The Chilling Hub Model and Social Capital in Dairy Value Chain Development

A Case of Heifer International in Kenya

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Table of Contents

List of Acronyms iii
ACKNOWLEDGEMENTS iv
FOREWORD v
EXECUTIVE SUMMARY 6
1.0 INTRODUCTION 9
   1.1 Origins of the Hub Model 11
   1.2 About Heifer International (HPI) 14
   1.2.1 About Heifer International in Kenya (HPI-K) 14
   1.2.2 How Heifer “Places” a Cow with a family 15
   1.2.3 Escape from Poverty by the Productivity of a Cow 16
   1.2.4 From Lifting Families out of Poverty to Transforming Rural Communities 17
2.0 THE SIONGIROI PILOT PROJECT 18
   2.1 Challenges 18
   2.2 Solutions 19
   2.3 Ownership Structure 20
   2.4 Business Start-Up 21
   2.5 Operations 21
   2.6 Scaling Up Phase 21
   2.7 Conclusions of the Pilot Projects 22
3.0 LAYING THE FOUNDATIONS OF SOCIAL CAPITAL 23
   3.3 Conclusions re Social Capital 23
4.0 BUILDING A PROFITABLE ENTERPRISE 30
   4.1 The Challenges of Milk Collection and Chilling Plant Operations 30
   4.2 Profitable Enterprise 32
5.0 COMMUNITY BENEFITS OF THE HUB MODEL 33
6.0 THE EAST AFRICA DAIRY DEVELOPMENT PROJECT 35
7.0 EXIT STRATEGY 37
   7.1 The Kenya Dairy Farmers Federation (KDFF) 37
8.0 CONCLUSIONS AND IMPLICATIONS OF THE HUB MODEL 39
9.0 REFERENCES 41
List of Acronyms

ABS-TCM  African Breeders Service – Total Cattle Management
AI  Artificial Insemination
BOD  Board of Directors
BMGF  Bill and Melinda Gates Foundation
CH  Chilling Hub (Milk collection, chilling, bulking and marketing business)
FAO  Food and Agriculture Organization of the United Nations
GOK  Government of Kenya
HI  Heifer International
HPI-K  Heifer International (Kenya)
KCC  Kenya Cooperative Creameries
KDFF  Kenya Dairy Farmers Federation
NALEP  National Agriculture and Livestock Extension Program
TNS  Technoserve (an American NGO)
USAID  United States Agency for International Development
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Our sincere appreciation also goes to the donors who believed in our proposal to test the model. Specifically USAID and Heifer International –USA for funding the initial pilot project under the Siongiroi Dairy Project (1996 to 1999) and the scaling up phase of the next 3 Dairy Plants (Chilling Hubs) (2000 – 2003). The Government of Kenya (GOK) participation in the interventions gave HPI-K program the impetus to continue its dairy value chain program with other stakeholders in developing the rural areas of Kenya. The East African Dairy Development Project (EADDP) funded by Bill and Melinda Gates Foundation (BMGF) is a true testimony of the potentiality, replicability as well as validation of the hub model and its impact amongst the smallholder producers. We thank the Foundation for funding this expansion and validation phase of the dairy value chain system.

HPI-K deeply appreciates the efforts of partners TechnoServe Inc., African Breeders Service Total Cattle Management (ABS-TCM) for their role in the development of the Milk Chilling Hubs particularly during the Pilot phase of the model in Siongiroi Division. Many private sector players notably milk processors (New KCC and Brookside Dairies), mainstream banks and Micro-finance Institutions, milk transporters, Animal Health service providers, insurance companies and many others are deeply acknowledged for their immense role in making the hub model work for the poor.

Many thanks also go to the thousands of dairy farmers who came together (with a unity of purpose) to determine their own destiny with that of their generations to come. The strength of Dairy Farmer Business Associations (DFBAs) and Kenya Dairy Farmers Federation (KDFF) will enable them to play their respective roles with other dairy value chain actors. We wish them all well for now and in the future.

Sincerely,

Alex Kirui
Heifer International - Kenya
FOREWORD

Heifer International – Kenya (HPI-K) is a branch office of Heifer International (HPI) USA whose mission is to fight hunger and poverty while caring for the earth. HPI-K started operations in Kenya in 1981. Its initial focus was to address malnutrition especially amongst the children and the elderly in the low milk production regions (Western, Nyanza and Coast) of Kenya. The projects implementation strategy was and still is the placement of high grade producing livestock mainly dairy cattle and goats to poor families to produce milk for home consumption and surplus to generate family income. HI-K also puts strong emphasis on training appropriate to the type of livestock enterprise being implemented. Besides dairy cows and goats, HPI-K has diversified its interventions to include camels, meat goats, oxen, donkeys, beekeeping, livestock marketing and milk marketing in appropriate areas of Kenya.

However, during the course of its projects implementation, HPI-K foresaw an emerging challenge of marketing surplus milk. The milk marketing challenge was already evident in regions of surplus milk production mainly Rift Valley and Central Kenya. This was because of the collapse of the Kenya Cooperative Creameries (KCC) in the 1990s followed by the liberalization of the agricultural sector leaving farmers at the mercy of exploitative middlemen. Dairy farmers sought help from development actors including HPI.

When HPI-K with other development partners and collaborators started intervening in the dairy value chain, little did it know that the milk bulking and chilling plants would transform dairy farmers beyond just addressing the milk marketing challenges. Now it is evident from this case study that the Milk Chilling Hub can transform rural development and create opportunities for increased private sector participation in addition to the many employment opportunities created by the model. An in-depth study will have to be carried out to unearth the impact ramifications of CH model amongst the rural population in the future.

The Hub Model continues to shape HPI’s approach to enterprise development strategy and overall approach to transforming communities for sustainable livelihood. To date, a total of 21 Hubs are operational in Rift Valley and Central Kenya serving well over 110,000 smallholder dairy farmers with milk marketing, animal health, farm input supplies, financial services and medical insurance amongst many other vital services. The private sector is thriving in these areas bringing forth services required by all value chain actors, principally farmers, close to their door steps. The dairy value chain sub-sector is now self driving and sustaining in the 21 Hubs. HPI-K will continue strengthening/developing the CHs in Kenya until it reaches where all areas of Kenya where the opportunity is significantly wanting.

This case study emphasizes the importance of Social Capital in driving meaningful change amongst the rural poor. Principles and concepts applied to ensuring a successful CH can apply to other enterprises too. It is hoped that other development actors (focusing on other enterprises apart from Dairy and Livestock) will be able to use the lessons and principles of this case study to drive meaningful and lasting change in their focus enterprise areas.

The hub model and social capital approach has enabled HPI-K to sustainably demonstrate the concept of moving families from point A to B and finally to C. Poor rural families are at point A when they rely on others for survival such as entitlement from relatives and well wishers. They will move to point B when they receive livestock and training from HPI-K. At this point they can produce substantial amount of food and income from their own labor. They will be supported to enter into market with their surplus produce and enroll in social networks for development of marketing services. The social networks will develop marketing hubs where other services are provided in support of increased production. As a result of improved and sustained incomes, they increase their consumption of goods and services, thus moving from subsistence to substance. These families will be at point C in their development continuum. HPI-K will exit and leave the families to steer their own course of economic and social development in partnership with private sector businesses.

Alex Kirui
Heifer International - Kenya
The Hub Model was developed based upon farmer owned and managed milk collection and chilling centers in remote rural areas of Kenya. It is an approach to small farm and rural development that utilizes a profitable agribusiness center operating at a significant scale to support a network of businesses delivering supplies and services to the farmers who supply a commodity to the core marketing enterprise. Starting with a single enterprise, a milk collection and chilling center, a Hub supports and sponsors multiple enterprises that deliver farm supply and other services to the community. The core business must be sufficiently profitable to justify shareholder investment. The commitment of shareholders to be reliable suppliers is a key to success. The Hub Model secures this commitment of dependable and trustworthy shareholder-suppliers through a variety of business strategies and social relationships that serve the interests of both suppliers and the Hub. A strong network of social relations built upon mutual trust and commitment is often referred to as “social capital.” With a solid foundation of social capital and a well-managed, viable business at the core, a Hub becomes a transformative power for both small farm and rural community development.

Kenya has a long history of dairy development going back to the introduction of the first purebred dairy cows more than a century ago. Since that time, many supporting institutions in the areas of research, breeding, and animal health have been established. Many ethnic groups in Kenya have a tradition of keeping cows for meat and milk. The cow is generally associated with status and prestige in these communities. This traditional love and appreciation for livestock in general, and the milk cow in particular, helped motivate Kenyan smallholder farmers to adopt improved breeds and learn the basics of a more modern approach to dairy farming. The dairy cow is a substantial asset to a small farmer, providing daily nutrition, cash income, manure to enrich the soil, and offspring for sale. With improved genetics, better husbandry, and integration of livestock waste into an improved farm management system, a dairy cow can literally lift a family out of poverty.

In the 1960’s smallholder dairying in the highlands became a very significant source of income and nutrition for the rural poor. With Government of Kenya (GOK) support for milk marketing through Kenya Cooperative Creameries (KCC), some areas of the highlands were motivated to produce a large surplus of milk for processing. Unfortunately, when the dairy sector was liberalized in 1992, parastatal KCC failed to adapt. Mismanagement and corruption ensued, and small farmers were not paid for the milk they delivered. KCC collapsed in 1998, owing billions of shillings to small farmers that have never been repaid. This discouraged the smallholder dairy farmers, who turned to other activities in search of income, and lost interest in their dairy cows. Milk production fell dramatically. Many smaller milk processors sprang up to take the place of KCC, creating a new dynamic and competitive milk market. But it was difficult for remote rural areas to deliver to these new smaller dairies, who lacked the collection capacity of KCC.

Some limited success of farmer owned and managed milk collection, bulking and chilling centers that were sponsored by the GOK and donor projects in the past helped Kenyan smallholder farmers see the potential benefits of managing their own milk marketing. However, farmers in Kenya were skeptical of cooperative business models because of past experience of mismanagement and corruption. With long term support from Heifer International in Kenya (HPI-K), the viability of this type of business model has been re-established, based upon farmers investing their own funds, and taking ownership of the business. The foundation of a successful farmer owned and managed business of any kind is individual and group investment of both financial and social capital. Building social capital within and among farmers groups is as important for long term success as developing a viable business with good governance and professional management. Building social capital requires a true grassroots effort to give all participating farmers the sense of ownership of the business that makes them take an active interest in how it is managed for their benefit.

Perhaps the most significant accomplishment of the Hub Model is the demonstration of how to build durable, effective farmer organizations that are capable of managing a business for the benefit of all their members. The business and technical management skills required to run a Hub can be outsourced to professionals. But the social capital that makes for fully functional and enduring farmer organizations must come from the farmers themselves.

The core business of a Hub must have a solid economic basis and show consistent profitability to repay the commitment of its farmer-shareholders. It must be managed with a consistent focus on building trust with its suppliers and shareholders. Because of the relatively well developed milk processing industry in Kenya,
it is possible for milk collection centers with sufficient milk volume to enter into contracts with processors. A farmer-owned milk collection center with 6,000 liters per day capacity is small, but can be profitable with fair processor contracts. Larger centers can collect 20 to 30 tons of milk per day, and are able to negotiate longer term contracts at more favorable prices. With higher levels of milk intake, the collection center becomes more profitable, and is able to save and invest to increase milk handling capacity, build new facilities, pay dividends to shareholders and undertake additional projects. Secondary businesses that support the dairy farmer, such as an agro-vet shop for livestock and farm supplies, artificial insemination (AI) services, and farmer training programs to promote increased milk production and quality can be built up around the collection center. A complex of farm service businesses like this is referred to as a Hub.

**HPI-K support to hub development**

Heifer International in Kenya (HPI-K) launched a pilot milk collection and chilling center with the Siongiroi Dairy Farmers Cooperative Society in 1996. A milk chilling plant at Siongiroi was established as a for-profit limited liability company, the Siongiroi Dairy Plant, Ltd. Beginning with a holding capacity of only 6,400 kilos, the plant quickly added a second holding tank of an additional 5,600 kg when milk supply exceeded holding tank capacity within the first three months of operations. HPI-K went on to support three more farmer-owned chilling plants in the highlands over the next four years. In 2010, the Siongiroi Dairy Plant took in 30 tons of milk per day during peak production season.

