1.2.3. Access to Potable Water Sources and Water and Sanitation Hygiene Practices[81]

One of the underlying causes of malnutrition according to the United Nations Children Fund (UNICEF) conceptual framework[82] is inadequate access to and use of clean water, along with poor sanitation practices. According to National Environment and Management Authority (NEMA), only 50% of the target households had access to potable water and 46% of them had access to pit latrines in 2005.[83] Diseases related to sanitation constitute a significant disease burden in the district, with diarrhea constituting 12%. Formerly, people depended on wells, streams, swamps, and rainwater as their only sources of drinking water. There were many cases of children drowning in streams in the process of fetching water. There were very few boreholes, and people spent long hours lining up at the few boreholes that did exist. Some people, especially children, used this as an excuse to dodge school activities and house chores.

Cooking, drinking, washing, and watering of kitchen gardens were some of the activities for which water from all sources was used. Streams and swamps were popular water sources for grazing animals and brick making. The mentioned sources largely provided less clean and often unsafe water, especially drinking water. Most people collected rainwater in saucepans and open containers that they put under the eaves of their houses. Unfortunately, this water was easily contaminated. Some of the farmers complained that even the borehole water could be dirty, "although we can access borehole water these days, the water is not good. It has soil in it," and, "pipes of the borehole rust and make the water to taste unpleasantly."

The safest drinking water was boiled, but this was rarely done. Some said boiled water did not quench their thirst, while others do not see any problem with not boiling water. Fuel scarcity for boiling water was another problem.

1.3. The Government of Uganda Health and Nutrition Structures

1.3.1. National Health and Nutrition Structures and Policy Context

The Ministry of Health (MoH) provides leadership for the health sector in Uganda. As outlined in Health Sector Strategic Plan (HSSP) II, the MoH is the principal agency responsible for the delivery of curative, preventive, public-awareness building, and palliative and rehabilitative services to the people of Uganda. The provision of health services in Uganda has been decentralized, with districts[84] and health sub-districts (HSDs)[85] playing a key role in the delivery

[81] Adapted from monthly reports 2005. VEDCO/SRL
[82] NEMA, 2005. State of the Environment
Report for Uganda. Kampala: NEMA.
[83] MoH 1996. Major Causes of Morbidity and Mortality in Kamuli District. Epidemiology Unit. Uganda: Ministry of Health. Kampala Uganda.
[84] The district health systems are run by the local government and are responsible for delivery of health services, recruitment, deployment, development, and management of human resource for the health service. They also develop and pass health-related by laws and monitoring of the overall health sector performance. The local governments manage public general hospitals and health centers and also provide supervision and monitoring of all health activities (including those in the private sector) in their respective areas of responsibility.
[85] The HSD is a lower hierarchy in the health service organization. It is mandated with the planning, organization, budgeting, and management of the health services at this and lower levels. It carries an oversight function of

and management of care. The health services are structured into National Referral Hospitals (NRHs)[86], Regional Referral Hospitals (RRHs),[87] general hospitals,[88] health center (HC) IVs, HC IIIs,[89] and HC IIs.[90] The HC I has no physical structure, but relies on a team of people (the Village Health Team, or VHT) that works as a link between health facilities and the community.[91] The role of the VHTs in the community is to:

- Identify the community's health needs and take appropriate measures;
- Mobilize community resources and monitor utilization of all resources for their health;
- Mobilize communities for health interventions such as immunization, malaria control, sanitation, and promotion of health-seeking behavior;
- Maintain a register of members of households and their health status;
- Maintain birth and death registries;
- Serve as the first link between the community and formal health providers; and
- Promote community-based management of common childhood illnesses, including malaria, diarrhea, and pneumonia, as well as the periodic distribution of any health commodities needed to support these activities.

The Nutrition Unit at the Ministry of Health (MoH) headquarters is responsible for coordinating nutrition activities and leads the process of formulating policies and guidelines relating to nutrition. In order to do this, the Unit works with other departments within the MoH, the Uganda National Food and Nutrition Council (UNFNC), and other stakeholders.

