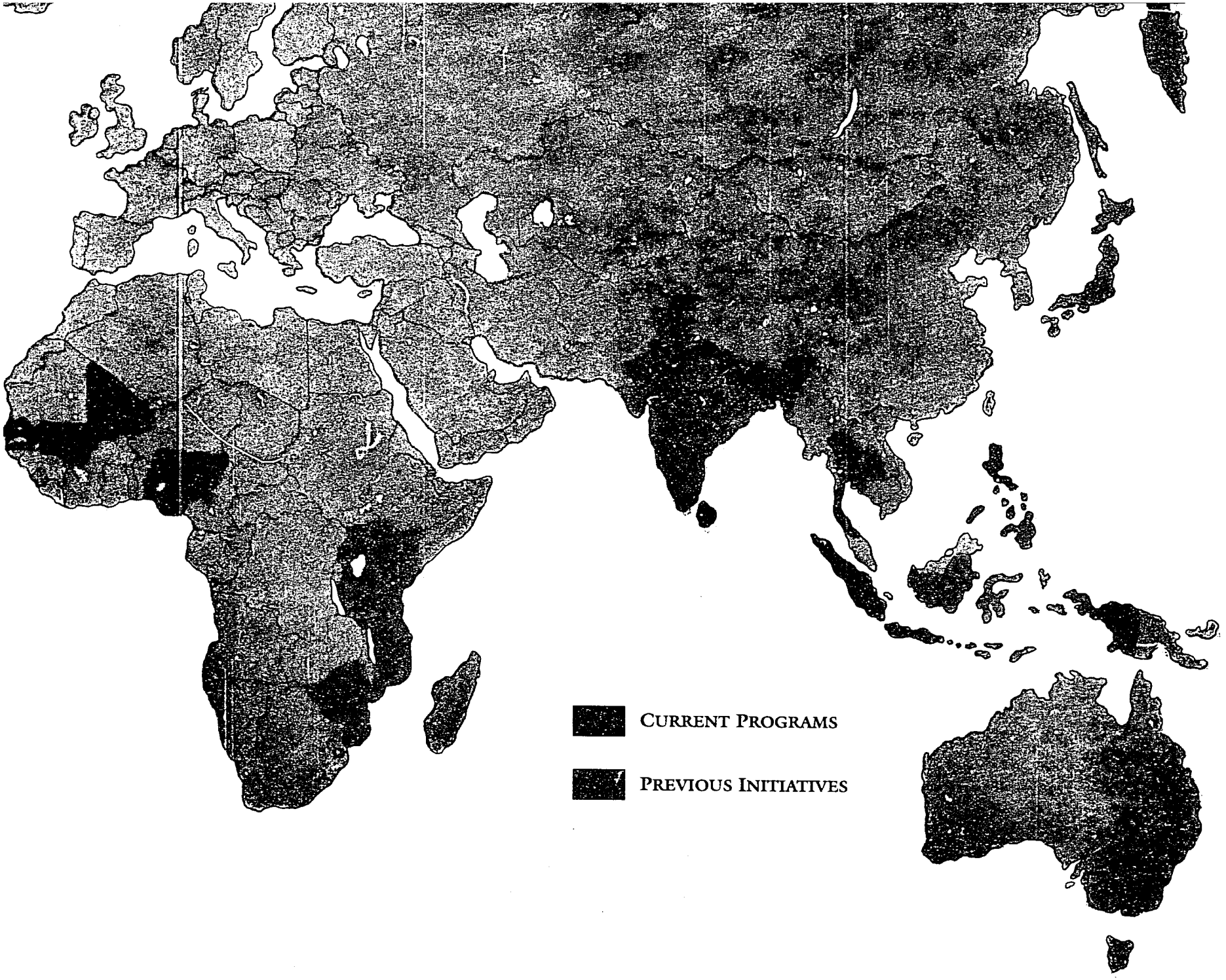
Assist in product development

Implement quality control system

Establish market distribution system

TAKING A GLOBAL VIEW
ATI PROGRAMS 1993-1994

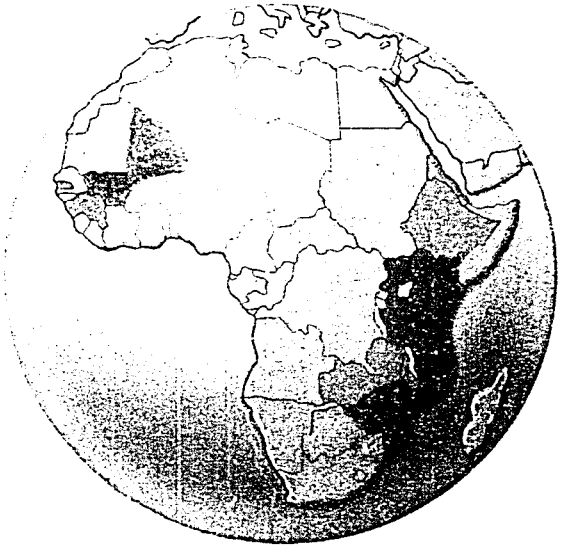
- **Bangladesh** – Dairy producers, resource-poor farmers
- **Belize** – Non-timber forest products collectors
- **Bolivia** – Animal fiber processors
- **El Salvador** – Tree crop processors/coffee
- **Guatemala** – Animal fiber processors, ceramicists, non-timber forest products collectors
- **Honduras** – Tree crop processors/cashews
- **India** – Animal fiber processors, dairy producers, non-timber forest products collectors, resource-poor farmers/ rhizobium producers, textile producers
- **Indonesia** – Non-timber forest products collectors, resource-poor farmers/kapok
- **Kenya** – Oilseed farmers and entrepreneurs
- **Mali** – Cereal processors, market gardeners, oilseed farmers and entrepreneurs
- **Mozambique** – Oilseed farmers and entrepreneurs
- **Nepal** – Animal fiber processors, non-timber forest products collectors, resource-poor farmers/potatoes
- **Nigeria** – Market gardeners
- **Philippines** – Non-timber forest products collectors, resource-poor farmers/rhizobium producers, tree crop processors/coconuts
- **Senegal** – Metalworkers, ceramicists/Diambar stoves, market gardeners
- **Sri Lanka** – Resource-poor farmers/rhizobium producers
- **Tanzania** – Oilseed farmers and entrepreneurs
- **Thailand** – Special initiative/gender sensitive venture capital
- **Uganda** – Oilseed farmers and entrepreneurs
- **Zimbabwe** – Oilseed farmers and entrepreneurs