Based upon the experience of these milk collection centers, HPI-K developed both a project implementation strategy, beginning with grassroots farmer mobilization to create the sense of ownership that makes this type of business work, and business management and marketing systems to insure the profitability of the individual milk collection centers. Skilled professional management is a critical element in the success of the business model. This includes a general manager, a dairy technician, a financial manager/accountant, and a skilled extension staff. There are very significant challenges to successful management of a milk collection center, including:

- Negotiating “from in the middle” between the farmers and the milk processor for an acceptable milk price, and meeting competition for the milk supply in order to keep chilling plant volumes high;
- Dealing with seasonal variation in milk production caused by limited feed and water management capability at farm level;
- Managing chilling plant expansion as milk collection tends to increase dramatically as trust builds in the plant and its success becomes more widely known;
- Managing the constraints imposed by weak rural infrastructure, specifically roads and bridges, electricity and water supply;
- Managing milk quality, which is the key in the long run to the success of the national dairy industry and requires building satellite collection centers closer to the farms

A grant in 2008 from the Bill and Melinda Gates Foundation (BMGF) enabled the scaling up of the Chilling Hub (CH) model, so that in 2010 HPI-K was supporting 20 Chilling Hubs delivering about 10% of all commercially processed milk in Kenya. The best CHs currently achieve annual turnover in excess of US $2 million per year. More than 70% of this turnover is farmer income. A single dairy cow with average production of 15 liters per day could earn her owner more than $1,250 per year in income if all her milk were delivered to the plant, of which roughly $400 would be pure profit.

Milk collection and chilling and bulking centers established in the early projects have evolved into the far more complex rural business center that HPI-K now refers to as a Hub. Beginning with farm services and supplies, initially focused on dairying, but later extending to all farming activities, the milk collection centers added agro-vet supply shops, animal health assistants and veterinary services, artificial insemination (AI) services, and dairying and farm extension training to their milk collection and marketing activity. As the volumes of milk collected by CHs continued to increase, ever more services have become financially feasible, including health insurance, village banking, and guarantees for payment of school fees and loans, and even scholarships for local students to attend college.

Farmers who deliver to the CH have a credit facility, referred to as “check-off,” based upon their daily milk deliveries. They accumulate credit with the CH until they withdraw their funds at the end of the month, and they can access these funds in the meanwhile through check-off. A farmer whose cow is ill or in estrus can pay “on check-off” for the services of an animal health technician or an AI technician through the CH, which acts as a financial intermediary, trusted by all parties.
The Chilling Hub is an innovative business model that enables a profitable farmer-owned and operated agribusiness to transform a rural community into an economic pole for development. A successful CH:

• Provides farmers with a reliable source of income;
• Enables farmers to manage this income without resort to cash transactions, thus facilitating savings;
• Provides essential services for milk production and other farming activities (farm inputs, animal health and veterinary services, AI, farm extension training);
• Facilitates access to additional services through financial intermediation (schools, clinics, financial services);
• Enables the growth of ancillary enterprises in the community because of the wealth brought in through milk sales (construction supplies, consumer goods, food services, vehicle repairs, etc. etc.).

The impact on rural communities is very significant. It is no exaggeration to say that a successful CH has a transformative effect on rural communities. HPI-K is now supporting the creation of the Kenya Dairy Farmers Federation (KDFF). This national organization will act as a voice for all smallholder dairy farmers to support enabling policies for the dairy industry in Kenya. It will also provide services to members to continue to build the management capability of CHs and to guide the future development of smallholder dairy. The private sector is very supportive of smallholder dairy in Kenya. The Nestlé Company is actively engaged in improving milk quality to enable Kenya’s dairy export processing industry. TetraPak also maintains ties with Kenyan chilling plants and supplies equipment and provides technical support and services to the plants.

While enterprise viability and financial success are essential to the Hub Model, the future of Chilling Hub enterprises rests solidly upon the social capital of strong farmer organizations. Strong business and social relationships enable the supplier network and the enterprise to clearly see their common interest and collective purpose, overcome the obstacles that inevitably arise in the course of affairs, and share a common vision of success.
Since 1944, HPI has managed livestock gift programs, including dairy cows, as an effective solution to rural poverty. Heifer training programs provide poor farmers worldwide with knowledge of animal husbandry and improved farming techniques to maximize the benefits they receive from a gift of livestock. Heifer also puts a high priority on social development programs that instill fundamental values to strengthen families, promote mutual aid groups, and help to bind communities more closely together. Twelve “Cornerstones” serve to lay the foundation of more prosperous and sustainable farming communities by building social capital. From the beginning HPI applied the Cornerstone principle of Passing on the Gift. Families who receive a gift of livestock must agree to “pass on the gift” by donating an offspring of their animal to another family in their group. This expands the impact of HI’s programs and helps to strengthen relationships within the community.

The Hub Model is an evolutionary approach to Heifer’s work with poor rural families and groups. Heifer’s approach to providing food security, improved nutrition, and higher family incomes results in increasing farm productivity. Increased productivity at the family farm and farmer group level creates the opportunity, and even the need, for rural communities to collectively market their surplus production into more distant markets. With professional management, collective marketing can increase farmer incomes by providing farm services needed to raise productivity even further, and transform rural communities by bringing income from outside sources to the rural hinterland. A Hub is an economic center of a farming community, insuring effective marketing of farm products into better paying urban markets, and bringing in farm supplies and services needed by the community. A mature well-managed Hub is a sustainable business that is not dependent upon outside sources of financing like government funding, donor projects or grants, or NGO support.

The Hub Model is based upon the same fundamental principles as Heifer’s traditional approach of providing knowledge and assets on the one hand, and encouraging social responsibility and building social capital on the other. It is a big step from building more productive, sustainable farmer groups to developing a farm community business Hub, but it is the logical consequence of increasing farm productivity. A Hub enables farmer groups to leverage their social capital beyond mutual aid development activities to ownership of a larger scale sustainable business. And it results in the transformation of poor, remote rural communities into dynamic and growing farm business centers that can provide the goods and services needed to permanently raise the standard of living of the community.

Assisting a few families in a poor rural community to improve their standard of living has much greater impact and sustainability when those families go on to assist others to achieve similar gains. Passing on the Gift is fundamental to Heifer’s approach. It is a powerful tool for building social capital, the ever-expanding network of trusting and caring relationships that enable a spirit of mutual aid. The Cornerstones lay the foundation of social capital that enables the rural poor to go beyond the struggle for daily subsistence to mutual aid societies that take many forms. Passing on the Gift of livestock and knowledge, either within a group, or to others in the community outside the group, is one form. The Hub Model is another form of mutual aid organization, in this case a social enterprise that works because it is built upon a solid foundation of social capital.

A project participant receives a POG in Western Kenya
The Hub Model leverages Heifer’s traditional approach, based on assets, knowledge, and social capital, to enable farmer-owned agribusiness to contribute to rural economic development. The Hub Model requires different types of assets and knowledge depending on the business. In the case of Heifer’s program in Kenya, the assets were for milk collection, chilling, and bulking, and the knowledge was of business management, milk marketing, and dairy technology. An important aspect of farmer social capital in Kenya is the investment of funds, energy, and personal commitment to delivering the milk supply required to make the business work.

A successful demonstration of the Hub Model is possible when thousands of shareholder farmers increase their incomes and whole communities grow and change can motivate others to attempt the same strategy. In Kenya, one long term investment in a single milk collection center and chilling plant with a farmers’ cooperative has blossomed into more than 20 similar businesses. The Bill and Melinda Gates Foundation (BMGF) provided support to prove the replicability of the Hub Model. The results have been nothing short of spectacular.

The Hub Model is a meta-business model for small farmer business ownership in the sense that it can, in principle, be adapted to many different types of agribusiness. As such, it can only succeed if the underlying business is successful, profitable, and sustainable. This implies that the technical assistance demanded of Heifer in support of a Hub Model development project requires a different set of professional skills from the traditional approach. Value chain development strategies and business advisory services are basic to the approach.

The Hub Model, like traditional Heifer programs, also rests upon a solid foundation of social capital. This is essential for the real sense of ownership and trust among the farmers who own the business, and whose productivity and commitment to the enterprise will make it succeed. While the Cornerstones remain fundamental to farmer group and rural community development, building social capital in support of a Hub Model business requires another set of tools and a somewhat different approach. Elements of this approach include:

- The way farmers are mobilized into producer groups, informed about the business idea, and engaged from the beginning in the planning process;
- The investment of financial capital by the farmers themselves to become shareholders and owners of the plant;
- The active participation of the farmers as shareholders in the management of their business that confirms their sense of ownership;
- The systems of social and business organization that link the farmers and the enterprise, and insure transparency and integrity of management;
- The way information flows both ways and the manner of doing business between farmers and management that builds trust and confidence on both sides;
- The range of services that the enterprise provides to its shareholders to build many different mutually beneficial relationships.

This paper will present the Hub Model as it was developed in Kenya through the efforts of the Heifer country office, and with the support of USAID and BMGF. Many other partners contributed to the achievements of the farmer-owned Milk Collection and Chilling Hubs in Kenya. Today in Kenya, Heifer sponsored Milk Chilling Hubs provide about 10% of all the milk that goes into formal processing channels. More than 100,000 farm families benefit from the development of more than 20 Chilling Hubs. Total annual payments to farmers of all the hubs together are now approaching $20,000,000 per year. When the farmers own the agribusiness, as they do with the Hub Model, the benefits of the business go directly to them.
S

een from above, Kenya’s Rift Valley Highlands is a rolling patchwork quilt of little farms scattered densely across the verdant hills. The countryside appears blessed with rich soils, abundant vegetation and rainfall - a farming paradise. But poverty is pervasive. Many factors contribute to low levels of income and education, small farm size and limited farming assets in this region. Although there is a well established tradition of keeping dairy cows in the highlands, the dairy industry here has suffered many setbacks over the last 20 years due to the failure of extension and farm business support services and the collapse of milk marketing institutions. But Heifer International’s experience organizing farmer-owned milk collection centers that we call Chilling Hubs has shown a way forward to greater prosperity for dairy farmers and their remote rural communities.

To put the achievements of the Hub Model into perspective, it is helpful to understand the context of the dairy industry in Kenya. It is unique in sub-Saharan Africa in depth of history and development of supporting institutions both public and private.

Kenya has a long history of dairy development going back more than a century, when purebred dairy cows were first introduced in 1902. Milk is the most valuable product in the agricultural sector in Kenya, as shown by this chart from FAO Stat.

The country has long invested in research, breeding, and animal health, beginning with the National Animal Husbandry Research Center established in Naivasha in 1903. Commercial milk processing began in the 1920’s, and the first legally registered cooperative in Kenya was Kenya Cooperative Creameries (KCC), a dairy farmers cooperative, registered in 1931. Government subsidized artificial insemination services for improved genetics for dairy cows was introduced in the 1940’s. One of the first acts of the newly independent Government of Kenya (GOK) in 1964 was to guarantee access to the milk market for all farmers who were able to meet the quality standards of KCC.

Many ethnic groups in Kenya have a tradition of keeping cows for meat and milk. The cow brings status and prestige in these communities. This traditional love and appreciation for livestock makes Kenyan smallholder farmers well suited to adopt improved breeds and learn the basics of a more modern approach to dairy farming. The dairy cow is a substantial asset to a small farmer, providing daily nutrition and cash income, manure to enrich the soil, and offspring for sale. With improved genetics, better husbandry, and integration of livestock...
waste into an improved farm management system, a dairy cow can literally lift a family out of poverty.

In the 1960’s, support from the GOK acting through KCC, made small holder dairying a significant source of income and nutrition in highland areas where the climate is suitable for dairy cows. Because of GOK efforts to develop milk marketing through KCC, milk surplus for processing increased steadily on small farms that are widely dispersed across the countryside with very poor rural roads. Dairy production by smallholder farmers in remote rural areas requires them to organize to get their milk to market. Farmer cooperatives set up milk collection centers with the support of the GOK to get their surplus milk to KCC. By 1992, there were over 100 primary dairy marketing cooperatives registered, and more than 200 multipurpose farmers’ cooperatives that engaged in milk marketing. However, they faced many challenges. The Rural Dairy Development Project began encouraging farmers to establish their own milk processing centers in the early 1980’s, but only two such cooperatives succeeded. Of more than 60 milk chillers supplied to farmer cooperatives, less than half were operational ten years later. Despite the importance of milk as a source of household income in the highlands, most attempts to establish farmer-owned milk collection and chilling plants had failed by the time milk marketing was liberalized in 1992.

Perhaps the most significant accomplishment of the Hub Model is the demonstration of how to build durable, effective farmer organizations that are capable of managing a business for the benefit of all their members. The business and technical management skills required to run a Hub can be outsourced to professionals. But the social capital that makes for fully functional and enduring farmer organizations must come from the farmers themselves.

Parastatal industries like KCC lost their monopolies under pressure from the World Bank and international donors to “rationalize” the economy through Structural Adjustment programs in the early ‘90’s. Liberalization of both producer and consumer milk prices and licensing of many independent processors resulted in a rapid increase in both formal and informal milk marketing channels.

“The most critical step in the liberalization of Kenya’s dairy industry was the decontrol of both producer and consumer prices of milk in May 1992, followed by an explicit policy statement that any party interested in getting into dairy processing and marketing business could be licensed, provided that the business premises met the minimum hygiene standard requirements.”
KCC had enjoyed a near monopoly position in the industry for decades, controlling more than 90% of the milk market, and operating almost all the milk collection and processing centers in the country. They began to have difficulties competing in the newly liberalized environment almost immediately. Mismanagement and corruption ensued, and small farmers were not paid for the milk they delivered. KCC collapsed entirely in 1999, owing billions of shillings to small farmers that has never been repaid. This discouraged smallholder dairy farmers, who began to neglect their dairy cows, and milk production fell dramatically during the ‘90s. Many smaller milk processors sprang up to take the place of KCC, creating a new dynamic and competitive milk market. But it was difficult for remote rural areas to deliver to these new smaller dairies, who lacked the rural milk collection centers formerly operated by KCC.

With access to markets and reliable payment for their milk becoming increasingly problematic in the ‘90s, small farmers in the highlands were highly motivated to solve the milk marketing problem themselves. However, the history of failure of farmer owned and operated milk chilling plants made this a difficult decision. At the end of the decade, successful farmer-owned milk collection and chilling centers were few and far between.

Yet conditions for the development of farmer-owned chilling plants were very favorable:

- Kenya has a long history of government support and investment in the dairy industry;
- There were many support services and institutions for dairy, including animal breeding and research, modern genetic services, local production of vaccines, and a well-trained and experienced veterinary service;
- Milk market liberalization had quickly brought about a highly competitive dairy processing industry serving large urban markets;
- Many areas of the highlands offer favorable agro-climatic conditions for milk production in Kenya;
- Ownership of cows is an important tradition of the ethnic groups in the highlands, confers high status, and is an objective of every household;
- Highland farmers were very familiar with dairying and caring for dairy cows, and some had improved genetic stock with much higher milk yields than local breeds;
- Smallholder farmers knew that an improved dairy cow is an important source of both income and nutrition for their household;
- There was a milk surplus even when milk marketing was in disarray, and;
- Farmers were prepared to increase production rapidly when they gained access to market.

The failures of so many farmer-owned and operated milk collection centers and chilling plants can be attributed to many different factors. Among these are poor management and marketing skills, a difficult operating environment, severe competition for the milk supply from informal sector traders buying at the farm gate, and a lack of commitment by the farmers themselves to make the collection center succeed.

Nonetheless, in the midst of the milk industry crisis of the 1990’s, a small group of farmers from a rural town called Siongiroi in the southern Rift Valley highlands near Bomet decided to set up their own milk collection and marketing center. Knowing the difficulties such enterprises had encountered in the past, they went to the Livestock Development Officer in Bomet to ask his advice. He suggested they seek the support of an NGO experienced in livestock development and marketing, and helped them contact Heifer International in Kenya (HPI-K).

Heifer agreed to partner with them for this project, and helped them to register the Siongiroi Dairy Farmers Cooperative as a first step. They all agreed that their objective must be to create a profitable, privately owned milk collection center that would be sustainable without financial support from other sources. Heifer and the farmers would share in the investment required to start the company.

Because of the development approach of Heifer International, coupled with the local experience of HPI-K, and the determination and dedication of the farmers of Siongiroi, this partnership would transform the rural dairy industry in Kenya.
1.2 About Heifer International (HPI)

Heifer International has worked worldwide for over 65 years to develop livestock based programs, including dairy cows, as an effective solution to rural poverty. Livestock is a traditional source of wealth in rural areas for obvious reasons. Animals have intrinsic value, reproduce giving offspring who further increase in value as they grow, and also give valuable products like milk, meat, hides, and manure. Heifer training programs provide poor farmers with knowledge of animal husbandry and improved farming techniques to maximize the benefits they receive from livestock. Heifer also puts a high priority on social development programs that instill fundamental values to strengthen families, promote mutual aid groups, and help to bind communities more closely together. The Cornerstones serve to lay the foundation of more prosperous and sustainable farming communities by building social capital.

Heifer International began in 1944 with donations of heifers to poor families. From the beginning HI applied the Cornerstone principle of Passing on the Gift. Families who receive a gift of livestock must agree to “pass on the gift” by donating an offspring of their animal to another family in their group. This expands the impact of HI’s programs and helps to strengthen relationships within the community. In some cases, the chain of giving reaches many generations, and extends well beyond the original farmers groups.

The gift of skills and knowledge is passed on by the most progressive farmers who are trained to train others in their group, and in the community at large. Lead farmers offer training in animal husbandry, animal nutrition and feed production, construction of animal shelters, organic agriculture and composting, and social development principles. In this way, spontaneous adoption of improved agricultural practices and livestock husbandry is facilitated throughout the communities where Heifer works, and the social capital of these communities is enhanced.

1.2.1 About Heifer International in Kenya (HPI-K)

HPI-K began a small project with a women’s group in Kakamega in 1981. It now operates in 29 of 47 counties in the country. In 2010, 23 separate projects reached 78,454 families, or almost 550,000 individuals. The program has projects in Nyanza, Western, Rift Valley, Central, Eastern and Coast regions. In Kenya in 2010, about 80% of livestock donated to poor families in HPI-K programs came from other families passing on the Gift.

Placing dairy cows with poor rural families is a highly effective means of lifting families out of poverty. Working at the level of families and farmers’ groups, HPI-K assists families to improve incomes and nutrition, and groups to develop strong mutual aid relationships. HPI-K programs establish partnerships with farmer groups to plan objectives and activities together. The commitment to partnership is open ended, but HPI-K direct assistance to groups tapers off over three to five years. Many groups become fully able to design and manage their own community development programs, based on their experiences with Passing on the Gift of livestock and farming skills, and building strong social capital. An exit strategy is an integral part of HPI-K partnerships. Heifer partnerships are designed to create a sense of independence and responsibility for their own development among the rural poor, and to assist them to build the social capital that enables them to work effectively together.

A dairy cow represents a significant level of wealth in rural Kenya. Farmers below the poverty line rarely own a cow, or if they do, she is probably not very productive. To assist poor farmers to improve their income, food security, nutrition and livelihoods opportunities, HPI-K selects well motivated groups with sufficient resources to care for a dairy cow. Placement of dairy cows in poor rural communities addresses the problems of poverty, food security and nutrition, and also lays the foundation for creation of a milk surplus that can contribute to the viability of a chilling hub.

The Hub Model is best suited to regions with a substantial milk surplus, where farmers have difficulty getting their milk to market. In such regions, farmer mobilization can begin as soon as a feasibility study determines that conditions are favorable for a Hub. This is the approach taken by the East Africa Dairy Development Project, which we discuss in section VIII below. But even those areas where the poverty incidence is very high and most families do not own a cow can benefit from the dairy cow placement program, and eventually become surplus areas that can support a chilling hub.
Livestock placement programs work with individual families organized into groups as partners for development with Heifer. All the members of a group must adhere to the Cornerstones, principles for strong, durable social relations that provide a foundation for the collaborative activities of the group. An essential element of the Cornerstones is the principle of Passing on the Gift, of giving the first female offspring from a dairy cow they receive to another needy family and passing on the knowledge they receive by training others.

When a poor farm family gains a dairy cow, the productivity of their farm increases. The cow provides nutritious milk for the family, plus a surplus for sale. She will produce valuable offspring, and her manure can be used to increase the fertility of their land. Training in animal husbandry is essential to gain maximum benefit from the cow. The family must provide her with adequate feed and shelter, and keep her healthy.

Training in mixed farming techniques shows how to utilize the cow’s manure to increase the productivity of the land in an environmentally friendly and sustainable way. The family can improve their own nutrition from kitchen gardens, produce surplus crops for sale, and feed the cow properly to keep her healthy and producing well.

Ultimately the gift of a cow provides a focal point for many changes on the family farm and in rural communities. Nutrition, income, farming practices, gender roles, and family and community relationships all evolve in positive directions around the needs, the benefits, and the opportunity that the cow represents to the family. The social capital of the community is reinforced by the sharing of livestock and knowledge, and increasing prosperity for all.
1.2.3 Escape from Poverty by the Productivity of a Cow

Heifer Kenya focuses on vulnerable families, those living on less than $1.25 per person per day. Farm labor in rural Kenya is paid as little as 20 to 50 Kenya shillings per day, equivalent to $0.25 to $0.65, hardly a living wage and well below the “vulnerable” threshold.

On one acre of average land a poor farmer, using the low level of inputs typical in Kenya, can produce 4 to 6 bags of maize per season. The farm gate value is around Ksh. 1,800 to 2,400 per bag, for a total value of Ksh. 7,200 to Ksh. 14,400 per season, and yields will decline over time as soil fertility is depleted. Depending upon rainfall patterns some areas enjoy two growing seasons for maize, but many are limited to only one.

With mixed farming techniques of manure composting and improved soil management a good farmer with average land will easily produce 15 to 20 bags of maize per acre per season, with a farm gate value of Ksh. 27,000 to 48,800. With proper soil amendments based on good organic agriculture practices, soil fertility will improve over time and yields will increase. The value of the cow’s manure is evident.

A dairy cow is one of the most productive sources of food on earth. One acre of farmland planted to fodder crops is sufficient to feed a cow for a year. One healthy cow with good genetics, well cared for and well nourished, can produce more than 25 liters of milk per day on average during a 305 day lactation period, in addition to producing a valuable calf. Thus one cow can produce 7,625 liters of high quality food per year. With proper soil amendments based on good organic agriculture practices, soil fertility will improve over time and yields will increase. The value of the cow’s manure is evident.

In rural areas of Western Kenya a liter of milk sells for between 30 and 40 Ksh. at the farm gate. Fifteen liters sold for 30 Ksh. would bring in Ksh. 450 per day, or a total of Ksh. 13,500 per month or Ksh. 137,250 in a year. At 40 Ksh. per liter income from the sale of surplus milk would reach Ksh. 183,000 per annum. In addition to the cash income the family gains in prestige and self esteem and a higher social standing within the community.

Compare this with off-farm income earning opportunity of 20 to 50 Ksh. per day (less than Ksh. 20,000 per year) for day labor, and it is easy to see why families who learn to care for a cow and integrate her into their farming system no longer consider themselves “poor.”
1.2.4 From Lifting Families out of Poverty to Transforming Rural Communities

HPI-K has been delivering improved dairy cows, breeding services, training in animal husbandry and farming, techniques, and social development programs to poor farmers in remote rural areas of Kenya since 1981. These programs have a significant effect on farm family incomes, nutrition, and food security. Impact is first felt at the household level when surplus milk, livestock and crop sales to neighbors and local markets enable families to achieve a higher standard of living and rise above the poverty line. Family farms are visibly improved, with much better homes, stables for their animals, and more productive fields. The practice of Passing on the Gift spreads better quality livestock and improved farming practices around the community so that many families not touched directly by HPI-K field staff also benefit from the program.