In 2010, the government introduced the Integrated Management of Acute Malnutrition (IMAM) strategy to address acute malnutrition. The principal objectives of the IMAM strategy focused on the need to better:[92]

- Integrate the management of acute malnutrition into the ongoing routine health services at all levels of the health infrastructure; and

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overseeing all curative, preventive, awareness-building, and rehabilitative health activities including those carried out by the Private Not-For-Profit (PNFP) and Private For-Profit (PFP) service providers in the health sub-district.

[86] National Referral Hospitals provide comprehensive specialist services and are involved in health research and teaching, in addition to providing services offered by general hospitals and Regional Referral Hospitals (RRHs).

[87] The RRHs offer specialist clinical services such as psychiatry; ear, nose, and throat (ENT); ophthalmology; higher-level surgical and medical services; and clinical support services (laboratory, medical imaging, and pathology). They are also involved in teaching and research. This is in addition to services provided by general hospitals.

[88] General Hospitals provide preventive, promotive (i.e. public awareness building and educational), curative, maternity, in-patient health services, surgery, blood transfusion, laboratory, and medical imaging services. They also provide in-service training, consultation, and operational research in support of the community-based health care programs.

[89] HC IIIs provide basic preventive, promotive (i.e. public awareness building and educational), and curative care and provide support supervision of the community and HC II under its jurisdiction. There are provisions for laboratory services for diagnosis, maternity care, and first referral cover for the sub-county.

[90] The HC IIs provide the first level of interaction between the formal health sector and the communities. HC IIs only provide outpatient care and community outreach services. An enrolled comprehensive nurse is key to the provision of comprehensive services and linkages with the village health team (VHT).

[91] MoH (Ministry of Health). 2004. Health Sector Strategic Plan (HSSPII): 2004/2005-2010/2011. Kampala: MoH.

[92] MoH (Ministry of Health). 2010. The Integrated Management of Acute Malnutrition Guidelines. Kampla: Ministry of Health.

- Incorporate routine nutrition assessment and management into all treatment, care, and support services.

The IMAM guidelines were intended for use by all health and nutrition care providers working at all facility levels of health and nutrition service provision in Uganda.

A second stream of basic health and nutrition services is implemented as part of school health programs in Uganda. To date, however, the implementation of comprehensive school health programs has been hampered by:

- Lack of enforcement of guidelines by local governments;
- Absence of a school health policy;
- Lack of a memorandum of understanding between the MoH and Ministry of Education and Sports;[93] and
- Poor functioning of the National Health Management Information System, which was tasked with collecting all of the food and nutrition surveillance data needed to track the execution of this and other nutrition programs.

1.3.2. Kamuli District Health Structure and Services

District health services are headed by the district health officer (DHO), who is based at the district headquarters and supervises and monitors all the health-related activities in the district. The general hospital[94] is the only government hospital[95] that handles all the major operations in the district (Table 3.5). The district is divided into three sub-districts: Buzaaya, Bugabula South, and Bugabula North. There are a number of health centers in the district that include two HC IVs, eight HC IIIs and 20 HC IIs (Table 3.5).

A number of non-state actors also play a role in provision of health services in the district, as attested to by the existence of an NGO hospital and a number of private health facilities.

At the district level, the DHOs are responsible for coordination of nutrition activities. The VHTs at the community level are equipped to provide the necessary nutrition education and other nutrition-related interventions to members of the community and build capacity of the community to become active participants in nutrition programs.

Table 3.5. Kamuli District Health Structures and Services, 2012

Health Unit	Ownership			Total
	Government	NGO	Private	
Hospital	1[96]	1[97]	0	2
Health Center IV	2	0	0	2
Health Center III	8	0	0	8
Health Center II	18	20	2	40

Source: Kamuli Health District Office, November 2012.

[93] Ministry of Health (MoH). 2004. Health Sector Strategic Plan (HSSPIII): 2010/2011-2013-2014. Kampala: MoH.
[94] Kamuli District Hospital.
[95] Kamuli Mission Hospital.
[96] Kamuli District Hospital.
[97] Kamuli Mission Hospital.