CURRENT PROGRAMS
PREVIOUS INITIATIVES

OILSEED FARMERS AND ENTREPRENEURS

Current Programs:

Kenya
Mali
Mozambique
Tanzania
Uganda
Zimbabwe



Researched / Provided Assistance:

Eritrea
Ethiopia
The Gambia
Guinea
Malawi
Zambia

Early in 1994, when U-PRESS Project Director Dr. Rita Laker-Ojok launched ATI's newest oilseed entrepreneur initiative in Uganda, she turned for help to a lengthy roster of Africa Regional OILS experts — an international team of engineers, machinists, economists, extensionsts, and business experts with last names that include Manyanga, Shiganga, Protzen, Hyman, Herz, Granima, Mlambo, and Macpherson. OILS is a bold experiment in how to scale up and spread the benefits of innovations. It's an experiment that builds squarely on African experts and entrepreneurs, and on agencies that subscribe to commercial principles of sustainable development.

ATI's Regional OILS program, with headquarters offices in Harare, Zimbabwe and Arusha, Tanzania, is empowering an expanding portfolio of country-level programs like U-PRESS, supporting the commercialization of small-scale oilseed processing, and reaching wider markets for oilseed products. Working side-by-side with oilseed subsector enterprises and institutions throughout Eastern and Southern Africa, OILS aims to spread the benefits of business innovations that address constraints along the production-consumption chain (pp. 24-25) and, over the long term, transform the oilseed subsector to the benefit of low-income rural producers.

OILS succeeds in building small-scale agro-industries and creating thousands of jobs in rural communities because of its strategic integration of business development activities (from engineering design to gender-sensitive credit and business promotion); its south-south provision of professional services; and its continuous learning involving all participants. It builds private sector links between equipment manufacturers, oilseed growers, oilseed processors, and cooking oil and seedcake sales and distribution agents.

ICRW selected ATI's oilseed entrepreneur program for presentation at the Beijing Conference on Women.

Country-level programs in Tanzania and Zimbabwe have helped create almost 2,000 new enterprises — 800 in 1994 alone — around the low-cost manual processing technology known as the ram press, bringing direct income and dietary benefits to tens of thousands of small farmers, rural entrepreneurs, and low-income consumers. In Tanzania, ATI-assisted oilseed entrepreneurs are producing cooking oil equivalent to two percent of the country's total vegetable oil imports, with a three-fold expansion envisioned over the next three years. With OILS' help, new country programs are poised to take off in Mozambique, Kenya, and Mali. Malawi, The Gambia, and other national initiatives are not far behind.

Partnerships multiply OILS impacts by strengthening capacities of agencies as diverse as CAMARTEC and SIDO in Tanzania, the Rural Oil Manufacturers Association (ROMA) in Zimbabwe, CARE International in Mozambique, Africa Now in western Kenya, and Mali's *Groupe de Recherches et d'Applications Techniques*. These agencies and many others are blending their staff skills and site-specific knowledge with OILS' well-targeted technical assistance and training to better reach rural producers and processors.

A major challenge is finding ways for indigenous entrepreneurs to profit from activities currently performed by development programs, such as linking urban manufacturers to potential

Oilseed Farmers & Entrepreneurs Value Chain—Potential Interventions

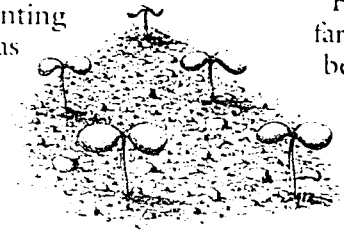
Planting Seed/ Multiplication & Distribution

Planting Seed

Identify & multiply improved seed varieties

Promote multiplication of planting seed

Facilitate market development for planting seed in rural areas



Pressing Seed/ Production & Distribution

Pressing Seed

Increase farmer access to inputs

Promote improved farm management practices

Facilitate small farmer access to better markets

Oilseed Processing

Oil

Increase access to processing technologies

Establish sustainable system for manufacturing, press distribution & repair

Foster successful enterprises through business support services

ram press purchasers in rural areas. Businesspeople like Peter Pswarayi, owner of Star Engineering in Rusape, Zimbabwe, are pioneering such commercial links: he has made his small town business a 'one-stop shop' for oilseed processing. Star employees sell presses, provide user training and press repair services, advise farmers, and demonstrate the press at local fairs and public events.

The Uganda project shows what OILS expertise and a dedicated national staff can accomplish in a matter of months. Starting from scratch in early 1994, almost 100 new enterprises were launched by September, a level of production that took years to achieve in other countries. Ugandan manufacturers now have orders to fill and agencies are lined up to work with U-PRESS. As Dr. Laker-Ojok notes, "Our progress was really made possible by timely assistance from OILS team members. Following in the footsteps of ATI's earlier success in Tanzania and Zimbabwe also gave us a real kick start."

OILS assistance provided U-PRESS in 1994 will be extended to new partners in Kenya, Mozambique, and Mali in 1995. The OILS program is validating the initiative's original hypothesis that a multi-disciplinary Africa-based team of experts can provide timely, cost-effective services for rapid expansion of a new, small-scale rural oilseed industry.

PRIMARY PRODUCT MARKETING

Oil

Disseminate information on edible oil marketing

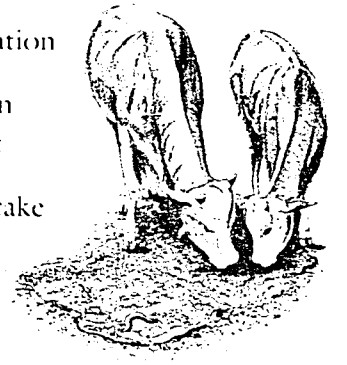
SECONDARY PRODUCT MARKETING

Seedcake

Improve processing technology

Disseminate information to end users on seedcake utilization

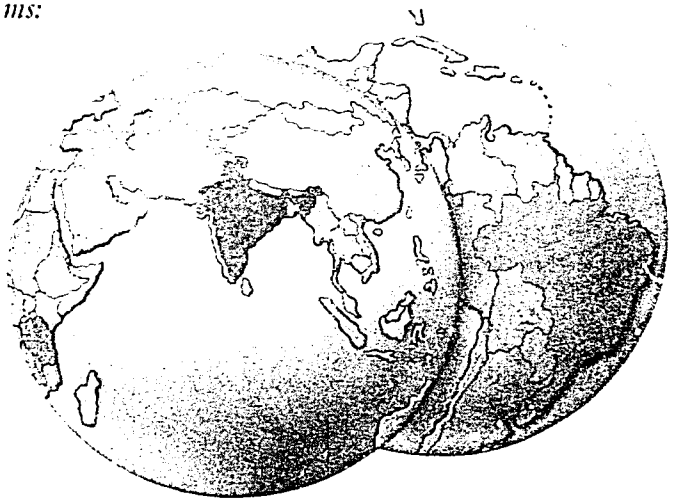
Promote market for & provide information on seedcake



DAIRY PRODUCERS

Current Programs:

India



Initial Work:

Bangladesh

Brazil

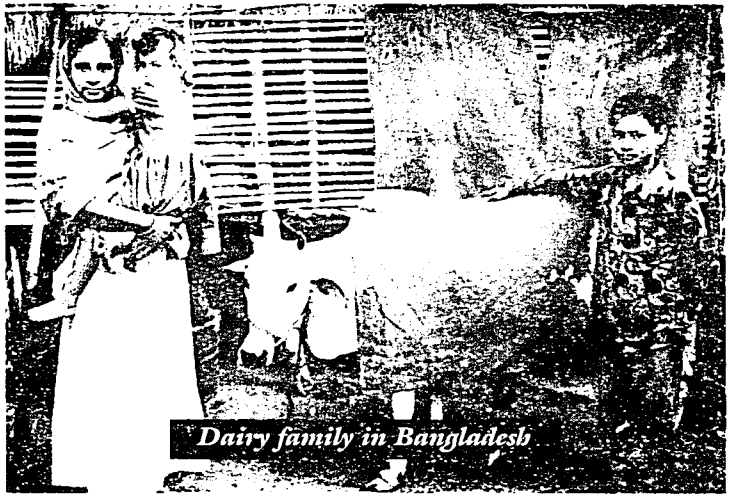
Tanzania

In 1991, at the request of the U.S. Environmental Protection Agency (EPA), ATI began research on low-cost feed supplements as a means to improve the digestive efficiency of ruminants such as cattle, buffalo, and goats. While the EPA and ATI shared an interest in the methane reduction possibilities offered by feed supplements, ATI was equally interested in the opportunity to increase the milk production — and incomes — of small-scale dairy farmers. The result of this combination of interests is an innovative program in Gujarat State, India which promises to reduce livestock emissions of methane, a major greenhouse gas, while increasing milk yields up to 35 percent for over 650,000 small-scale dairy producers. With private funding, regional processing enterprises owned by existing local feed cooperatives have begun to manufacture and sell the molasses-based supplements, which are sold by women marketing agents to predominantly female dairy herders through a village-based distribution system. Marketing agents commence their work with a large percentage of their salary paid by the program. Support will be reduced over a three-year period until agents work completely on commission. All marketing assistance will cease after six years.

Costs of establishing the first three feed supplement factories are borne by the program. However, once financial viability and self-sustainability are established — the break-even point for a production facility is projected to be 24 months — local commercial credit programs and development banks will begin to finance additional facilities.

India's National Dairy Development Board (NDDB) is a key partner in the initiative (other partners include the BAIF Development Research Foundation, the National Dairy Research Institute (NDRI), and the Self-Employed Women's Association (SEWA)). Monies from the NDDB's revolving fund are slated to finance additional plant

Milk yields are increased by up to 35 percent in the Gujarat program.



Dairy family in Bangladesh

construction in new regions; it is expected that after 10 years, there will be more than 50 active molasses-based feed supplement manufacturing operations in Gujarat State.

As with many ATI programs, the dairy feed initiative simultaneously tackles a development problem while addressing important environmental concerns. By improving the digestive efficiency and productivity of dairy animals, the project helps small producers raise their incomes through increased milk production and generally healthier animals. The resulting reduction in livestock methane emissions lessens the threat posed by global warming.

The program's global impact is matched by its potential for

Dairy Producers Value Chain—Potential Interventions

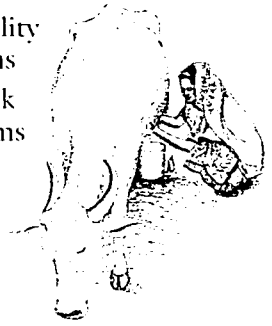
Primary Production

Raw Milk

Improve feeding, breeding & health care

Introduce quality control systems

Improve milk handling systems



Milk Collection

Raw Milk, Tested & Cooled

Establish communal drop centers, cooling stations & collection systems

Facilitate use of quality-based pricing mechanisms

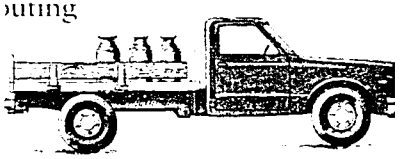
Implement quality classification programs

Transport

Bulk Raw Milk

Introduce more sanitary milk handling systems

Improve vehicles & routing



world wide replication. ATI has already conducted additional EPA-funded studies in Tanzania, Brazil, and Bangladesh, with initial results showing that a locally-adapted feed supplement strategy in each of these countries could yield equally positive results for their small-scale dairy farmers.

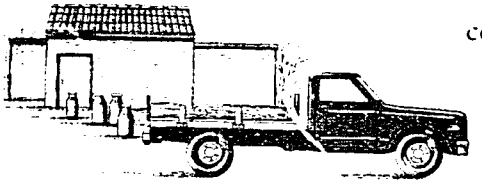
Building on its experience with oilseed entrepreneurs in Tanzania, ATI is designing a program to enable dairy producers in the northern region to purchase sunflower seedcake, a low-cost animal feed supplement that improves nutrition and increases milk production in dairy cattle. This initiative will promote the cake — a byproduct of the oilseed press and of power expellers operated by local entrepreneurs — to establish a self-sustaining enterprise that supplies high-quality animal feeds.

In the Rajshahi Division of Bangladesh, ATI is working with local dairy producer groups, Tufts University School of Veterinary Medicine, and USAID/Dhaka to promote the commercialization of molasses-urea feeding technology. ATI is also identifying opportunities for improving feeding practices, milk production, and marketing in southern and northeastern Brazil. These initiatives will maximize the potential of local resources — such as pasture lands and forages — to generate new income for dairy producers.

PASTEURIZATION ····► **PROCESSING & PACKAGING** ····► **WHOLESALE** ····► **RETAIL**

Pasteurized Milk

Introduce or upgrade pasteurization technology

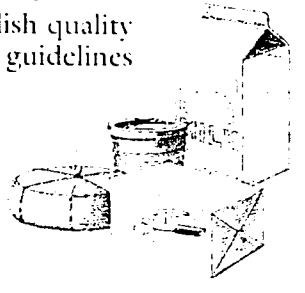


Dairy Products

Improve processing technology

Introduce new or diversified products

Establish quality control guidelines



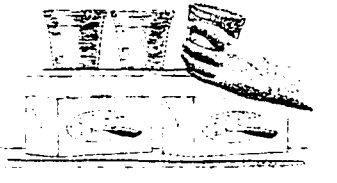
Dairy Products

Establish distribution channels & pricing structures

Dairy Products

Enhance dairy product marketing

Refine distribution channels



NTFP Collectors and Processors & the ANSAB Network

Non-Timber Forest Products Collectors and Processors:

Belize
Guatemala
India
Nepal
Philippines

ANSAB Network:

Bangladesh
China
India
Indonesia
Nepal
Philippines
Sri Lanka
Thailand
Vietnam

Across the developing world, men and women earn their livelihood harvesting and collecting non-timber forest products (NTFPs) — gums and resins, nuts, bamboo and rattan, honey, medicinal and aromatic plants, seeds and spices, tubers and fruits, and wildlife.

Despite a large and lucrative worldwide trade in NTFPs, small-scale collectors and processors receive very little from the sale of their valuable resources. The value added by processing raw materials into such finished products as paints, perfumes, medicines, and furniture is captured by processors and intermediaries who are often located far from collection areas. Low financial return forces collectors to over harvest and encourages the shift to logging or agriculture, with potentially destructive results for local biodiversity and the long-term economic future of small producers.

ATI is helping small-scale NTFP collectors and processors on two continents gain better economic control over their resources by identifying and designing approaches that help overcome economic and logistical obstacles within the context of local cultural practices and tradition. Initiatives are underway in the Humla Karnali River Watershed Area of Nepal, the Garhwal Himalayas of India, West Kalimantan (Indonesia), and the Philippines. With support from the Biodiversity Conservation Network (BCN), ATI has helped launch in Nepal an essential oil distillation facility for oil from jatamansi, juniper berries, sunpati, and titepati. Production of jatamansi oil began in December, 1994. Additional interventions aim to improve market links.

Other BCN funded efforts are examining community processing of oak tasar silk and honey in India; and resins, bamboo, and rattan in Indonesia. In the Philippines, a Ford Foundation grant enables

ATI and local partners to identify interventions in the rattan subsector to increase benefits for the gatherers. Because present practices encourage unsustainable harvesting, the supply of local rattan to the $275 million Philippine rattan furniture and handicraft industry is in serious decline, endangering the livelihoods of 15,000 gatherers and over 100,000 people employed in the processing industry. By helping to promote rattan replanting, group marketing, and first stage processing by gatherer communities, ATI expects to increase rattan supplies as well as income for small-scale gatherers and processors.

To support these initiatives, the Asia Network for Small-Scale Agricultural Bioresources (ANSAB) — a regional network established by ATI and the Government of Nepal as a Nepali-registered NGO in 1992 — has expanded its focus to

NTFP collector in Nepal

encompass a Biodiversity Program Unit. With funding from Canada's International Development Research Centre (IDRC) and the Ford Foundation, the unit disseminates information on biodiversity and natural resource use and examines the extraction, trade, and processing of NTFPs — with the long-term goal of strengthening the capacity of local organizations to commercialize NTFP collection and processing, conserve biodiversity, and monitor relevant socioeconomic effects.

In Central America, ATI was granted a contract by the Inter-American Development Bank (IDB) to design a program for improving collection, processing, and marketing of NTFPs in the ecologically-sensitive Guatemalan Petén.

Jatamansi collectors in Humla

NTFP Collectors & Processors Value Chain ~ Potential Interventions with Essential Oils

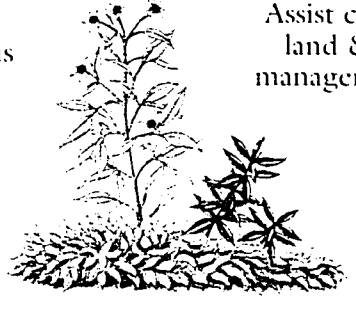
Managed Resource Regeneration

Aromatic Plants

Determine sustainable management practices

Encourage efficient & sustainable harvesting

Strengthen indigenous conservation systems



NTFP Collection

Plant Materials

Organize collection societies or community groups

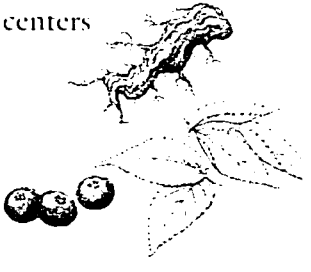
Assist collectors with land & resource management control

First Stage Processing

Dried Plant Roots, Leaves, and Berries

Provide training on proper drying, cleaning, & sorting

Establish collection & pre-processing centers



The program builds on previous work by USAID and Conservation International (CI) and lays the groundwork for value-adding and enterprise-generating initiatives of benefit to 9,000 inhabitants of the central and western portion of the Maya Biosphere reserve, which includes over 40 percent of the Petén.

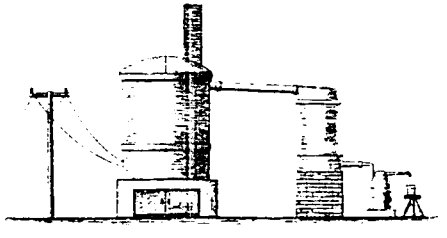
In late 1994, the IDB approved $726,000 for CI to fund the program to support the sustainable extraction, processing, and marketing of allspice, cohune (corozo) palm oil, extracted from nuts of the cohune palm, and potpourri from various wild plants and flowers. The program will help Guatemalan NTFP collectors and processors compete in domestic and international markets, prompting small business creation and economic growth throughout the region.

Second Stage Processing & Marketing

Essential Oils

Establish local distillation processing

Disseminate marketing strategies

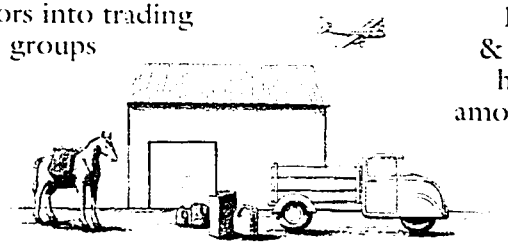


Trade

Essential Oils & Marc

Facilitate access to working capital, transport, & storage

Organize individual collectors into trading groups

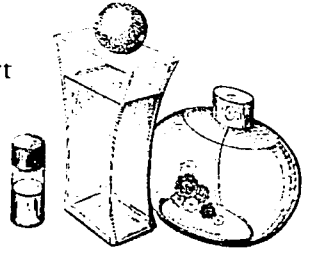


Final Processing & Marketing

Perfumes & Cosmetics

Foster links between collector groups & finished product processors

Promote purchase & use of sustainably harvested NTFPs among finished product manufacturers



TREE CROP FARMERS

ATI's value chain work with tree crop farmers received a large boost in 1994 with the approval of a $1.3 million program in El Salvador aimed at small-scale coffee growers. Funding for the initiative comes from the Inter-American Development Bank (IDB). In conjunction with the Coffee Producers Cooperative Union of El Salvador (UCAFES) and the *Grano de Oro* Coffee Producers Cooperative, ATI was preparing in late 1994 to implement Phase I of the program, which will help 850 producer families raise their incomes and generate more than 2,000 new jobs in a region still recovering from civil war.

This new program will also have a significant environmental impact in El Salvador's eastern region by reducing the water pollution typically associated with coffee production. Rather than simply dump coffee pulp into waterways, as is the usual practice, participating *beneficios* will process the by-product into organic fertilizer for sale back to coffee growers, who will use it to increase productivity. ATI will also promote the use of organic fertilizers and biological pest control.

As a principal Central American export, coffee is critical to most regional economies. The coffee subsector includes more than 230,000 producers, 90 percent of whom are small-scale farmers. It generates

TREE CROP FARMERS VALUE CHAIN—POTENTIAL INTERVENTIONS WITH COFFEE

COFFEE PRODUCTION → **PRIMARY PROCESSING** → **SECONDARY PROCESSING** →

Cherry Coffee

Promote high-value organic & gourmet coffee production

Encourage use of organic fertilizers & biological pest control

Improve farming & farm management practices

Strengthen managerial capacity of producers organizations

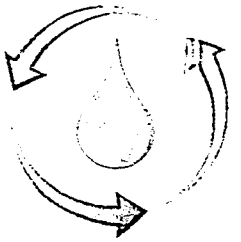
Parchment Coffee

Eliminate or reduce water use for pulping & fermenting

Promote organic fertilizer production from pulp

Introduce waste-water treatment technology

Increase small-scale producers access to processing facilities



Green Coffee

Facilitate drying, dehusking, cleaning, sorting, & bagging

Improve drying through use of cost-efficient, husk-fueled dryers

30 percent of the exports and employs over 25 percent of the Central American labor force.

ATI is targeting similar groups of small coffee producers from other Central American nations with the intent of transforming initial efforts in El Salvador into a regional initiative. ATI has already begun efforts on the Honduran "module" and has plans to include other coffee-producing countries in the future.

Program beneficiaries in El Salvador are typically family farmers with landholdings of fewer than seven hectares who have no other income source; over one third are women.

ATI provides technical assistance and expertise in improved coffee processing techniques, credit portfolio

Coffee producer harvests coffee "cherries".

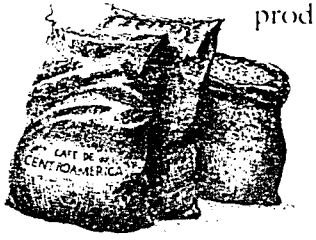
MARKETING → **FINAL PROCESSING** → **RETAILING**

Green Coffee

Provide market information, training, and technical assistance to producers

Establish producer co-op contacts/agreements with profitable domestic and international markets

Promote producer co-op control of national/international marketing



Roasted Beans, Ground Roast Coffee

Improve technology for roasting, grinding, and packing

Assist producers with final product design

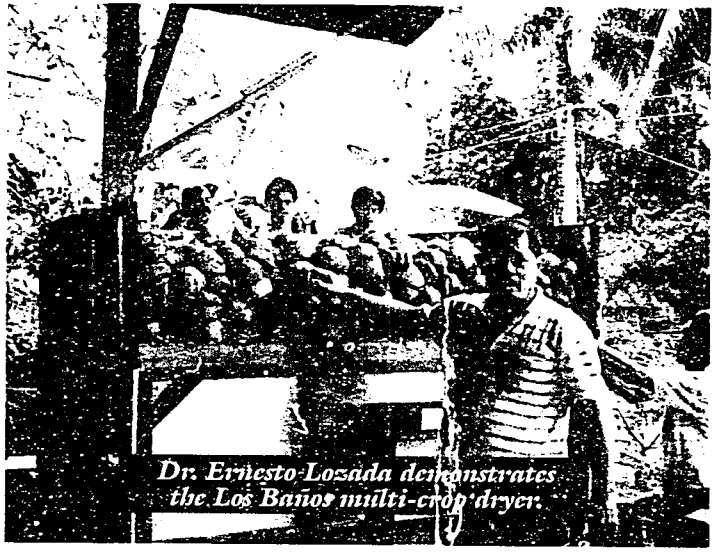
Roasted Beans, Ground Roast Coffee

Promote direct sales by producers to final consumers in importing countries

management, accounting, and marketing to the coffee cooperatives, who will in turn provide services to their small producer membership. By improving access to credit, training, effective marketing, and value-adding post-harvest handling and processing techniques, ATI and its Salvadoran partners will help position small-scale coffee producers to compete more effectively in both domestic and international markets.

ATI has also begun to investigate the applicability of similar value chain solutions for small-scale cocoa producers. As a crop, cocoa bears many similarities to coffee production — both with respect to agricultural practices and the level of small producer involvement.

In the Philippines during 1993-1994, ATI continued working with Filipino coconut processors to develop better production and processing methods. Building on previous success with improved "fresh-dry" coconut oil processing, ATI is beginning efforts to promote increased utilization of coir, the fibrous product derived from coconut husks.



Dr. Ernesto Lozada demonstrates the Los Baños multi-crop dryer.

Although processed coir and its byproducts are used throughout the world in a wide range of products including brushes, twine, and upholstery materials, coconut husks are usually discarded by small-scale Filipino producers, who lack access to processing facilities and links to profitable markets. Given the economic potential of coir products, ATI expects to secure funding to establish small producer links to coir processing facilities.

Along with the University of the Philippines at Los Baños, ATI has been promoting coconut processing improvements in demonstrations and workshops throughout the Philippines, including Palawan, Marinduque, and Southern Leyte.

The results are encouraging: two producer groups are establishing coconut oil mills and a third group is launching a cooperative trading program to market high-quality copra produced in improved dryers. Other interested parties are finalizing business plans and seeking funding packages for coconut oil mills, a coir processing plant, and a *nata de coco* production facility.

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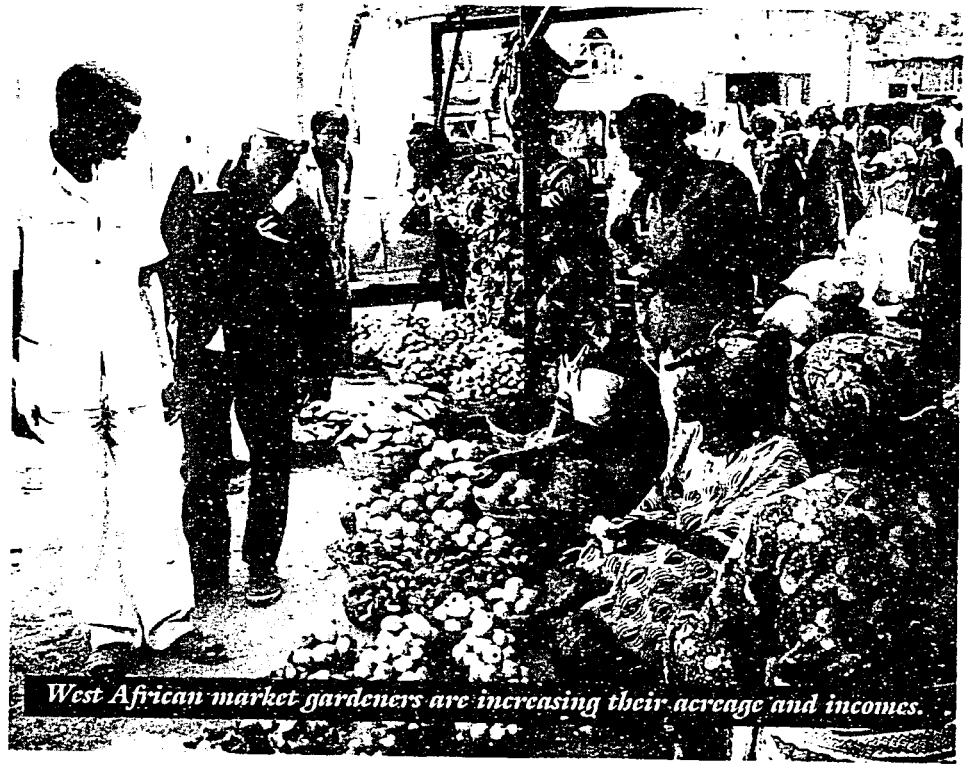

West African market gardeners are increasing their acreage and incomes.

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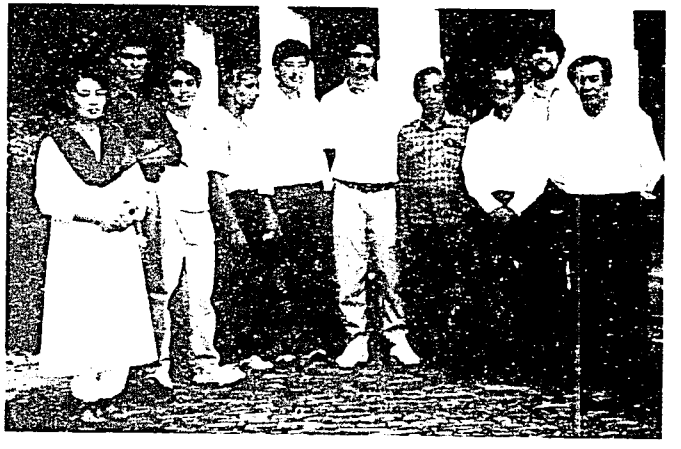

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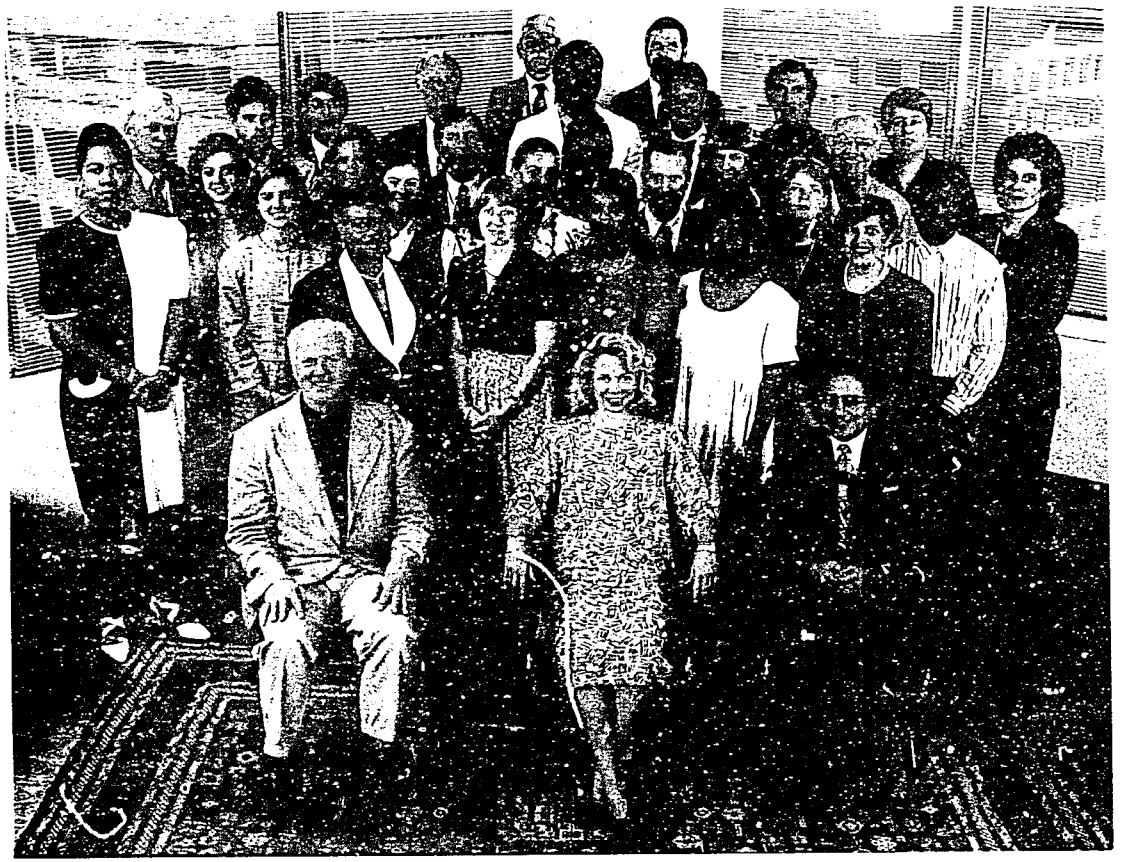

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Cooperative Agreement DHR-5455-G-0-1027-00 (Leveraging Fund)
USAID Africa Bureau, Office of Operations and New Initiatives (AID/AFR/ONI)
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Development Alternatives International (DAI), USA
Entrepreneurial Extension Center (EEC), Jamaica
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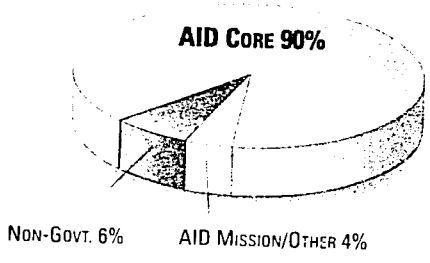
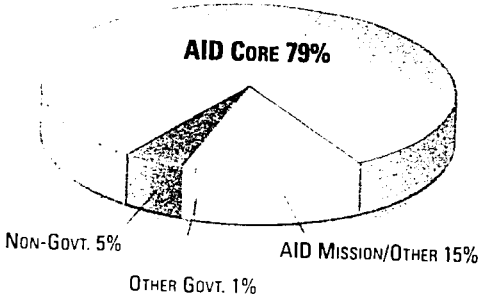
ATI's Leveraging Success Augments Impact of AID Core Support

1990



$2,973,559

1991



$3,605,379

Environmental Resources Management, Inc. (ERM), USA
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Food Industry Crusade Against Hunger (FICAH), USA
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Foundation for Development Assistance (Codespa), Spain
Ford Foundation, USA
Global Action, Japan
Inter-American Development Bank (IDB)
International Development Research Centre (IDRC), Canada
International Fund for Agricultural Development (IFAD)
Lutheran World Relief (LWR), USA
McKnight Foundation, USA
Nathan Associates, Inc., USA
Netherlands Development Finance Company, Ltd. (FMO), Netherlands
Netherlands Ministry for Development Cooperation, Netherlands
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Small Industries Development Bank of India (SIDBI), India
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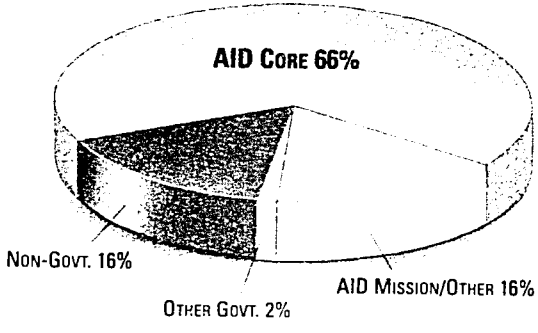
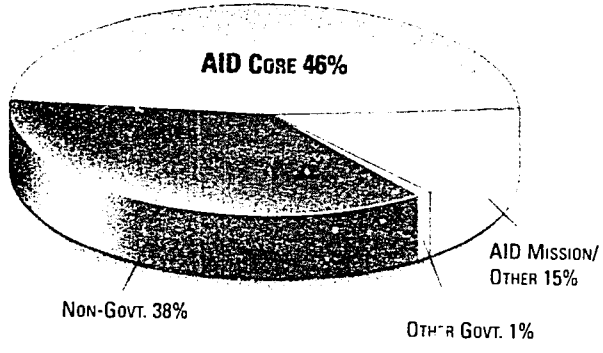
United Nations Commission for Human Settlement (UNCHS HABITAT)
United Nations Development Programme (UNDP)
United Nations Development Fund for Women (UNIFEM)
United Nations Environment Program (UNEP)
United Nations Industrial Development Organization (UNIDO)
World Bank

1992



$4,491,492

1993



$6,724,422

LAST WORDS

Sustainable development that creates chains of enterprise, respects the environment, and enlarges the range of freedom and opportunity over generations should be pursued as the principal antidote to social disarray.

J. BRIAN ATWOOD
ADMINISTRATOR, USAID

The most difficult of international development tasks is working with the built-in desire to have a better life; that is what development is all about. You can't develop anybody, people develop themselves.

MARGARET CATLEY-CARLSON
PRESIDENT, THE POPULATION COUNCIL, AND FORMER HEAD, CANADIAN INTERNATIONAL DEVELOPMENT AGENCY

Dedicated to Bill Watson (1954-1994)
by his friends and colleagues at ATI

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