As long as farm productivity is sufficient only for local consumption, essentially raising a subsistence standard of living above the poverty line, marketing and sale of family farm products to neighbors and local markets poses few problems. However, once a large number of small farmers begin to produce a surplus of milk marketing begins to pose a real challenge. In the Kenya highlands, it was estimated in 2010 that around 800,000 smallholder farmers gain a significant share of their household income from the sale of cow’s milk. Total milk production in the country was estimated at roughly 5,000,000 tons, of which half was used on farm or locally, and half went to more distant markets, through either formal (20%) or informal (80%) channels. Clearly, dairying is a very important activity for rural households in Kenya, and marketing of surplus milk is important to the well-being of rural communities. Successful milk marketing can bring significant income into the community from outside, further raising livings standards and transforming the local economy.

The Hub Model was developed as a solution to the milk marketing problem, and also to the need for training, services and supplies to increase farm productivity in response to the market opportunity created by the Hub. In principle, government, donor projects, NGOs, and the private sector are available to support farmers with training, services, and input supply. But in practice, when these essential support services for more productive agriculture are supplied from sources outside the community, they tend to be unreliable, expensive, and unsustainable. The beauty of the Hub Model is that it enables the farming community to manage the supply of all these essential services from their own resources with local management that is responsive to the farmers. In the process, it diversifies the local economy, creates jobs, and develops management skills that can be applied to other needs of the community.

Through Heifer International interventions, families have improved their lifestyles. This house was constructed through proceeds from milk (Inset) the old house.
After milk marketing was liberalized, KCC began to fail and the milk marketing situation deteriorated during the '90's. HPI-K was approached by a small group of farmers from Siongiroi, a small town 30 kilometers off tarmac in Bomet District. Prior to liberalization of milk marketing in 1992 milk production in the area around Siongiroi was about 60,000 liters per day. This milk was delivered to a KCC chilling plant in Sotik, either by the farmers themselves, or by milk traders. Dairying was a very important source of income and food security in the area. However, as KCC went into steady decline in the '90's, payment for milk became irregular, unreliable, and finally stopped altogether. Farmers almost abandoned dairying as a source of income because they could not get their surplus to market. The same region was estimated to produce only 5,000 liters per day in 1998. Milk production and sales had gone back to a subsistence level. Even with the very low farm gate prices for milk that prevailed at that time, of about Ksh. 8 per liter, this represented a loss of over $5,000 per day in farm family income in the area around Siongiroi. This increased poverty and food insecurity in the area, and represented a severe hardship for rural households. Even today, in discussions with farmer groups of different ages, the generally lower level of education of adults who grew up during this time, when money for school fees was hard to come by, is evident.

### 2.1 Challenges

When Heifer International in Kenya agreed to partner with the Siongiroi farmers to set up a milk chilling plant and facilitate milk marketing, they knew they faced many production and marketing challenges. These included, among others:

- Poor rural infrastructure, including roads, electricity and water supply, and communications, that would increase the cost of operations for milk collection, chilling, and delivery to a processor;
- Deterioration of the genetics of dairy cows in the region resulting in low productivity, due to neglect of livestock caused by the failure of KCC;
- Very small average farm size and number of cows per farmer, resulting in small quantities of milk available for sale from each individual farmer, thus requiring a very large number of suppliers and complicated collection systems;
- Competition for the milk supply from aggressive informal traders paying cash at the farm gate;
- Limited private sector services for farming in general and dairying in particular, such as animal health services, veterinary services and supplies, artificial insemination, feed supplements and other farm supplies;
- Limited availability of transport services, both for milk collection and for delivery to a processor;
- High cost of milk chilling and holding equipment for the collection center;
- Difficulty of finding qualified staff and management willing to work in a remote area; and, most important of all,
- The need for a strong, well-motivated farmer organization to mobilize investment in the milk chilling and bulking equipment and to insure the milk supply for the plant.
2.2 Solutions

So the first step in response to the farmers’ request was to assess their commitment to the project. HPI-K began meeting with farmers groups to discuss the idea of the project, to evaluate the potential milk supply in the area and to investigate the depth of social capital, the farmers’ willingness to invest and work together, that would be required to make the project succeed. Motivation was high, because the farmers wanted to regain what they had lost with the downfall of KCC, and because the leaders of the community were personally committed to the project. By meeting with farmer groups at the beginning and engaging them in the process of project design, HPI-K got their backing and the commitment of social capital that was needed.

HPI-K recommended to the Siongiroi farmers that they register a company as a first step to establishing their own milk collection and marketing business, and prepare a feasibility study to evaluate these challenges. The Siongiroi Dairy Farmers Cooperative Society was registered in 1997. Based on the strong motivation of farmers in the Siongiroi cooperative, and the positive indications of the feasibility study, HPI-K prepared a business plan, and persuaded USAID to help fund the project. USAID stipulated that HPI-K should partner with Technoserve (TNS), an agribusiness management NGO, and African Breeders Service - Total Cattle Management (ABS), a private animal genetics and livestock management firm, to create a team effort to insure success of the project.

The feasibility study verified that milk production potential in the area was high, but it was clear from the outset that success or failure would be determined by the volume of milk delivered to the center on a daily basis. This would depend on the farmers. There were many temptations to sell for quick cash to milk traders plying the back country, and even larger milk processors would set up buying stations to purchase directly in competition with the collection center once supply increased. The farmers had to commit to delivering their milk to their own chilling plant to make it work. For this reason, farmer ownership of the plant was a key element in the business strategy. The farmers would have to invest both their financial capital and their social capital in the new enterprise to make it succeed.

In order to insure steady delivery of the milk needed to keep the new chilling plant profitable, HPI-K helped to mobilize and organize the participating farmers. In fact, the project was literally designed “from the ground up,” with active participation of the farmers from the beginning. This enabled the farmers to understand the necessity of supporting the Chilling Plant by delivering their milk there, and avoiding the temptation to “side sell” to other buyers. They were persuaded to invest their own money as shareholders, and their social capital as committed individuals, as a sign of their determination to make the plant a success.

Group mobilization provided the farmers with a voice in management and increased their sense of ownership of the project. Each group elected a leader to represent them at the Annual General Meeting and in discussions with chilling plant management. These leaders elected a Board of Directors (BOD) from their ranks to serve for a fixed term of four years to represent the farmers in all senior management decisions and to supervise plant management. The system of farmer groups, group leaders, and BOD members enabled effective communication and transparency between the management of the chilling plant and the farmers who supplied it with milk. Because the BOD themselves are dairy farmers and members of a group, they understand the shareholder’s point of view and can communicate effectively with them. Also, through this grassroots process of selection of the leaders, the farmers know the personalities of the people who represent them, which provides a social capital guarantee of integrity at the highest levels of management.
Based on the business plan the farmers’ cooperative created a private company, Siongiroi Dairy Plant, Ltd., to own and manage the chilling plant. Farmers agreed to put up 60% of the funds required through share purchase. Heifer International provided $400,000 to cover the cost of technical assistance and for seed capital, and USAID contributed another $50,000. Tetra-Pak supplied the chilling equipment, holding tanks, pumps and other hardware needed for the plant on loan to the new company. A Board of Directors (BOD) was established with three members from among the farmer group representatives, a Chairman, a Secretary, and a Treasurer. HPI-K also held two seats on the board because of its investment in the plant.

2.3 Ownership Structure

![Board of Directors Meeting in Kabiyet Dairy Plant](image)

**Ownership of the Chilling Hub**

- **Dairy Farmers**
  - Heifer International-Kenya
    - 40% Shareholding
    - 2 BoD members
  - Siongiroi Dairy Farmers
    - Cooperative Society
    - 60% Shareholding
    - 3 BoD members

- **Siongiroi Dairy Plant Limited**
  - a Liability Company
  - 5 BoD members
  - Professional Manager
2.4 Business Start-Up

Successful start up required:

- Mobilization of as many farmers and farmer groups as possible to raise social and financial capital for the new business and assure the milk supply;
- Training for farmers in dairy production, milk handling, animal genetics, and other aspects of dairy farming to increase their productivity and enhance milk quality;
- Support of local leaders, like the traditional chief and councilors, and government officials, including ministry of agriculture and livestock officials, and the Kenya Dairy Board;
- Identification of a site for the plant (secured with the help of the local administration), and facilities construction;
- Selection and training of professional management and staff: a business manager and a bookkeeper, and a chilling plant technical manager and operations staff;
- Development of management and administrative systems and controls;
- Delivery, installation, and commissioning of the milk receiving, chilling, and holding equipment;
- Establishment of a collection system to get the milk from the farmers to the chilling plant as quickly as possible;
- Identification of buyers for the large quantity of milk that was anticipated.

The Siongiroi Dairy Farmers Cooperative Society actively supported the development of the project. Mobilization of the farmers was a collaborative effort between cooperative leadership and HPI-K. The National Agriculture and Livestock Extension Program (NALEP) provided support for farmer training in partnership with HPI-K. The local traditional chief, who in Kenya has a formal role in government, used his power to convene local leaders in support of the project, and to influence the town council to provide the land needed for the chilling plant.

A plant manager with business administration experience and administrative staff were hired through a competitive process managed by the technical assistance team, with input from the BOD. A dairy technician and plant operations staff were similarly engaged to run the daily milk intake, chilling, bulking, and handling operations, and to insure proper cleaning and maintenance of the equipment. Technoserve provided support for management training and development of administrative systems for the plant, including a system for recording deliveries by each individual farmer. ABS trained AI technicians and provided support for a program of breeding to improve the genetic production potential of local breeds of dairy cattle. TetraPak provided the equipment for the plant, and oversaw installation and commissioning in the facility that was constructed on the site provided by the town council.

2.5 Operations

Once the plant was operational, response from farmers in the region was very positive. Milk supply exceeded holding capacity within the first three months of operations. Beginning with a holding capacity of only 6,400 kilos, the plant added a second holding tank of an additional 5,600 kg. When USAID funding came to an end in 2001, the other NGO partners withdrew, but HPI-K stayed on as an investor in the plant to consolidate the gains of farmer-owner management. As membership grew over the years to more than 6,000 farmers, with more than 1,800 regularly supplying milk to the plant, additional holding tank capacity was added. In 2010, the Siongiroi Dairy Plant was taking in 30 tons of milk per day during peak production season, and supply continues to increase.

These volumes have enabled the plant to negotiate longer term contracts with major milk processors like New KCC and Brookside, who also pay the plant a fee to chill milk for them that they have collected in the area. Payments to suppliers for milk now exceed $1 million annually.

2.6 Scaling Up Phase

HPI-K went on to support three more farmer-owned chilling plants in Kipkelion, Kipkaren, and Ol Kalou over the next four years. In each case, the same fundamental issues motivated the farmers to organize with the help of HPI-K, invest their own funds, and establish a private, for-profit legal entity to own and manage their milk collection and chilling plant.
2.7 Conclusions of the Pilot Projects

Several important conclusions emerge from this discussion of the situation among smallholder dairy farmers in the highlands, the impact of the dissolution of KCC, and circumstances and methods employed that facilitated the start up of the Siongiroi Dairy Farmers Cooperative and the Siongiroi Dairy Plant, Ltd.

- Livestock placement enables selected families to improve their standard of living and rise above the poverty line within a subsistence community;
- Passing on the gift spreads the benefits of more productive agriculture throughout the community;
- When enough members of a community increase their productivity sufficiently to generate a surplus of agricultural products that cannot be sold locally because they exceed local demand, the possibility of transformative economic growth arises;
- At this point, producers face a quantitatively and qualitatively different marketing problem, since they must set up a business to collect and deliver their products to more distant markets;
- This requires that they face the challenges of bulking up the surplus into economic quantities for quality control, transport, and marketing;
- A collection center, professional management and staff, equipment, and finance are essential elements of the business;
- Rural farmers are generally lacking in the business skills needed for these operations;
- However, HPI-K’s Hub Model approach can assist large groups of farmers to pool their funds to own and manage a business of this type.

While the initiative and much of the organizational effort for the project came from the farmers themselves, the financial support of USAID and the efforts of HPI-K, TNS, and ABS were essential to realization of the vision. Professional technical assistance and professional management of the milk collection plant itself are clearly necessary, since so much of the process is outside of the experience and capabilities of smallholder dairy farmers. However, it is important to recognize that without the motivation and commitment of the farmers, the project would never have seen the light of day.

This motivation and commitment was carefully nurtured by HPI-K, and by the leadership of the cooperative and the Siongiroi Dairy Plant. There have been several periods of chaos in the milk marketing systems in Kenya over the last twenty years. At times, commitment has wavered, and the milk supply to the Dairy Plant has fallen off to dangerously low levels. These times have been wake up calls to the Plant Manager, the BOD, and the farmer group leadership to renew the commitment of their farmers to the business. There is no doubt that the long run success of the Siongiroi Dairy Plant, Ltd., rests on the social capital invested in it by its farmer-shareholders, who supply the milk that makes the enterprise possible, and profitable.

Kipkelion, Olkalou and Tanykina Dairy Plants were among the first milk cooling centres after Siongiroi Dairy to established by HPI/K
The Hub Model is based upon HPI-K experience with milk collection centers, so our discussion will use this experience as an illustration of an effective approach to building social capital and a successful farmer-owned agribusiness. The principles could be applied to any type of rural enterprise with a large number of farmers as suppliers, shareholders, and customers.

The basic business of the Hub Model in Kenya is very simple:

Farmers supply their surplus milk to the collection center via a network of local transporters. The Center receives, tests, filters, and chills the milk, and then is able to sell it on to processors on more favorable terms because of the volume of milk they can deliver, and because they provide the value-added service of quality control at the source.

However, we have seen that farmers are tempted to sell their milk to many other buyers:

- Traders passing by the farm gate offering easy cash;
- Processors who set up their own independent buying points closer to the farm;
- Local markets or neighbors where prices may be higher than at the chilling plant.

The key to success of the business model is reliable high volume supply. The scale of operations is important because the chilling plant can only afford to take a few shillings from each liter of milk it handles in order to meet all of its operating expenses, recover investments in equipment, accumulate savings for setbacks and new investment, and pay dividends to its shareholders. Giving the farmer the highest possible price for their milk is the first priority of the business. Fortunately, the dairy business is inherently very attractive to poor farmers, because of the many benefits it brings to the household in addition to daily cash income. HPI-K experience has been that milk supply increases very rapidly as soon as farmers see that they have access to market through a Hub that can be trusted to pay them for their milk.

3.1 Elements of Social Capital

In order to secure this reliable high volume supply, the plant must build social capital and establish relationships with a large number of suppliers. The strategy adopted for the Hub Model is based on:

- A Sense Of Ownership – the farmers have invested their own funds, are shareholders, and receive dividends, and therefore prefer to do business with their own chilling plant rather than sell to other potential buyers;
- Trust - management must be transparent, communicate effectively with its shareholders/suppliers, always pay suppliers on time and never betray their trust;
- Farm Business Services - by supporting its farmer / shareholders with a range of supplies and services they need for their farming activities, the plant assists its suppliers to increase the milk supply, sets up additional profit centers to support the Hub, and strengthens mutually beneficial relationships with suppliers/shareholders;
- Financial Services - the milk collection center becomes a financial intermedairy, assisting its suppliers/shareholders to access farm inputs and services and meet other financial needs based on the credit they have earned from the milk they deliver to the plant.

Let’s consider these elements of social capital which are critical to the long run success of the Hub.
The farmers who supply milk to the plant must agree to invest in it themselves. By putting their own hard-earned cash into the business, they show their belief in the concept, and their commitment to its success. It can be very difficult to persuade poor farmers to make cash investments.

When asked about the roots of success of Siongiroi Dairy Plant, Ltd., Chairman Richard Soy replied without hesitation: “Ownership.”

It was so difficult to gain farmers’ confidence for the initial investment in the Siongiroi Dairy Plant, Ltd., that HPI-K had to put up most of the funds, on the understanding that the farmers would, “eventually,” repay the money by buying back HPI-K’s shares. In fact, this repurchase of shares is now, more than ten years later, complete. Subsequently, as the business model has been proven, it has become easier for HPI-K to launch new farmer owned collection centers with farmer investment up front. Farmers learn readily from the experiences of other farmers, so farmer visits to successful chilling hubs are the best advertisement for the model.

For the farmers, a sense of ownership comes from investing their own money, holding shares in the enterprise, voting in the Annual General Meetings, receiving dividends out of profits, and electing the officers who represent them at management meetings and on the BOD. It comes from being informed regularly and frequently about the progress and the challenges of the enterprise by their leaders, by members of the BOD, and by the plant manager. It is fostered by a willingness on the part of the leadership to listen to the views of the shareholders, and to make a continuous effort to engage with them in order to achieve consensus on the critical issues faced by the enterprise.

A sense of ownership makes the shareholders see that the success of the enterprise is their own success, and makes them intolerant of behavior that may benefit a few individuals at the expense of the other owners of the business.

When you own the business, you are even willing to accept personal sacrifices in order to make it succeed, like taking a slightly lower price for milk even though a passing milk trader may offer a bit more, or giving one shilling from every liter of milk delivered to the plant to purchase additional shares in the enterprise.

Trust

Every successful long term business relationship is built on trust. With the difficult history of the cooperative movement in Kenya, this is a critical ingredient for success.

The system of social organization of the cooperative and the collection center fosters strong social capital. Every shareholder is a member of a farmers’ group, from the single mother with one cow to the Chairman of the Board. Groups elect their own leaders to represent them. These leaders are responsible to keep their group members informed about management meetings and all issues affecting the operation of the enterprise. The group leaders elect the members of the BOD from among themselves. Because the leaders of the company, the BOD and the group leaders, are personally known to the shareholders, there is confidence in the integrity of management. Group leaders also elect committees to strengthen internal controls, such as Supervisory, Financial Oversight or Audit committees, or they may choose to hire independent auditors to play this role.

Members of the BOD take responsibility for decisions and policies that affect the success of the business, such as choice of a plant manager and other technical staff. They make difficult decisions in consultation with the plant manager, such as whether profits should be paid out as dividends to shareholders or retained for further investment in the business. BOD members in the most successful chilling plants are very active in meeting with all the farmer groups to inform shareholders directly of the reasons for decisions, and to listen to feedback from the membership. This serves to achieve transparency in management and governance of the enterprise, build trust among shareholders, and secure their commitment to success of the business. One of the most important functions of the leadership of the chilling plant is to achieve consensus among the shareholders.
With two seats on the BOD, HPI-K was able to provide practical guidance and training to BOD members both in formal training sessions and during BOD meetings. Since the BOD members are dairy farmers themselves, this training and support for business decisions is highly valued, as evidenced by comments from BOD Chairmen and members during interviews.

Plant management builds trust with its shareholders by good business practices. In contrast to informal market traders, who often use unreliable containers to measure the milk they purchase, the plant will weigh suppliers’ milk as a basis for payment. Once tested and approved, each supplier’s milk is weighed, and the amount delivered is recorded and a receipt issued showing the amount delivered that day, and the cumulative amount of milk delivered since the last payment. Suppliers are paid once a month based on these records, and the farmers have their own receipts. Payment is always on time. All shareholders are aware of the milk price, how it was negotiated with the processor, and what deductions from the price (such as the one shilling per liter for share purchase) will be withheld. Transparency and honesty in transactions is a key to building trust with milk suppliers, and with everyone who does business directly or indirectly with the plant. This is particularly important given the role the chilling plant plays as a financial intermedairy in its community.

**Farm Business Services**

The most important service the dairy plant provides to its members is market access. This motivates members to increase their production and their productivity. But farmers face many constraints to increasing production and productivity of their farms and dairy operations:

- Poor rural infrastructure;
- Limited government services, especially training and extension support;
- Weak private sector services for agriculture and livestock production systems;
- Limited private sector transportation services;
- Virtually non-existent financial services.

So the chilling plant enterprise finds itself in an unfriendly farm business environment, where there are many obstacles to increased farm level production and profitability. These problems create opportunities for the plant to serve its shareholders, and build its own business by increasing milk production among its shareholders. By fulfilling its purpose as a milk collection and marketing center, the business puts money into farmers pockets, and motivates them to increase production. This creates demand for supplies and services for dairying. It is a natural extension of the milk collection and marketing enterprise to assist farmers with milk production.

Hence agro-vet shops, animal health assistants, veterinary services, and AI service are all areas of opportunity for the dairy plant. The development of these ancillary services, some of which are profit centers for the plant, leads to the creation of the Hub of farm business services, built around the core business of the plant. For this reason, we refer to the complex of activities surrounding the dairy plant as a Chilling Hub, or CH for short.

While these are all potentially profitable areas of activity in support of the local dairy industry, it is important to recognize, in the context of our discussion of the importance of social capital, that these are also activities that serve to bind the shareholders and other milk suppliers more closely to the CH. It is a major responsibility of the plant manager to ensure that these ancillary services are available to the farmers, whether by providing them directly as secondary profit centers of the CH, or by encouraging private sector involvement.

Milk transport, from the farm gate to the chilling plant, is one of the biggest challenges. Many small farmers deliver only a few liters a day, but there are thousands of suppliers. The main road in to Siongiroi is an improved murram road now, but in the early years, it was a very difficult and poorly maintained rural road that would sometimes be impassible in the rainy season. Supplier farms are scattered across the countryside, mostly within a ten to fifteen kilometer radius of the chilling plant. These farms have even poorer access roads in to Siongiroi, often little more than cattle tracks across the hills. The solution to this collection problem was a large network of small private transporters. Anyone can bring milk in to the plant, in any quantity. Collectors are trained to test the milk they collect to reduce rejection rates at the plant to a minimum. They are paid a flat rate of 2 bob per liter of milk delivered to the plant. Transporters with only a bicycle might deliver 50 liters per day.

“I spend a lot of my time talking with the farmers. They are always welcome in my office, and I go out to visit them whenever I can. If they don’t trust the plant manager, it won’t work.”

Mr. Ferdinand Okinyi
Siongiroi Dairy Plant Manager
Extended Elements of the Chilling Hub

Diagram 1

Dairy Farmers

Agro Vet Supply

A/I

Animal Health & Extension Services

Transporters

CH

Commercial Milk Processor

Diagram 2

Dairy Farmers

Agro Vet Supply

A/I

Animal Health & Extension Services

Transporters

CH

Financial Services Association

Health Insurance

Feed and Water Supply

Commercial Milk Processor
while some motorcycle transporters are able to deliver 200 or more. Donkey carts and pickup trucks provide even greater carrying capacity, thus earning a decent income for a large number of small private milk transporters. This solution offered several benefits:

- Employment for milk traders who might otherwise compete with the plant for the milk supply;
- Employment for youth, a high priority in rural Kenya – it takes a strong young man to handle a motorbike on a bad road with 200 kg of milk cans slung over the back;
- Some farmers are also transporters, thereby increasing their income;
- Ease of finance, since the banks were happy to make loans for motorcycles to transporters who can earn a steady income;
- Flexibility to respond to seasonal variation in supply;
- Low cost solution for the plant.

The transporters network becomes another basis for social capital, as many youth earn their living serving the enterprise, and the banks, too, get business from it because of motorbike loans.

The chilling plant itself is also an important employer in Siongiroi town, with permanent staff in a variety of positions. The number of staff employed varies with the volume of milk the plant takes in, which is steadily increasing over time, and with other service and profit centers such as agro-vet shop and financial services that are managed by the plant. As the business grew and developed, it began to take over many of the services that were provided by the original USAID funded project.

These services, now that dairying is a profitable farm enterprise, have become viable businesses in their own right. They include agro-vet shop for farm supplies, animal health assistants, a veterinarian, and AI service. Each of these activities generates employment and income for people with very diverse levels of skills and education. In some cases, such as the agro-vet shop, the activity is a profit center for the hub. Other services are provided to suppliers through the mediation of the hub, such as veterinary services or AI. The Hub will guarantee payment to the service provider based on the farmer’s milk deliveries, a process known as “check off,” thus making it easy for a farmer to get the service they need when they need it, and for the professional service provider to be assured of payment for services even in a poor rural community.

Many goods and services that could enhance the quality of life in remote rural areas are generally lacking. Over time, successful CHs tend naturally to diversify into other business lines, such as health insurance, water supply, mixed feeds, and financial services. When these business lines can be operated profitably, they serve both to strengthen the CH financially, and to build social capital through valuable services to shareholders and the community. Obviously, profitability is essential.

In some cases, it makes more sense for the CH to encourage others, for example banks, pharmacies, or clinics to come into its area and do business independently. Through payment guarantees based on the check-off system the CH can provide an incentive for businesses to invest in the community. The steady flow of income generated by milk sales attracts all types of businesses to the community.

Financial Services

While the CH is not a bank, it inevitably takes responsibility for certain financial services to its shareholders and milk suppliers. The CH business model relies heavily on trust. An important element of this trust is timely and reliable payment for milk delivered by suppliers. Recall that failure to pay suppliers was the downfall of KCC.

The CH keeps close track of milk deliveries on a daily basis, and makes payments to suppliers accurately, reliably, and on time at least once a month. With very small volumes of milk delivered by the average individual supplier, it is not practical to pay cash on a daily basis.

Milk delivered to Siongiroi Dairy Plant.

An Agro-vet Shop in Tanykina Dairy Plant.
A CH taking in 30,000 liters of milk per day may have 2,000 suppliers. This would be a huge number of transactions to manage on a daily basis. Monthly payment is more practical for the CH, and offers many advantages for the milk suppliers.

As each supplier delivers their milk, they accumulate credit at the CH. Every CH has systems that enable its suppliers to access this credit for a variety of needs, ranging from animal health and AI service to school fees and payment on bank loans. Cash advances are also available. In this sense, the CH provides financial services. These services help consolidate the social capital that provides the foundation of the CH’s success, as they expand the network of social relations between the CH and many members of the community.

CHs are obliged to manage substantial cash payments at the end of each month, as they pay the salaries of their staff and their milk suppliers. For a CH taking in 30 tons of milk per day, the total payout may be as much as Ksh. 20,000,000 ($250,000) at the end of every month. It is a small step from managing this level of cash disbursement to managing savings accounts for staff and suppliers. CHs with this level of sales usually set up independent financial services offices in the form of Financial Services Associations, which are easier to create and face fewer regulatory hurdles than banks, to manage this aspect of their operations. The more aggressive banks in Kenya, such as Equity Bank and Family Bank, have found it advantageous to open branches near the most successful CHs, because “the money is there.”

“Check-off” is the practice of using the credit accumulated at a farmer’s CH account to pay for goods and services needed for farming or for household expenses. The farmer can assure the supplier, service provider, clinic, chemist, school, or whomever they need to pay that the funds are available for payment in their CH account. This can be verified by a phone call, or by the farmer’s most recent receipt for milk delivery. The CH can pay them directly, from the farmer’s account, before settlement at the end of the month. This provides the farmer with access to their funds, without the risk of having cash in hand, and provides the supplier of services or goods a reliable guarantee of payment.

A farmer’s long-standing history of milk deliveries provides a basis for a bank loan or getting their children into a better school. Interviews with shareholders indicate that the financial services provided by the CH are highly valued. Cash management is a perpetual problem for poor rural households. There are always demands, either from the household or other family members or neighbors, for whatever cash the small farmer may have in her pocket. Only when that cash is “unavailable” can it be saved for other uses. Helping its suppliers to overcome the challenge of cash management is one of the most valuable roles the Hub plays within the community. By keeping their milk income “in the bank” so to speak, with the CH, they are able to avoid the common problem of frittering away the little cash that otherwise would come to them from milk sales on a daily basis. The practice of monthly payments facilitates savings (women tend to save more than men), and enables investment in livestock, better housing, and other more expensive purchases that enhance farm productivity, and raise the standard of living of the household.

Naturally, given the large number of shareholders and frequent interactions between the CH and its shareholders, the Hub tends to become a kind of community center. The more successful CH’s even sponsor local children for higher education by offering scholarships.
3.3 Conclusions re Social Capital

Some important conclusions about the social basis of a successful Chilling Hub emerge from this discussion of Social Capital.

- The Chilling Hub’s Social Capital depends ultimately upon the sense of ownership and trust that characterizes its relationships with its shareholders (and even with those milk suppliers who are not shareholders);
- This aspect of the CH’s relationship with its shareholders/suppliers is one of its most valuable assets, and therefore is an important responsibility of the BOD, the Plant Manager, and all the farmer group leaders;
- By extending a variety of other services to its members, and to the community, the CH strengthens its social capital and reinforces the mutually beneficial relationships that tie it to the community;
- This is a highly effective business strategy. It becomes very difficult for other milk buyers to compete with the CH for the milk supply when all they have to offer the farmer is a slightly higher price for their milk.

The social capital invested in a Chilling Hub must be nurtured and maintained in many ways, as demonstrated by the many strategies detailed above. Furthermore, the enterprise, in which the farmers have invested their own money, must also be financially successful.
4.0 BUILDING A PROFITABLE ENTERPRISE

We have seen that a very simple milk collection business can develop into a Hub of farm community services, taking on a wide range of profitable activities in support of its milk suppliers, who are its principle shareholders. In the process it also help to develop the business environment in the community where it operates.

The milk collection center’s profit potential arises from several factors:

- Naturally productive regions where farming and dairying have high potential (the so-called High Potential Zones of the Kenyan back country);
- Strong inclination toward keeping livestock in general and dairy cows in particular in these regions;
- Social capital, business organization and marketing ability overcome very poor rural infrastructure and improve market access;
- Market access strengthens farmer motivation to increase production and productivity on the farm, and begins raising farm incomes and also investment in farming;
- Strong social capital overcomes farmers’ mistrust of cooperative organizations and management, and enables them to organize to realize their high production potential;
- Greatly increased income to farmers encourages private sector investment in farming services and support systems, further raising farm productivity;
- Kenya’s relatively well developed dairy processing industry serves several large urban centers where demand for dairy products is high and growing, offering a potentially lucrative market.

By finding their own solution to the milk marketing problem, farmer-owned milk collection centers were able to capitalize on a difficult economic situation. The farming community needed access to market in order to increase their incomes. Once market access was established, they were motivated to increase production and productivity on their farms through further investment in dairying and other activities, and they had the funds to do so from milk sales. This created the demand for farm supply and services that opened up a range of opportunities for the milk collection center to become a farm service center. It also created opportunity for other businesses of all types to meet the needs of the community, now that there was a steady stream of income.

In parallel, the sponsoring organization for a Hub Model business must remain focused on building the social capital that we discussed in the previous section. Even potentially profitable rural agro-enterprises will fail if they lack the support of the farmers who supply the raw material required for operations, or if management is allowed to ignore their responsibilities to shareholders.

4.1 The Challenges of Milk Collection and Chilling Plant Operations

There is more to this apparently simple business than one might think.

Milk collection centers sponsored by HPI-K typically try to start with a milk chilling and holding capacity of about 6,000 liters, because this is a level of daily operations that can enable a typical center to break even.

The most fundamental problem in the milk business is to maintain the quality of the milk. There are many aspects to quality, but the most basic are that the milk must not be adulterated (a variety of substances can be used to dilute milk), and it must be as bacteria-free as possible to minimize spoilage and preserve flavor. The processor who buys from the collection center will test the milk for adulteration and spoilage before purchase, and reject any milk that does not meet their standards, so maintenance of milk quality is essential to the business.

Milk quality begins with the health of the cow, so the collection center must be concerned with the health of the cows that are producing the milk it buys. The moment the milk leaves the cow, it begins to deteriorate as bacteria may be introduced from many sources, and the naturally warm milk is an ideal medium for bacterial growth. So the collection center must be concerned with the farmer’s milking methods and equipment, to insure proper hygienic handling of fresh raw milk. In order to maintain milk quality it must be chilled, ideally to about 4°C but at least down to 10°C, as soon after milking as possible, but no more than two hours after milking. Small farmers rarely have any facilities for this, so the milk must be delivered to the collection center, or to a satellite collection point with a chiller, as quickly as possible. Efficient milk transport, from the farm to the nearest collection/chilling point, is critical to the success of the collection center.

As a CH grows and develops its market, milk quality becomes ever more difficult to maintain, since there are more suppliers, presumably some of them more distant. At the same time, quality becomes ever more important factor in the ability of the CH to secure a market. A high volume supply of high quality milk is very valuable to larger scale dairy processors. Poor quality milk will be rejected.
If the average milk delivery per farmer is less than 5 liters per day the plant will need more than 1,200 suppliers in order to reach the 6,000 liter per day goal. Because of rapid spoilage and very poor rural roads, supplier’s farms should all be located within 10 to 15 kilometers of the chilling plant. Because of the time, temperature and spoilage factors, chilling plants would prefer that all milk be delivered to the plant within two hours of milking. This poses challenges for both the farmers and the transporters, and also to the chilling plant manager and staff, who must try to insure compliance with this demanding rule.

Clearly, the collection center has a strong incentive to mobilize a large number of producers in the area close to the chilling plant, and assist them to increase their milk production so that average delivery quantities become larger over time. Ideally, all these suppliers should be owners, shareholders in the plant. A larger CH also has an incentive to establish satellite milk collection and chilling centers, to put the collection and chilling process as close to the farmer as possible. This will require additional investment.

Upon reception, the milk will be put through a series of tests to make sure that quality is acceptable. This requires some simple equipment, and some expertise. Most chilling plants have a small laboratory where more sophisticated testing can be done on a sample basis to verify milk quality. This requires skilled personnel. Once approved, the milk is filtered to remove any extraneous matter, then weighed, so that the farmer’s account can be credited.

At this point, the milk is chilled and transferred to bulk storage tanks to keep it cold.

A chilling plant with daily volume of 5,000 liters or more can contract with a milk processor to send a tank truck to pick up the milk at the chilling plant. Even this apparently simple operation is fraught with challenges. The processor would prefer to take delivery at their own processing plant gate, even if they physically pick up the milk at the chilling plant. This gives them the option to reject the milk for quality reasons when it is finally delivered to them. It is obviously best for the chilling plant to hand over the product to the processor, and have the quality of the milk approved, when it is pumped into their truck. It should be considered accepted, and payment due, as soon as the milk is in the tank truck. This is not a simple negotiation.

At the end of every day, the entire plant and all milk handling equipment must be thoroughly cleaned and prepared for the next day. Proper cleaning and maintenance of the chilling plant equipment requires technical training and experience. Pumps and chillers are mechanical devices that inevitably fail at times and must be repaired.
This brief summary of the activities and challenges that characterize the most basic aspects of milk collection and chilling plant operation clearly shows the need for experienced professional and technical management at the plant. The basic operations of collection, testing, chilling, and bulking the milk may pose many challenges. These are the responsibility of the technical staff of the plant, which includes:

- Extension and animal health workers who reach out to the farmers on their farms;
- Transporters who deliver milk to the plant;
- Technicians who maintain and operate the chilling and holding equipment;
- Dairy technicians who receive the milk and insure milk quality.

Milk marketing is a primary responsibility of the plant manager, who is ideally qualified both in business management and dairy science. The manager negotiates the terms of sale with the processor, including price and quality standards, delivery volumes that may vary seasonally, payment terms, transport arrangements, etc. One of the plant manager’s major challenges is negotiating a price for the farmers’ milk that makes three key players happy:

- The farmers want a milk price that is “higher,” but will accept something less than the highest price available in the local market in order to support their milk collection center because they own it, and because it provides them with many benefits and services;
- The processor wants a “lower” price, but sees value in the large volumes and quality control that the collection center can provide, and is therefore willing to pay more than the lowest prices offered at the farm gate, or in the local market;
- The collection center must be able to take a few shillings per liter to meet all of its own expenses, in the fullest sense, including loan repayments, capital recovery and retained earnings for future investment.

### 4.2 Profitable Enterprise

Some important conclusions emerge from this discussion of the Chilling Plant as a profit driven, sustainable enterprise:

Even the most basic operations of the milk collection and chilling plant show the need for professional staff. Operations require technical training and skills that the farmers themselves do not have. Business management of the plant is challenging, requiring trained and experienced staff.

Even a strong and committed BOD selected from among the leaders of the farming community will need training in financial management and reporting, business organization and good governance, and many other fields which lie outside the realm of their ordinary experience as dairy farmers in order to discharge their responsibilities well. Kenya is fortunate to have an educated and professionally experienced population even in rural areas. But even so, BOD members of CHs consistently express the need for more training on financial management and business planning.

Since the BOD is drawn from the leaders among the farmer group shareholders, these groups must also benefit from business training, since future BOD members will come from their ranks. And ultimately, in order to achieve consensus on important business issues facing the CH, the shareholders, who are almost all smallholder farmers, must also have an understanding of how the business works. This is essential to maintain the good will, trust and confidence of the shareholders which is the social capital foundation on which the enterprise rests.

Management training at all levels, from dairy farmer to BOD member, thus becomes another area of ongoing responsibility for any entity promoting the Hub Model. In order for the chilling plant to survive financially, providing reliable services to the local dairy industry and justifying shareholders investment of their social and financial capital, it must be a successful, profitable private enterprise. To achieve this, the commitment represented by the social capital invested by shareholders must be sustained through good management of the enterprise, so that it can meet the needs and expectations of its shareholders.

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**The Essential Equation for Sustainability**

*Without social capital, the enterprise cannot hope to succeed. Without financial success, social capital will erode.*
It is clear that in order to apply the Hub Model to the problems of poverty alleviation, small farm development, and rural economic development, an NGO or other development agency and its partners must possess skills for building social capital among the farming population, and skills for business analysis, investment and operations management, marketing, and business training.

A number of trained observers, including the author, and staff of ILRI and FAO in separate studies, have noted the extensive benefits that the Hub Model brings to rural communities. The chilling plant can act as a catalyst for economic development of the community, as illustrated in this quote from an FAO study, done in 2006 for the Sustainable Agriculture and Rural Development Initiative (SARD):

“The plant has influenced the expansion of businesses in the town due to farmers’ increased disposable income. Since the Siongiroi Dairy opened there are nine new veterinary supply stores to serve the farmers, three new clothing shops, six new restaurants, 16 new food stalls and butcher shops, and 17 new hardware and mechanic shops. The people of Siongiroi used to have to travel many miles to reach an open-air market - now, every Thursday, the market comes to them. The plant is a source of employment for 18 local people. Many entrepreneurs have also seized the opportunity to start milk transportation businesses. Residents are building solid stone houses to replace their dwellings made of mud, which has spurred growth in the construction industry. The town now has three health clinics and two pharmacies, and children attend the town’s two new schools and shop in its three new bookstores…. The infrastructure (roads) leading to the chilling plant is regularly maintained.”

The Hub is a farmer owned and managed business that serves the needs of the farming community for market access, farming inputs and other supplies, and training. In doing so, it enables and encourages smallholder farmers in remote rural areas to invest in farming, increase their productivity and income, and improve their standard of living. Poor rural farmers begin to think of farming as a business, and the issues of poverty alleviation and food security become a thing of the past. Higher incomes in the community lead to the development of a thriving local economy, with greater availability of goods and services to improve the quality of life and increase economic and social opportunity.

Documented benefits are very numerous, and include the following:

- Access to a reliable milk market motivates farmers to invest in increased dairy productivity;
- Reliable cash flow enables investment and increased productivity in all farming activities;
- Hub farm services further enhance farm productivity;
- Hub sponsored technical and business training stimulate farmers to adopt new practices, improve their soil management and livestock genetics, and invest in farm enterprises;
- Reliable farmer income stimulates local businesses, and the community grows and diversifies, with new schools, clinics and chemists, hardware & house wares shops, clothing, sundries, and shoe stores, restaurants, banks, etc. etc.;
- The Check Off system enables farmers to save and accumulate larger sums of money for investment in home and farm structures, chaff cutters, and other farming equipment;
- Reliable income provides security of payment for medical services and school fees;
- Reliable income allows farmers to access loans for livestock, farming, home improvement, transport, schooling, and other necessities.;
- Children can now go to school regularly, and even access higher education, raising future political involvement and community awareness;
- Young men find local employment opportunities, resulting in more responsible behavior and better life skills;
- Women gain income opportunity, improving gender balance in households, child welfare, and opportunity for girls;
- Men are motivated by income opportunity, improving the stability of family life;
- Real Ownership of the CH by farmers changes attitudes toward farming and the future.
In an ideal world, government would respond to the needs of this new, vibrant community with roads, schools, clinics, electric power, water supply and sanitation, and improved security for the community’s new found wealth. In practice, local governments have often done their best to make the most of the advantages brought to their area by a successful hub business. Kenya allocates 10% of the national budget every year to Constituency Development Funds which are locally managed and make some of these improvements possible.

As with any small farm development program, there are numerous benefits at the farm level, ranging from increased crop productivity and improved soil conservation to improved livestock genetics and greater milk production. The greater income earning potential of farmers who are shareholders in a Hub has important secondary benefits. Gender equity, for example, is enhanced when women are better able to contribute cash income to the household. Heifer social development programs at the farmer group level lay the foundation for women to become more economically active outside the household. Many women are shareholders with supplier numbers and therefore have an independent source of income through the Hub.

The great advantage of the Hub Model, as a profitable farm service center owned and operated by local farmers, is that the resources needed for these improvements are institutionalized within the community, not brought in from outside by external agencies who will eventually have to bring their programs and services to an end. As with all Heifer programs, the social capital aspect of the Hub Model enables the farming community to begin to take charge of their own future. They can now set their development agenda, determine their needs and invest appropriately in order to improve their lives. Because the Hub Model operates at an economically significant scale, both local availability of funds and the ability to manage them is greatly enhanced.

Discussions with the BODs of the most successful CHs in Kenya reveal a range of investment plans. Some CHs have already built their own newer and larger facilities for their milk collection and chilling operations. Many are investing in satellite collection centers. Some are thinking about setting up feed mills. Others would like to establish zero grazing production centers where shareholder farmers can “board” their livestock under professional management to further increase milk yields, thus enhancing the reliability of milk supply to the CH. Most groups are thinking about value added processing at their chilling hub, and selling direct to retail to increase their margins. They do not lack for ideas, and they think about these opportunities in business terms.
6.0 THE EAST AFRICA DAIRY DEVELOPMENT PROJECT

We introduced the Hub Model concept with the story of the first successful Hub Model chilling plant, Siongiriori Dairy Plant, Ltd. With additional funding from various sources, HPI-K was able to replicate this experience at three other CHs, in Kipkelion, Kipkaren, and Ol Kalou, with similar results. The Hub Model is ideally suited to regions like the Kenya highlands where there is a substantial milk surplus and where farmers have difficulty getting their milk to market. In such regions, farmer mobilization can begin as soon as a feasibility study determines that conditions are favorable for a Hub.

A focus on profitable enterprises solving rural economic problems means that establishment of a CH needs to go through steps that are similar to any other rural agro-enterprise:

- Pre-feasibility study – does it look like a good idea? Are local conditions favorable?
- Feasibility study – how will the business work given supply and demand conditions in the area? What investment is required, what other resources will be needed, what is the potential for profitability and return on investment? What should the scale of operations be at start-up, and what is possible in the longer term?
- Business plan – if the feasibility study is positive, where are the sources of financing for the required investment, what methods of operations, business and marketing strategy, and human resources will make the enterprise a success?
- Farmer mobilization – a critical step, runs in parallel with all the other phases of project development, provides essential input to project planning, and continues indefinitely as the CH grows and prospers, bringing farmer-suppliers together with the enterprise through investment of funds and social capital.
- Financing – required for most enterprises that will operate at any significant scale, particularly since the shareholders of a Hub Model business are mainly poor farmers who cannot supply all the capital required;
- Donor funding – may be an option to provide some, but not all, of the capital required for start up;
- Equipment procurement and construction of facilities – a challenging step leading up to start-up;
- Management skills – must be available at all stages of this process, from initial investigation to opening of the doors on the first day of operations;
- Selection and hiring of competent professional management – a requirement for success, overseen by the BOD who are watching out for shareholders interests;
- Management training for shareholders, BOD members, and CH staff – an on-going process, necessary for good governance of the enterprise and good decision-making at all levels.

The foregoing are the primary technical responsibilities of any entity that promotes the Hub Model as a solution to rural poverty. Some of these skills can be hired from other sources, or acquired through working partnerships with other organizations. In any case, these are clearly not the skills required to succeed on a small farm, and one would not expect poor smallholder farmers to have these skills or the know-how to perform these tasks on their own. Farmer leaders do, however, have a very important role to play in farmer mobilization and the organization and management of farmer groups. Farmers and their leaders must be given business training so that they can understand the process and make responsible decisions as shareholders in the enterprise. Hence business training is a critically important role of the entity in promotion of the Hub Model.

The Hub Model approach was scaled up significantly with a $42.8 million grant from BMGF in 2008. The goal of the grant was:

“To help 179,000 dairy farmers in East Africa double their dairy-related incomes by increasing their ownership of cross-bred cows, increasing the amount of milk their cows produce, and strengthening their relationship to formal markets so they can sell more milk.”

The basis of the project was the lessons learned from HPI-K’s earlier efforts to develop Chilling Hubs as model businesses to enable small scale dairy farmers to access the milk market and also the inputs and services they need to increase production, improve milk quality, and better manage their farms, particularly in the areas of livestock breeding and fodder production and storage.

The BMGF web site states that EADD is organized around four specific objectives:

1. “Help farmers organize themselves into business associations that can establish chilling plants and manage the dairy hubs where various livestock services will be available.
2. Working with the business associations, establish 27 new chilling plants, strengthen 10 existing chilling plants, and train the farmers to run them efficiently.
3. Establish an investment fund to help farmers participate in chilling plant businesses, and work with banking institutions to help business associations with related financing needs.
4. Provide farmers with animal health, nutrition, and breeding supplies and services and business training through dairy hubs.”
All of these objectives have been met despite setbacks occasioned by post-election violence in Kenya and the global financial crisis. The original project targets will be attained with some delay due to these circumstances, but in Kenya, the concept has been validated.

In addition, private sector commitment to the smallholder dairy industry in Kenya has increased significantly as a result of EADD. Both New KCC and Brookside, the largest dairies currently operating in Kenya, have signed supply contracts with EADD hubs. Tetra Pak has been involved with chilling hub development in Kenya since the establishment of the Siongiroi Dairy Plant. Nestlé Corporation is working with selected EADD hubs and New KCC to help improve milk quality in order to enable Kenyan powdered milk to meet international trade standards. Success in building these linkages bodes well for the future of EADD sponsored chilling hubs, as they are becoming solidly integrated into the commercial dairy industry in the country.

The success of EADD can be measured by many indicators. A comprehensive Monitoring and Evaluation report of the first four years is not yet available. Perhaps it will present in some detail the importance of social capital for successful hubs, and the process of building and maintaining sense of ownership, trust, and valued relationships that are so critical to success of the Hub Model.

Conversations with the BODs of several of the most successful Hubs (Siongiroi, Tanykina, and Kabiyet) reveal that the relationship with HPI-K is viewed as one of the most important elements in the continuing success of their enterprises. These Hubs are handling more than 30 tons of milk per day in high season, with realistic perspective for further expansion. Annual revenue is high and growing, and their financial position is strong. Staff is highly professional and well-motivated and morale is high. Registered farmers are very active in milk supply, and use Hub services frequently for their farming operations and personal financial management. While there are still more men than women registered suppliers, the percentage of women is growing rapidly in every case. Every one of these centers has projects underway for expansion of milk handling capacity, installation of satellite milk collection centers, additional services for the Hub, and new businesses to respond to the needs of their dairy farmers, such as feed supply, water supply, and zero grazing management on a commercial scale.

The members of the boards are energetic and committed and enthusiastic. Yet, when asked what will happen when HPI-K is no longer an active partner in their business, they all say that they hope this will not happen for many years to come. They voice concerns regarding their own management skills and knowledge, particularly financial management. They express fears regarding their contracts with milk processors, and their desire to become more independent of the processors by investing in value-added processing on site at the Hub. They do not explicitly mention the value they place on the presence of Mzee Kirui, Director of HPI-K, at annual general meetings and elections, but it is clear that HPI-K provides an important element in the glue that holds together the social fabric of their enterprise, with its many thousands of shareholders and several layers of management.

"Let them continue with us for another five years. Then we will have better financial management skills and our businesses will be much stronger. There is much work remaining to do together." - Chairman of Kabiyet Dairies Ltd, Nandi North District
Fundamental to Heifer’s approach to rural development is beginning every project with an exit strategy in mind. The EADD exit strategy is based upon two approaches:

First is ensuring that every Hub is an autonomous, well-managed and sustainable business. There are many factors that lead to this result, including:

- Professional management with adequate business skills to plan and execute for profitable current operations and growth for the future;
- Knowledgeable and capable BOD committed to sustaining the social capital that underlies shareholder relations and overseeing responsible management;
- Strong grassroots farmer organizations with effective training programs to strengthen on-farm productivity, enable farmers to understand the business of the Hub, and continually strengthen the social capital that underlies the success of the model;
- Linkages with public and private sector agencies and individuals that provide services and support to the businesses of the Hub;
- Relationships with banks and other financial institutions for financing of operations, providing banking services to the Hub and its members, and providing loans for expansion of activities;
- A sound legal structure for the Hub that enforces compliance with business codes and enables the Hub to act in a legal capacity to make and enforce contracts, acquire clear title to property and other assets, and conduct its business in a professional manner.

Ownership of shares and active participation in a Hub fundamentally changes the small farmer’s perspective. A reliable market, availability of productivity enhancing inputs, access to credit through check-off and training in improved production methods encourage farmers of every size to invest in farming in order to improve their income and the productivity of their farms.

The Hub helps to put access to the market, and an understanding of market requirements, at the forefront of how the farmer thinks about farming. She begins to see farming as a business. Training programs must go beyond farming practices to include business concepts so that the farmers can be effective shareholders and better farm managers.

The second element of the exit strategy is the creation of a dairy farmers’ organization that can provide the support and services the hubs need, and also act as a lobbyist and civil society advocate to influence local government decisions, national policy, and promote respect for human and civil rights, as well as continue efforts to improve the business environment for the dairy industry. This organization is registered as the Kenya Dairy Farmers Federation.

7.1 The Kenya Dairy Farmers Federation (KDFF)

The success of EADD has encouraged shareholders of the many operational hubs to create an umbrella organization. The Kenya Dairy Farmers Federation is registered as a private company limited by guarantee. The nineteen founding members are all dairy farmers, members and representatives of farmer groups, and many of them are BOD members of their Hubs.
The objectives of KDFF are many, focused as it is on the needs of its member farmers, the chilling hubs, and growth and improvement of the national dairy industry. The statutes of KDFF state that its purpose is:

- “To monitor, measure, and enforce contracts” for members engaged in milk marketing and procurement of goods and services for the dairy industry;
- “To establish and operate inspectorate, quality assurance, and advisory services;”
- “To lobby and advocate for policy amendments” to provide incentives to dairy farmers and protect them from exploitation by market forces;
- “To obtain information on current and future market demands for dairy products” to better inform the operations and business decisions of chilling plants and dairy farmers;
- “To represent dairy farmers in international conferences, workshops, meetings and symposia;”
- “To participate in the formulation, negotiation and implementation of dairy development projects…;”
- “On an annual basis to carry out surveys on the cost of milk production and recommend the minimum producer price…;”
- “To establish … dairy processing plants and market the products from such dairy plants;”
- “To monitor, measure and enforce quality standards in the chilling plants to comply with HACCP, NEMA, KEBS and international standards;”
- “To participate in development … of Dairy Master Plans and … national dairy strategic plans and their implementation;”
- “To train farmers through field days, demonstrations, and exchange visits locally and internationally;”
- “To develop the capacity to provide management and technical services to existing and new chilling plants;”
- To carry out research on topical issues … and disseminate results through symposia and meetings;”
- “To publish periodical journals …;”
- To participate actively in research programs with KARI and other scientific and social research institutes relevant to the dairy industry…;
- “To liaise with universities and other learning institutions in development and advancement of knowledge and skills on dairy industry in Kenya;”
- “To obtain new technologies, advise and transfer the same to chilling plants and farmers, and lobby for control of influx of substandard dairy equipment and chemicals.”

In addition to the objectives listed above related to promotion of the dairy industry, the KDFF is also registered to act as a legal entity to engage in contracts, own property, obtain and manage funds and endowments, secure loans, and many other business functions.

Once established and fully functional, KDFF should be able to take on most if not all of the responsibilities of EADD. KDFF will be funded by membership dues (all Kenyan dairy farmers are eligible to pay the Ksh. 100 fee to become registered members) and a cess on milk marketed by members. KDFF is also empowered to raise funds from external sources to fund specific projects, and to collect fees for consulting services to the industry in Kenya and the E Africa region. It may also take on responsibility for management of chilling plants for a fee.

Ultimately, KDFF should Pass on the Gift of Hub Model know-how to more and more dairying communities in the Kenya highlands, increasing the number of active hubs and dairy farmers. Once the Nestlé program to raise milk quality standards to meet international trade requirements becomes fully operational, the KDFF can facilitate expansion of the quality standards and control methods to its members. This will provide Kenya with the raw material for exportable dairy products that can compete internationally.
8.0 CONCLUSIONS AND IMPLICATIONS OF THE HUB MODEL

The EADD Project has demonstrated conclusively the viability of the Hub Model as a tool for rural dairy development in Kenya. Since only about 10% of the milk supply to the formal sector dairy processing industry comes from EADD sponsored Chilling Hubs at present, there is potential to expand the number of collection centers and thereby extend and increase the impact on:

- Rural poverty alleviation through increasing farm incomes
- Food security from increasing farm productivity and income
- Small farm development based on appropriate training programs
- Social Capital embodied in strong farmer organizations
- Rural economic development derived from increasing community income
- Growth of the domestic Kenyan dairy industry with higher productivity and improved quality of the milk supply
- Export potential of the Kenyan dairy industry driven by quality management and support from firms like Nestlé and TetraPak.

These effects are all highly desirable, and one would therefore expect the Kenyan government to support replication of this farmer-owned business model in the dairy industry. The Kenya Dairy Farmers Federation is an attempt to institutionalize the process of further development of Chilling Hubs on a national scale. It should also assist existing hubs to consolidate their gains and maintain and grow their businesses successfully despite ever-changing economic conditions and a difficult business environment.

There is insufficient data to accurately quantify the impact of EADD at this point, but the success of the model, spectacular in some places, less so in others, is evident from the volume of milk flowing through the Hubs, and the payments to farmers that this represents. As we have seen, there are many other important community and rural economic development benefits that might also be quantified to judge the full impact of the project.

Some of the most important effects of the Hub Model are difficult to quantify, but are evident from discussions with farmers who are active in the project. We have discussed social capital at length, how the project develops and strengthens it, and the benefits that it brings to farmer organizations, rural communities and the chilling hub business model. Farmers who participate in a Chilling Hub business, who become registered suppliers and benefit from access to market and to the training and services offered by the hub, benefit in a variety of ways. Thinking of farming as a business changes the way farmers make decisions on the farm. They begin to think in terms of profit and loss when they have access to a market and some confidence in the prices they will get for their products. Cost of production and increasing productivity take on new meaning in the context of a reliable market. The Hub Model encourages the farmer to look further down the value chain, toward the market opportunities that may be available to her through new approaches to marketing. It creates a practical understanding of the requirements of the market, such as reliable delivery of good quality product. Access to market encourages the farmer to take steps to stabilize production despite natural seasonal variation, and to increase the quality of their milk as well as the quantity.

The Hub Model provides a positive experience of shareholding in a large farmer-owned organization that delivers access to market on favorable terms and also many services to improve farm productivity. This experience can help to offset longstanding prejudices against cooperatives and other state-sponsored large scale farmer organizations. It is an effective demonstration of the many ways that small farmers can benefit from organizing to achieve a larger scale of operations and a more powerful position in the value chain.

The gender equity benefits of the Hub Model are considerable and derive from the fact that milk production takes place at the homestead. This creates opportunity for women to contribute significantly to household income without having to leave the homestead, resulting in a more equitable economic relationship between husband and wife.

Young people, both male and female, benefit from employment opportunities as well as the opportunity to manage their own livestock on the family farm for income. In the Kenyan context, where youth unemployment in rural areas is associated with many complex social problems, young men are now able to get bank loans to buy motorbikes and become transporters delivering milk to the chilling hub from surrounding farms. The chilling hubs employ many women, and in some of the most successful hubs, the general manager is a woman. Girls may find work cleaning milk churns as part of daily operations, but the role model provided by a woman in charge of the most profitable business in the district is a powerful incentive for them to do well in school and aim high.

Circumstances in Kenya are favorable to the development of the rural dairy industry. Even within Kenya, there are less successful examples of Chilling Hubs, and some few have failed. As with any business,
the parameters of success are many, and so are the risks. Based on the extensive experience of EADD, it should be possible to do accurate pre-feasibility studies in other countries to assess whether the model will work there or not. EADD experience in Uganda and Rwanda are cases in point. Suggested elements of a pre-feasibility study for milk chilling hub investment are:

• Potentially highly productive dairy sector
  – Favorable conditions for fodder production and adequate water supply
  – Farmers who will be motivated by market access to increase production and the milk supply
  – Farmers eager to adopt modern production techniques
  – Potential to achieve scale rapidly - 4,500 lpd for start-up and 15,000 lpd+ for Long Term profitability and sustainability
• Potential for social capital: ownership and trust
  – Farmer willingness to invest and become shareholders
  – Dynamic leadership at grassroots level for farmer organizations and farmer businesses based on reliable BODs
  – Competent professional management for Chilling Hubs
• Access to market
  – Commercial processors at sufficient scale to purchase and take delivery in bulk
  – Possibility of contracting to supply them
  – Adequate transport infrastructure for daily milk delivery
• Manageable level of investment required
• Potential for commercial bank financing
• Favorable business and policy environment

Even if the pre-feasibility screen indicates that the Chilling Hub Model might work in another environment, a closer look at the viability of the business with a detailed feasibility study will be necessary. It is vital that the study investigate the social capital aspect of smallholder farmer willingness to invest in the enterprise, and make the collective commitment to seeing it through to a successful business.

A broader question is whether this model, of basing a farm service center on agricultural commodity marketing, can be applied to other smallholder farm products. HPI-K would like to attempt it with dairy goats, poultry, and horticultural products in Kenya. Milk as a farm commodity has many very specific characteristics which make it ideal for poverty alleviation and food security as well as a solid foundation for the Hub Model:

• Daily production provides steady cash flow for suppliers and the hub;
• Quality is easy to verify;
• Farm level investment to go into dairying is within farmers reach;
• There is significant potential to scale up and increase farm income, since dairy production is highly responsive to better technical inputs in animal husbandry and genetics;
• Milk production on the farm is organized in such a way that it enables women to participate fully and thereby gain in gender equity in the household;
• Milk as a farm product is excellent for food security and nutrition for children, the elderly, and the ill.

Note that the other projects that HPI-K is considering (dairy goats, poultry, and horticultural products) share most of these same characteristics. The potential is enormous to improve the standard of living in remote rural areas through collective marketing of farm produce on the scale achieved with the Hub Model. A successful market center can become a hub for farm business, and an economic pole for rural development. This approach is proven to effectively transform rural communities and stimulate economic growth and smallholder income. The next steps are to try the model with other commodities in Kenya, and to replicate the experience in other countries.
9.0 REFERENCES

- “Impact of marketing liberalization on dairy marketing and the dairy marketing system in Kenya.” Stephen G. Mbooh, 1993, Nairobi University for FAO.