2.0. Evolution of SRL Nutrition Activities

Under these circumstances, any long-term plan to reduce malnutrition in Kamuli District would need to stabilize food access as well as address the other standard causes of malnutrition[98] through a holistic approach. To address these issues, the SRL Program designed a strategy in 2005 that focused on the achievement of four Intermediate Results (IRs):

- IR 3.1. Build community-level understanding about how locally grown foods can be used to improve nutrition;
- IR 3.2. Strengthen community capacity to identify and manage malnourished children;
- IR 3.3. Improve the nutritional and health status of vulnerable groups; and
- IR 3.4. Strengthen community access to clean water sources and improved water and sanitation/hygiene practices.

2.1. The VEDCO Organizational Structure for Health and Nutrition

At the national level, VEDCO's nutrition programming is headed by the nutrition thrust manager,[99] based at VEDCO's Luwero headquarters. Given that VEDCO operates in different regions of Uganda, there are different regional nutritionists heading the regions. In Kamuli District there is a unique nutrition program that has two community nutritionists on the ground.

2.2. Evolution of VEDCO's Nutrition Activities in Kamuli District

The initial VEDCO/SRL interventions in Kamuli District did not include any activities that focused explicitly on nutrition. This is because they assumed that any increase in food availability or access would translate more or less directly into improved nutrition. This assumption was challenged by the SRL monitoring and evaluation (M&E) reports in 2006 and 2007, which showed that some of the households that were classified as "food secure" were still nutritionally insecure since many households were:

- Selling most of their farm production, leaving very little for household consumption; and
- Still consuming a diet comprising mainly of carbohydrates with inadequate proteins.

It is at this point that the VEDCO/SRL team realized that the issue of ensuring that families balanced their diets with the locally available foods was paramount.

In 2006, nutrition became a central focus for the program and all VEDCO staff in Kamuli, and the management team at the coordination office was trained in basic nutrition principles. This was done to build the capacity of the staff in understanding and incorporating nutrition into their activities and addressing the issue of malnutrition. The staff later trained the community on

[98] PRAs in Namasagali and Butansi sub-counties indicated the root causes as poor dietary practices, limited nutrition knowledge, limited community capacity to identify and manage malnourished children, poor health seeking behaviors, high disease burden, poor sanitation practices, and limited access to clean water. **Source:** These constraints are documented in the routine monthly reports by the SRL Program nutrition and HIV/AIDS officer in 2006.

[99] The term "thrust manager" is used by VEDCO to define the national coordinate for all nutrition activities for all VEDCO projects in all regions.

improved nutrition in the three sub-counties. As a result, food and nutrition security became one of the thematic areas for VEDCO strategic plan (2010-2015).

2.3. The Role of the Nutrition and HIV/AIDS Officer and the Community Nutritionist

2.3.1. Nutrition and HIV/AIDS Officer

After the SRL's initial training of the VEDCO central (Kampala) and field (Kamuli) staffing, a nutrition and HIV/AIDS officer was hired to spearhead the SRL nutrition and health interventions on the ground. The main responsibilities of this job include:

- Developing a community-based system for management of malnutrition;
- Developing nutrition training materials;
- Building staff capacity in basic nutrition principals;
- Coordinating nutrition activities in all operational sub-counties;
- Networking with nutrition and health service providers in the government and private health facilities that serve the communities where VEDCO works;
- Taking the lead in training community members in basic nutrition principles; and
- Promoting the production and utilization of nutrient dense foods, e.g grain amaranth, orange sweet potato (OSP), fruits, and vegetables.

This person is also responsible for the coordination of the VEDCO/SRL programs for HIV/AIDS. These activities include:

- Linking the People Living with HIV/AIDS (PHA) to other service providers like the Joint Clinical Research Center (JCRC), which is responsible for the analysis of all blood samples and providing medication for the PHAs; and
- Training all staff and community-based health workers in prevention and treatment of HIV/AIDS so that these activities can be integrated into all SRL activities.

2.3.2. Community Nutritionist in Charge of the School Feeding Program and the Nutrition Education Centers

The second community nutritionist on the SRL Program is charged with overseeing two pilot initiatives that have both national and regional importance:

- The School Feeding Program (SFP) promotes agricultural training and nutrition education and knowledge transfer through primary schools; and
- The pilot Nutrition Education Center (NEC) Project.

Both pilot projects are under the direct supervision of the SRL field coordinator in Kamuli because they include activities that are transversal—i.e. activities that are executed and monitored in collaboration with the core activities of each of the four SRL Strategic Objectives (SOs).

Although the primary focus of the NECs is nutrition, the mothers of the children being treated receive special agricultural (SO1), microcredit (SO2), and capacity-building (SO4) assistance as well.

To ensure appropriate reporting and coordination, each program SO—SO1, SO2, SO3 and SO4—includes a separate IR for tracking its support for these vulnerable groups. In the case of the SRL SFP, for example:

- The SO1 activities to support the school gardens program are tracked under a separate IR under SO1; and
- The SO4 activities to build the capacity of the PTAs (Parent Teacher Associations) to manage the gardens are tracked under SO4.

2.4. The Evolution of the Community Nutrition and Health Workers Concept in the Program

In the original conception of the nutrition component of the SRL Program, the community nutrition and health workers (CNHWs) were responsible for most community-based training and technical assistance. VEDCO/SRL Program required each CNHW to be selected by the local community. This was done so that the communities would understand that the CNHW is part of a community-based strategy for integrated delivery of nutrition and health services.

2.4.1. The Selection of the Community Nutrition and Health Workers

In Kamuli, the VEDCO/SRL Program's selection of the CNHWs started with community sensitization and introduction of the CNHW concept during a SRL parish meeting. At the end of each parish meeting, each community was asked to select one CNHW through a popular vote. Selection was gender sensitive given the nature of the work, which required both men and women to support community nutrition and health. Political leaders such as the Local Council One (LC I) chairperson, vice-chairperson, and secretary for each of the targeted villages were invited to guide and authenticate the selection process.

After successful sensitization of the village leaders, community members, and other key stakeholders on the importance of CNHWs, VEDCO encouraged the communities to consider nominating individuals who fulfilled the following criterion:

- Socially acceptable;
- Exemplary, honest, trustworthy, and respected;
- Willing to serve as a volunteer;
- Resident of the village and a registered member for one of VEDCO farmer groups;
- Available to perform specified CNHW tasks;
- Interested in nutrition/health and development matters;
- Good mobilizer and communicator;
- Ideally able to read and write in at least the local language; and
- Dependable and approachable.

In 2005, VEDCO selected 18 CNHWs from participating farmer groups. Between 2006-2007, the number increased to 31 due to increasing demand for nutrition extension services.

2.4.2. The Development of the Community Nutrition and Health Workers

After selection, CNHW capacity to offer nutrition extension services was built through training, mentoring, study tours, and material support. The trainings conducted at sub-county level were

guided by the prevailing nutrition problems. A specially designed manual was developed by the nutritional and HIV/AIDS officer, with technical support from Nutritionist Specialist Dr. Elizabeth Kiboneka from the Mwanamugimu nutrition unit. The manual constituted: basic nutrition principles, infant young and children feeding practices, and the relationship between nutrition and HIV/AIDS, among other topics. Each CNHW was facilitated with an anthropometric kit (measuring board, weighing scale, and Mid Upper Arm Circumference [MUAC] tape) for identification and proper management of malnutrition. When a CNHW dropped out, a new member would be identified from the community during the bi-annual VEDCO parish meetings. VEDCO took charge of orienting the replacement CNHWs through a combination of training and mentoring.

2.4.3. Roles and Responsibilities of the Community Nutrition and Health Workers

Each CNHW was charged with a variety of roles that included:

- Establishing demonstration gardens/livestock to demonstrate to community members the production of nutrient-dense foods;
- Organizing farmer-to-farmer home visits;
- Conducting nutrition surveillance;
- Organizing nutrition and health education;
- Supporting community-based management of malnourished cases;
- Building community capacity to mobilize and support community-based health and nutrition activities;
- Distributing health/nutrition commodities;
- Following up on malnourished cases who have been discharged from health facility; and
- Promoting health seeking behavior.

The bulk of the CNHWs' activities focused on the 814 VEDCO target households in 57 villages in six parishes in Phase I (2005-2009), although certain programs like nutritional surveillance and nutrition and health education affected the entire villages where the target farmers lived.

The CNHWs' activities were designed to support the achievement of all four SRL IRs:

- *IR 3.1. Build community-level understanding about how locally grown foods can be used to improve nutrition.* The CNHWs provided practical, community-based nutrition training and culinary demonstrations, as well as managed demonstration gardens that served as learning sites for other farmers. To ensure that a wider population was reached, rural development extensionists (RDEs) were also trained in basic nutrition concepts, provided back up for the CNHWs, and assisted in trainings on nutrition education within the community.
- *IR 3.2. Strengthen community capacity to identify and manage malnourished children.* The CNHWs identified cases of malnourished children in the community and helped to rehabilitate these children by:
    - *Sub-IR 3.2.1. Promote Community-Based Management of Moderately Malnourished Children (2008-2010):*
        - Offering basic nutrition advice to the mothers to help rehabilitate moderately malnourished children in the local communities;

    - Helping to refer more severely malnourished children and/or complicated cases to the government health units; and
  - *Sub-IR 3.2.2. Pilot Test a Nutrition Education Center Pilot Project in Naluwoli Parish as a Strategy for the Rehabilitation of Moderately and Severely Malnourished Children*:
    - Pilot testing a new model of community-based NEC in one parish under the direction of the community nutritionist (Text Box 3.1).
- *IR 3.3. Improve the nutritional and health status of vulnerable groups*. A third set of activities focused on helping vulnerable groups improve their nutritional and health status:
  - *Sub-IR 3.3.1. Improve the nutritional and health status of very vulnerable households*. One sub-group of very vulnerable households like HIV/AIDS groups who, because of their limited labor and resources, have a more difficult time producing enough food and accessing services.
  - *Sub-IR 3.3.2. Pilot test a new program for integrating school gardens with school feeding programs*. A second set of activities under this IR helped Kamuli District pilot test an innovative initiative that linked school gardens to the production of food for school feeding programs in five schools which serve five villages, representing 8.8% of the total 57 villages in the six parishes where the SRL Program intervenes under the leadership of the SRL community nutritionist.
- *IR 3.4. Strengthen community access to clean water and improved water and sanitation/hygiene practices*. A fourth set of activities focused on increasing local communities' access to clean water and improved water and sanitation/hygiene (WASH) practices.

These activities—in combination with the other program activities that were supposed to increase food availability and access—were expected to improve the nutritional and health status of the target households. These same activities were expected to build the capacity of VEDCO and the local governments to sustain these achievements once the SRL funding ended.

2.5. IR 3.1. Build Community-Level Understanding About How Locally Grown Foods Can Be Used to Improve Nutrition

The activities under this IR provided extensive farmer-to-farmer extension trainings (through the CNHWs and the CBTs) (Table 3.6):

- Promoting appropriate feeding, hygiene, and sanitation education; nutrient-dense food; and safe water and sanitation facilities (Table 3.6); and
- Organizing community-based cooking demonstrations to expose community members to different ways that locally available foods could be used to make up a balanced diet and prepare meals that meet the dietary needs of specific individuals in quantity and quality (Text Box 3.2).

The same activities helped build community connections to the local governments' health and nutrition services. One such connection was the distribution of free mosquito nets to vulnerable households in 2009 and 2010.

Text Box 3.1. Micronutrient-Rich Foods Promoted by VEDCO/SRL Nutrition and Crop Production Activities in Kamuli District, 2004-2012

One strength of the SRL Program was a series of initiatives to increase the availability and consumption of the micronutrient-rich foods that the community-based health and nutrition workers were promoting.

Kitchen Vegetable Gardens (KVGs): One example of this was the promotion of KVGs, which promoted foods like cabbage, amaranth (leafy and grain), onions, nakati (*solanumnigrum*), eggplants, and pumpkins. These crops were not land intensive, were culturally acceptable, and had long harvest periods.

Grain Amaranth & Livestock: Grain amaranth (*Amaranthus cruentus*) was promoted as a cheap source of high-value proteins and unsaturated oils. Many community members observed its capacity to boost the nutrition status of community members, especially those who were extremely wasted and HIV/AIDS victims. At least part of the impetus behind the program's promotion of small livestock was to increase access to protein.

Orange Sweet Potato (OSP): The orange-fleshed sweet potatoes were promoted as a source of Vitamin A. Planting materials were first multiplied in demonstration units and later distributed to households. By 2012, over 1,000 target households were growing the potatoes, and many are processing them into other products like chips, flour, and doughnuts once community members realize enough surplus production.

Fruit Trees: Fruit trees such as pawpaws, mangoes, and passion fruits were promoted as an important source of diets as well as potential source of income for the family.

Source: VEDCO/SRL reports.

Text Box 3.2. Community Nutrition and Health Workers' Self-Assessment of their Experiences with the SRL Program (2006)

Twenty-five CNHWs were interviewed about their experience with the program in 2006. All of them were motivated to serve as RDEs due to their interest in acquiring knowledge that would enable them improve their personal conditions and also serve others, and 22 chose to serve in this capacity because they were selected by fellow community members and did not want to disappoint them. Nineteen saw the organization as focusing on programs that would potentially improve livelihoods. Four were always interested in volunteer work and this served as an opportunity for them to serve in this capacity, and two were motivated by the possibility of accessing material benefits from the organization.

All reported their roles as being linked to the training, supervision, and encouragement of fellow community members, as well as reporting to members and VEDCO field offices. The kinds of training accessed from VEDCO staff broadly related to subject matter and adult education. Techniques used by staff in training included workshops, tours, demonstrations, lectures (with written notes given), and group discussions/group work. All members observed that the training format is adequate, although they suggest that use of visual techniques like video/films as well as more tours to other places could make the training better. One member suggested visits to the national agricultural show in Jinja for RDEs and CNHWs. Additional training was also requested by 10 members in first aid, care and management of pregnant mothers, and use of grain amaranth. They stated that the training on benefits of grain amaranth was 'not enough.'

In their training to farmers, meetings are held at an agreed-upon location. The techniques used include demonstrations, home visits, and lectures. The number of times met is usually twice a month (middle and end), but members are free to contact the CNHWs any time for guidance.

The main constraints mentioned by CNHWs included low participation of members (100%), transport and mobilization due to lack of facilitation (100%), and inadequate materials for conducting the training (92%). Suggestions included provision of transport and adequate demonstration/teaching items (100%) and increased supervision by VEDCO staff (92%). One member also noted that data-recording cards or books are necessary (anthropometric) for ease of documentation. Refresher training on training methods and modules was also suggested by one of the CNHWs.

The average age of CNHWs is 42 (males, 39; females, 43), with a range of 36 for both males and females (62 highest and 26 lowest for males; 65 and 29 for females). It is also noteworthy that the number of female CNHWs (19) more than triples that of males (six), probably due to their societal role of home management.

Regarding education level, disregarding kindergarten years, CNHWs have an average education level of up to eight years (nine for males and seven for females). The lowest for males is eight years and four for female CNHWs. 76% of CNHWs have leadership positions in other institutions (local leadership, credit institutions, other groups, school committees, and religious institutions), and only 32% have an additional source of income apart from farming. They reported a variety of social, personal, health, and economic benefits as a result of serving in this role. Key among these is increased popularity and respect from community members (100%), improved well-being in the home (100%), and increased income as a result of fewer expenses on medication (88%). Other benefits included increased knowledge and techniques of human relations (80%) and confidence (76%).

Source: H. Sseguya 2006. Annual Evaluation Report for the livelihoods program in Uganda. Iowa State University. Centre For Sustainable Rural Livelihoods. Ames, Iowa: CSRL for VEDCO and Makerere University. Pg. 22

Table 3.6. Evolution of IR 3.1 and IR 3.2 VEDCO/SRL Activities in Kamuli District (X=Activity was executed in this year)

Activities	2004	2005	2006	2007[100]	2008	2009	2010	2011	2012
IR 3.1. Build community-level understanding about how locally grown foods can be used to improve nutrition									
Selection and training of CNHWs ( )=# of CNHWs trained		X (18)	X (20)	X (31)	X (31)	X (31)	X (31)	X (1)	X (1)
Development of nutrition training material for staff			X	X	X	X			
Training of Trainers (TOT)									
• *Health workers*									
• *VEDCO staff*			X				X		X
• *CBTs*							X	X	X
• *CNHWs ()=# of CNHWs trained*		X	X	X	X	X		X (1)[101]	X
• *RDEs*				X[102]					
• *School children*									X[103]
• *VHTs*[104]									
• *Teachers*					X				X[105]
Community-based nutrition education and counseling		X	X	X	X	X	X	X	X
Strengthen the institutional capacity of VEDCO in nutrition			X				X	X	X on going
-Formal training and technical assistance			X				X	X	X on going
-By strengthening their collaboration with nutrition specialists in other institutions (e.g. UNICEF)								X	Plan-ned
Strengthen the connection of community-based health workers to the government health and nutrition services									
Encourage production of the foods being									

[100] Source: Sseguya, H. 2007. Annual Evaluation Report for the Livelihoods Programs in Uganda. Kampala: CSRL and VEDCO.
[101] One CHNW, Jane Sabi, was trained to give support to the NEC.
[102] RDEs were trained in basic nutrition principles.
[103] Nutrition education done in Namasagali Primary School.
[104] Some CNHWs have been enrolled by government/development partners as VHTs. No training has been done to target the VHTs.
[105] The trainings targeted service-learning schools (Namasagali and Nakanyonyi Primary Schools).

Activities	2004	2005	2006	2007[100]	2008	2009	2010	2011	2012
promoted by the nutrition programs									
Establishment of KVGs		X	X	X	X	X		X	
Promotion of nutrient-rich foods									
• *Grain Amaranth*		X	X	X	X	X	X	X	X
• *Orange Sweet Potato*			X	X	X			X	X
• *Soya*				X	X			X	X
• *High-iron beans*									X
Promotion of fruit trees and their importance in the diet									
-Formal Training		X	X	X					
-Promotion (distribution of seedlings)		X	X	X	X	X			
Promotion and consumption of animal protein		X	X	X	X	X			
-Formal Training									
-Promotion (distribution of animals		X	X	X	X	X			
Practical cooking demonstrations using locally available foods			X	X	X	X	X		X (2)
Other									
Strengthen household connections to government and nutrition and health service providers									
IR 3.2. Strengthen community capacity to identify and treat malnourished children									
Establishment of NECs								X (1)[106]	X (3)[107]
Management of emergency nutrition cases				X (10)	X (10)	X (120)	X	X	X
Distribution of mosquito nets to the families of emergency nutrition cases						X	X		

Source: VEDCO/SRL M&E Workshop, Nutrition and HIV/AIDS Working Group, September 2012.

[105] The first pilot NEC in Butansi.
[107] To establish two more NEC and maintain the first one established.

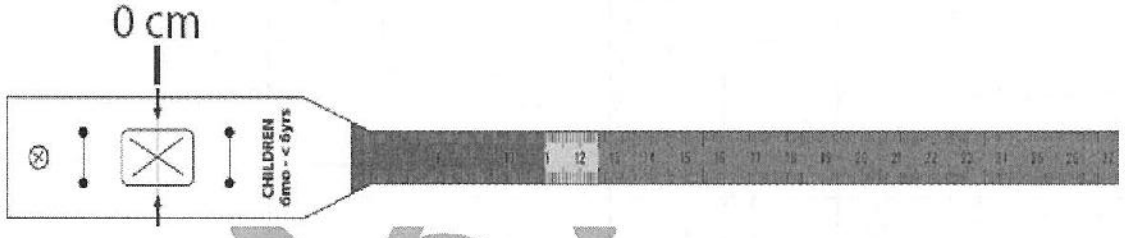
2.6. IR 3.2. Strengthen Community Capacity to Identify and Manage Malnourished Children

2.6.1. Sub-IR 3.2.1. Promote Community-Based Management of Moderately Malnourished Children (2008-2010)

Once a sick child was identified, the CNHW used a MUAC tape to measure the circumference of the child's left upper arm (Figure 3.1). The CNHW would then use the measurement on the tape to grade the nutritional status of the child. This methodology for assessment helped facilitate the CNHWs in:

- Conducting early identification and referral of children with severe acute malnutrition before the onset of serious complications;
- Referring cases with medical complications to various health centers such as Butansi Health Center, Namasagali Health Center, Bugulumbya Health Center, and Kamuli Mission Hospital;
- Following up with home visits for registered cases and sustaining any progress made; and
- Conducting community outreach to increase access to information about ways to improve the nutritional status of their children as well as their various options for treatment and consultation when problems arose.

Figure 3.1. Structure of a Mid Upper Arm Circumference Tape used by the VEDCO/SRL Community Nutrition and Health Workers in the Assessment of Children Under Five Years



The MUAC tape has three colors: red, yellow and green. Red color indicates Severe Acute Malnutrition (SAM) and its ≤11.0 cm, from 11-12.5 cm indicates Moderate Acute Malnutrition (MAM) and is yellow in color. The green color indicates normal nutritional status and ranges from 12.5 and above.

Source: Ministry of Health (MoH) 2010. Integrated Management of Acute Malnutrition (IMAM) Guidelines. MoH. Kampala: MOH. Pg. 4.

A phased-out approach was used, taking on only 10 severe cases in 2007 and 2008 (Table 3.6). These cases were managed directly by the program nutritionist. Caretakers were supported and trained on how to manage the nutrition condition of their children. The trainings covered preparation of weaning diets using locally available foods and grain amaranth. Each case received probex syrup, which is rich in highly available proteins, B-complex vitamins, and iron. Cases that presented with medical complications were referred to nearby health centers for further treatment. Community nurseries and kitchen gardens for eggplant and *sukuma wiki* for mothers/caretakers to access vegetable seedlings were established. They also received carrot seeds, groundnuts, banana suckers, and OSPs. These households were also trained in appropriate agronomic practices. The community health workers used the MUAC tapes to assess the children's progress (Figure 3.1).

Between 2008 and 2010, each of the 30 CNHWs was required to identify and manage five undernourished children each in Bwiiza, Namasagali, Naluwoli, Butansi, Nawanende, and Kasambira parishes. Once the children were identified, the CNHW—in close collaboration with the VEDCO nutrition and HIV/AIDS officer—tried to identify the principal cause of malnutrition in the child and how it could be addressed through a combination of formal training, increasing access to fruits and vegetables, provision of food rations, and home-based counseling (Text Box 3.3). This activity helped identify 40 severe cases that were referred to the nearby health centers for further treatment.

2.6.2. *Sub-IR 3.2.2. Pilot Test a Nutrition Education Center Pilot Project in Naluwoli Parish as a Strategy for the Rehabilitation of Moderately and Severely Malnourished Children*

In 2011, the SRL funded a NEC in Naluwoli Parish, which has strengthened its management of moderate cases in that parish (Text Box 3.3). This particular model stresses rehabilitation of the malnourished child and providing nutrition education and counseling in the same environment (village) that precipitated the condition using resources and infrastructures available in the community. To address the causes of malnutrition the NEC is using a multi-faceted approach because these causes are diverse and interrelated. It is an approach that is informed by the UNICEF conceptual model for malnutrition (Figure 3.2; Table 3.8).[108]

Once a child is referred to the center, the mothers visit the NEC five days a week. Trainings are given on Mondays and Thursdays; growth monitoring is done on Fridays. Good maternal nutrition is important for the prevention of low-weigh births (below 2.5 kg), and the importance of good maternal state starts at the pre-pregnancy stage. At conception a woman should be in good nutritional status and free of disease. This is emphasized at the NEC, and mothers are taught how to prepare balanced meals from the different food groups and nutrient-dense porridge. Every day each pregnant woman and a child receive three cups of this porridge. The dietary diversity at household levels is expected to improve while promoting good nutrition for all women before, during, and after delivery. Careful records are kept on each child including (but not limited to):

- Anthropometric measurements for the child, i.e. age, weight, height, and MUAC;[109]
- