

2006-2007 GL-CRSP KEY ACHIEVEMENTS

GL-CRSP ACHIEVEMENT STRATEGY

The Global Livestock Collaborative Research Support Program (GL-CRSP) supports two major initiatives affecting future international development planning: the President's Initiative to End Hunger in Africa (IEHA) and the USAID Agriculture Sector Strategy (AgSS). All GL-CRSP project activities are structured to incorporate IEHA and AgSS objectives in addition to the research and development and capacity building activities unique to the CRSP model.

Initiative to End Hunger in Africa. The President's Initiative to End Hunger in Africa (IEHA) is a multi-year effort to help achieve the Millennium Development Goal of halving the number of hungry people on the continent by 2015. The initiative focuses on promoting agricultural growth and building an African-led partnership to cut hunger and poverty. The primary objective of the initiative is to rapidly and sustainably increase agricultural growth and rural incomes in sub-Saharan Africa.

The initiative has six focal themes:

1. Science- and technology-based solutions and innovations, developed for agriculture, contribute to agricultural growth by increasing the productivity and profitability of food and export products and decreasing risks.
2. Efficient agricultural trade and market systems contribute to agricultural growth by raising African competitiveness in export and domestic markets, connecting African farmers to consumers and integrating African countries into global markets.
3. Developing human capital, infrastructure, and institutions is a fundamental building block of agricultural growth.
4. Environmental management contributes to agricultural and rural sector growth through the conservation and production of environmental goods and services that generate public and private economic benefits.
5. Community- and producer-based organizations contribute to agricultural growth by providing a wide variety of business, training, and leadership development services, and a political voice to the economic interests of farmers, who are normally too poor and too scattered to be heard.
6. Integrating vulnerable groups and countries in transition into sustainable development processes recognizes that hunger and poverty are not immutable issues but are often human-made problems to which human-made solutions may already exist.

USAID Agriculture Sector Strategy (AgSS). The USAID/EGAT Agriculture Sector Strategy (AgSS) is based on the Agency's 2003 policy document entitled Foreign Aid in the National Interest. The document emphasizes the importance of targeting the smallholder by addressing policy reform, expanding participation in global trade, and improving market and rural finance systems. These objectives are achieved through improved education, better information systems, sustainable use of natural resources, more environmentally sound agricultural systems and improved support for research and application of agricultural technologies.

The AgSS has four strategic directions:

1. Mobilize science and technology and foster a capacity for innovation to reduce poverty and hunger.
2. Expand global and domestic trade opportunities and improve the capacity of farmers and rural industries to act on them.
3. Bridge the knowledge divide through training, outreach, and adaptive research.
4. Promote sustainable agriculture and sound environmental management.

The GL-CRSP has developed a project portfolio addressing the IEHA themes and AgSS directions by integrating project research and development activities with Agency objectives and indicators. The GL-CRSP 2006-2007 portfolio is comprised of 11 research and development projects focusing on critical topics related to the broader definition of animal agriculture, including, but not limited to: human health and nutrition, poverty reduction, risk management, natural resource management, and zoonotic disease characterization, prevention, and response.

2006-2007 GL-CRSP PROJECT PORTFOLIO

Avian Flu School Train-the-Trainer Program (AFS). AFS is a multi-tiered, train-the-trainer program designed to educate animal health, public health, and agricultural extension workers about H5N1 highly pathogenic avian influenza (HPAI), enabling them to deliver this information at the community level in developing countries.

Enhancing Child Nutrition through Animal Source Foods Management Project (ENAM). In response to the primary constraints to the quality of young children's diets, the ENAM project is implementing micro-credit programs and entrepreneurial and nutrition education interventions in three regions of Ghana and is assessing their effect on income, Animal Source Food (ASF) expenditures, and children's ASF intakes and nutritional status.

Gobi Forage Livestock Early Warning System Project (GOBI). The Gobi Forage project was initiated in 2004 to adapt Livestock Early Warning System (LEWS) technologies developed by the GL-CRSP in East Africa for Mongolia to improve risk management by herders and other stakeholders in the Gobi Region of Mongolia.

Health for Animals and Livelihood Improvement in the Rungwa-Ruaha Ecosystem, Tanzania Project (HALI). The HALI project was established in 2006 as a stakeholder-driven research and capacity-building program to assess the effects of zoonotic disease and water management on animal health, biodiversity, and livelihoods in the Ruaha ecosystem, Tanzania.

Increasing Animal Source Foods in the Diets of HIV-Infected Kenyan Women and their Children Project, HIV Nutrition Project (HNP). HNP is researching the use of food as means of enhancing and preserving the immune status, lean body mass and quality of daily living of drug-naive HIV-infected women, and to support the growth, health and cognitive development of their vulnerable children in the Turbo Division of Uasin Gishu District in Kenya.

Livestock Information Network and Knowledge System for Enhanced Pastoral Livelihoods in East Africa Project (LINKS). The LINKS project developed from the GL-CRSP Livestock Early Warning System (LEWS) project, which established and applied a suite of technologies to provide a regional decision-support framework for livestock early warning. The LINKS project is placing LEWS technology inside a broader livestock information and analysis system that is designed to improve livestock markets and trade, thereby enhancing the well-being of pastoralists in eastern Africa.

Livestock Trade in Ethiopia and Kenya Project (LiTEK). The LiTEK project was developed to synthesize results of recent research about livestock marketing in eastern Africa. The project produced the book, *Pastoral Livestock Marketing in Eastern Africa: Research and Policy Challenges*. It is currently documenting results of the PARIMA project's research for a manuscript to be published in 2008.

Improving Pastoral Risk Management in East African Rangelands Project (PARIMA). The PARIMA project was established in 1997 and conducts research, training, and outreach in an effort to improve welfare of pastoral and agro-pastoral peoples with a focus on northern Kenya and southern Ethiopia. Foundation concepts include the exploration of opportunities to better diversify incomes and assets and how to improve access to natural resources, information, and various public services.

Sustainable Management of Rural Watersheds: Biophysical, Livestock, and Human Interactions in the River Njoro Watershed (SUMAWA). The SUMAWA project is a multidisciplinary research effort focusing on biophysical, livestock and human-related factors governing watershed processes for the purpose of improving long-term sustainability of rural watersheds in Kenya and East Africa. Recent project activity has focused on building models of the biophysical and human dimensions of the watershed as they relate to watershed and human health and sustainability. Two projects build on past SUMAWA research: Development and Marketing of Point-of-Use Household Filters for Drinking Water Improvement (**POU-WID**) and Water and Sanitation-Related Conditions and Disease Burdens in the River Njoro Watershed (**NJORO WATER**).

Pastoral Engagement, Adaptation, and Capacity Enhancement Project (PEACE). The PEACE project is focused on the development of the Afghan livestock sector by supporting policy planning, pastoral land tenure conflict resolution, and introduction of GL-CRSP LEWS and LINKS technologies to improve rangeland management and livestock production and marketing. The project will also help build capacity of the Afghan government personnel responsible for planning and implementing livestock development and rangeland resource management.

Grazinglands and Greenhouse Gases Project (3G). Resulting from research conducted by the completed GL-CRSP projects Livestock Development and Rangeland Conservation Tools for Central Asia (LDRCT) and Co-Benefits of Grassland Regeneration of Abandoned Wheat Areas for Carbon Sequestration, the 3G project is producing a scientific volume that helps managers and development agents to incorporate rangeland and pasture conservation and management projects as candidates for generation of credits.

KEY ACHIEVEMENTS

The GL-CRSP utilizes demand-driven research focused on a problem model while simultaneously forming necessary collaborations and partnerships to implement sustainable solutions and address core development issues specific to project areas. GL-CRSP projects have integrated research and development activities that incorporate IEHA themes and AgSS strategic objectives and indicators as they pertain to: agriculture enabling environment, applied research and technology, biodiversity, biotechnology, capacity building, community mobilization, conflict mitigation, food security, gender, higher education, HIV/AIDS, micro-enterprise, policy, and water.

Key achievements from 2006-2007 in these areas include the following:

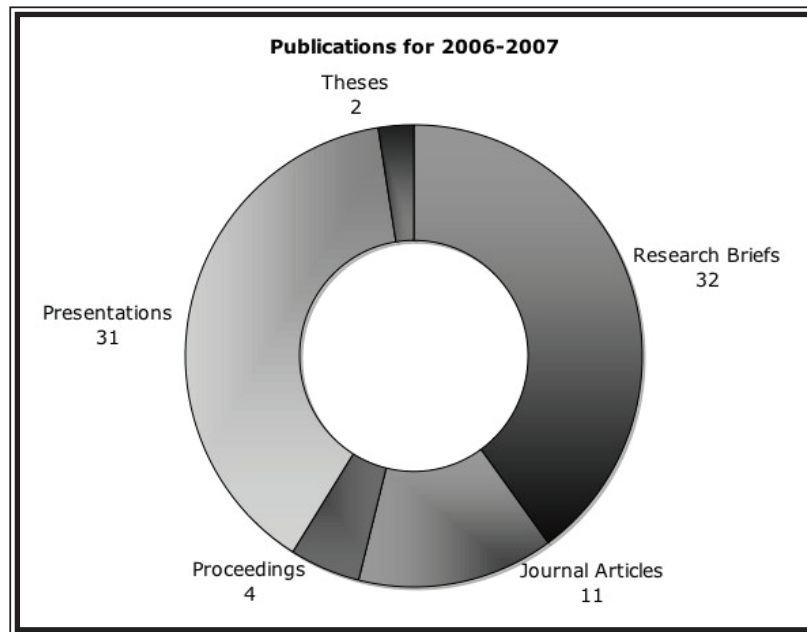
AGRICULTURE ENABLING ENVIRONMENT

- In Tanzania, a total of 184 community leaders and public officials received Avian Flu School (AFS) training on poultry vaccination for Newcastle disease and the benefits of improving poultry health. Trainings on the recognition and early reporting of avian flu have fostered new strategies for veterinary extension, including strategies for increasing poultry vaccination, thereby improving poultry production.
- From 2006-2007, 28 pastoral households participating in the HALI project benefited from interventions of tuberculosis testing in livestock herds and disease counseling to improve the health of

their livestock. These households are heavily reliant on livestock for both subsistence and income, and the identification of bovine tuberculosis in the area represents a significant threat to herd health and productivity.

APPLIED RESEARCH AND TECHNOLOGY

- The LINKS project is actively developing water resource monitoring tools as part of its Livestock Early Warning System (LEWS) to aid pastoral communities on the availability of water. These activities will enhance the capacity of pastoral communities to make decisions on migration and



minimize the likelihood of competition over water resources. For 2006-2007, the LINKS project trained 171 market monitors - 86 from Kenya, 51 from Ethiopia, and 34 from Tanzania. LINKS has also established a steady SMS (Short Message Service) text message-based reporting flow from 14 markets in Kenya, 15 markets in Ethiopia, and 14 markets in Tanzania.

- Since January 2007, weekly radio bulletins have been broadcasted using GOBI Forage LEWS/LINKS technology to provide information to herders on current and forecast forage conditions and drought prediction information by natural zone and soum. The target audience is estimated to be approximately 520,000 rural listeners distributed over the eight aimags in which GOBI Forage is active.

BIODIVERSITY

- The GOBI Forage Technology Suite covered over 75,000,000 hectares in 2006-2007 throughout eight aimags in Mongolia, representing a significant range of biodiversity potential for conservation, including critical habitat and plant species. Stakeholders use Gobi Forage products to reduce the number of animals grazing during drought periods, thereby decreasing potential losses in plant species biodiversity.
- HALI researchers have identified bovine tuberculosis in both wildlife and livestock in the Ruaha ecosystem, one of the largest intact conservation areas remaining on the African continent. An accurate assessment of diseases that threaten the persistence of key species, such as buffalo and lion, is essential for informing policy and management strategies to conserve the unique biodiversity of this region.

BIOTECHNOLOGY

- The Avian Flu School utilizes technologies such as the FluDetect test kit, a rapid antigen detection kit for birds, developed through biotechnology research. In the period 2006-2007, 152 animal health and human health professionals in Uganda, Kenya, Tanzania, Djibouti and Ghana were trained

in using the FluDetect test kit to incorporate it into their early detection program in the field.

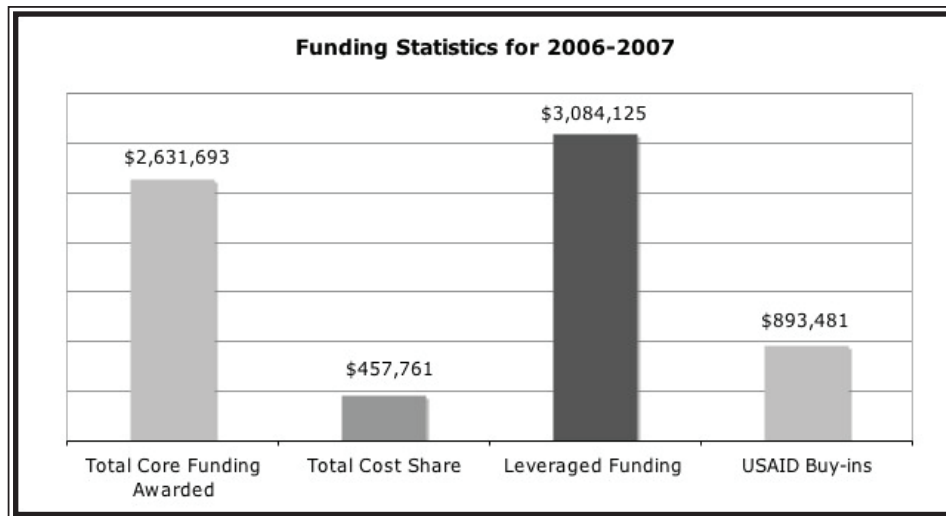
- The HALI project has introduced new immunomagnetic separation techniques allowing researchers to detect a high number of parasites in a river used heavily by people and livestock. The project is also employing immunofluorescent antibody staining techniques to test for the presence of these parasites in wildlife and livestock fecal samples to determine if these parasites are the same as those found in water sources. These technologies serve to inform Tanzanian water management agencies of the presence of harmful bacteria, greatly enhancing aid efforts to improve access to clean water for rural Tanzanians.

CAPACITY BUILDING

- The LINKS project has been supporting training programs at the policy, market/trader and producer/community levels to build the capacity of users to access, interpret and utilize the market information for decision-making. Approximately 5,687 individuals participated in market information system user capacity trainings at the national, regional, and local levels during 2006-2007.
- Through its national-level (Tier I) Train the Trainer program, the AFS trained 134 avian flu prevention and response instructors in the ministries of animal health, public health, agriculture and faculties of veterinary medicine in Nigeria, Kenya, Tanzania, Uganda, Ghana, and Djibouti. At the district level (Tier II), in Tanzania and Djibouti, 178 people were trained, while 184 Tanzanian villagers and community leaders received training at the village level (Tier III). Nearly 500 individuals received AFS training in year 2006-2007.

COMMUNITY MOBILIZATION

- The period 2006-2007 has proven to be yet another active and sustainable year for the 60 collective-action/micro-finance groups that have formed in southern Ethiopia since 2001, as part of PARIMA. This model of collective-action/micro-



finance has been adopted throughout the Oromia State of Ethiopia and extended to communities in the region. Total membership currently stands at 2,085, and the groups have merged into legally recognized cooperatives.

- The ENAM project community mobilization processes have included the formation of 35 community Credit and Savings Associations based on shared values and trust, the independent development of group bylaws and leadership capabilities, and communal activities. Association members have assisted each other in initiating communal activities, such as building smoking ovens and pooling resources for feed preparation for poultry operations.

CONFLICT MITIGATION

- The Intergovernmental Authority on Development (IGAD) in Eastern Africa Conflict Early Warning System (CEWARN) utilizes the LEWS forage early warning system technology for identifying areas of forage deficiency as a potential resource-based conflict indicator. LEWS technology was incorporated into CEWARN in 2006-2007. CEWARN serves as the basis for initiating interventions for conflict prevention and mitigation throughout the Eastern Africa region, including the conflict ridden and volatile Horn.

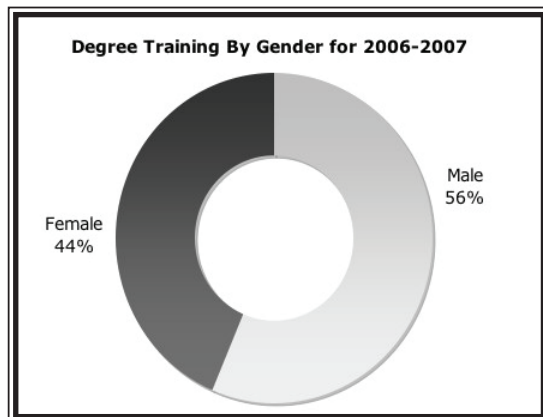
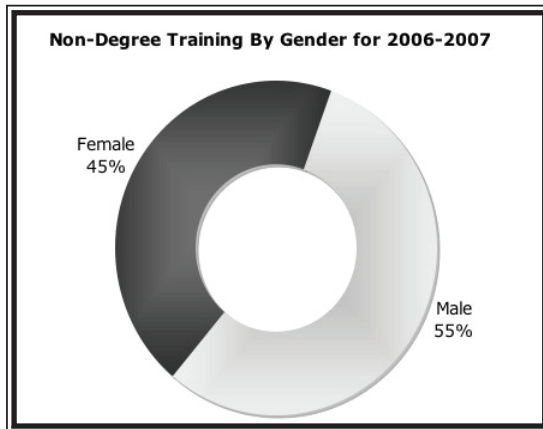
- In order to characterize natural resources and understand the elements of cross-border conflict along the Ethio-Kenya border, PARIMA interviewed over 200 pastoralists and mapped the area using GPS technology. Findings indicate that pastoralists have traditionally moved across the border in search of forage areas during dry periods, and such movements, and therefore livelihoods, are threatened by border conflicts and require the attention of research and development specialists and policy makers.

FOOD SECURITY

- Preliminary results of the HNP Food Security Assessment of 31 HIV-infected Kenyan women and their children indicated that about half of the households had no source of income and relied on self-sustenance, or good will, for food. The majority could not afford three meals per day and consumed monotonous diets with little animal source foods. Over 75% reported no intakes of egg, meat or fish within the past 24 hours.
- The ENAM project has identified variation in food scarcity patterns in Ghana. Food shortages peaked during April-June, the primary rainy season in Ghana. The overall prevalence of food shortages was highest in the northern Guinea Savannah during this period, demonstrating the importance of targeting interventions by region and season.

GENDER

- Informal education training sessions were held monthly in ENAM's project communities, with a total of 3,596 female and 59 male attendees. The micro-credit intervention reached 163 women. In addition, six professional women and eleven professional men were trained by Freedom from Hunger on implementing their "Credit with Education" program.
- Milk marketing is predominately a female task in Ethiopia. Therefore, it is noteworthy that women are the primary leaders of the 60 collective-action/micro-finance groups that have formed in southern Ethiopia since 2001 as part of PARIMA. Women also represent 79% of the cooperatives' 2,085 total members.



- Water treatment in the Njoro River watershed in Kenya is generally a female gender-specific role. Therefore, the POU-WID project's successful introduction of BioSand water filters (BSF) as a sustainable water treatment technology has greatly impacted gender and labor roles at the household level, where men have increased their involvement with water-related chores due to filter appreciation, including taking responsibility for re-filling the filters.

HIGHER EDUCATION

- The ENAM project and its partners developed a course titled "Nutrition, Sustainable Livelihoods and Extension" to be offered by the Department of Nutrition and Food Science at the University of Ghana, Legon. This multi-disciplinary course is designed for students who plan to work in the area of community-based nutrition.
- Six advanced degrees (three M.Sc.s and three Ph.D.s) were awarded to Ethiopian and Kenyan students supported by the LINKS, PARIMA, and SUMAWA projects in the fields of Range Science, Range Management, Hydrology, and Human Ecology during the period 2006-2007. The students completed their degrees at the University of Nairobi and Egerton University in Kenya, Alemaya University in Ethiopia, and Hebrew University in Israel with support from Texas A&M University, Utah State University, and the University of Wyoming.

HIV/AIDS

- The HIV Nutrition Project (HNP) is evaluating the effect of protein quality and micronutrients in meat on the health and nutritional well-being of women living with HIV in rural Kenya and the health and development of their children. Thirty-one women participated in the Phase I Food Security Assessment, eighteen women and nineteen children were enrolled in the Phase II Preliminary Trial, and 88 families have been identified for the main nutrition intervention study.

MICRO-ENTERPRISE

- Three micro-credit loan cycles through the 35 ENAM project Credit and Savings Associations were completed with 100% repayment of loans. Interviews with 206 participants and their control households showed that women who engaged in Animal Source Food (ASF)-related Income Generating Activities (IGA) earned, on average, 3.5 Ghanaian Cedis (one U.S. Dollar ~ one Ghanaian Cedi) more per week than women engaged in IGA unrelated to ASF, a statistically significant amount. Diversity of ASF in the diet increased when mothers had an ASF-based income generation activity.
- The original 60 collective-action/micro-finance groups that have formed in southern Ethiopia as part of PARIMA have merged into legally recognized cooperatives. As of September 2007, cumulative savings on investments in livestock trading and other small-business activities equaled USD \$93,344. Internally extended loans over the past five years total 4,527 with a cumulative value of USD \$558,989 and a 100% repayment rate.

POLICY

- Livestock market information systems and early warning technologies developed by the LINKS/LEWS (Livestock Network and Knowledge System/ Livestock Early Warning System) projects provide the basis for a National Livestock Market Information System (NLMIS) currently operating in Kenya. These technologies are also being adopted as part of a NLMIS program in Ethiopia, representing the integration of regional and transnational livestock markets in East Africa and providing policy support for natural resource management, market efficiency, and livestock monitoring.
- Following the Avian Flu School (AFS) briefing and training of community leaders and local government officials in Tanzania, the district of Iringa formulated and adopted a new policy to make Newcastle disease vaccination and improvement of poultry health a priority for development. A district-wide Newcastle disease vaccination program has since been implemented.



WATER

- Diminishing lake levels in Lake Nakuru, Kenya, a primary water source for irrigation and household drinking water in the nearby town of Nakuru, threaten both agricultural and ecological sustainability, as the lake provides critical habitat to a number of keystone species. The SUMAWA/NJORO WATER project developed a water budget model for the lake and River Njoro to understand the balance between upstream surface and groundwater sources in sustaining lake levels. This model enhances the capacity of managers and policy makers to make critical decisions on water resource management.
- Further results of the POU-WID (Development and Marketing of Point-of-Use Household Filters for Drinking Water Improvement) project's investigation into the use of BioSand Filters (BSF) in 60 Kenyan households showed significant improvements in water quality, reductions in incidence of childhood diarrhea, and high levels of satisfaction and sustained use of the filters. At the end of the trial, 47 of the 60 households chose to purchase the BSF, including 23 of the 30 control households. As a result, the health and well being of 235 vulnerable people in the Njoro watershed have now been protected from drinking and using contaminated river water through the purchase and use of the BSF.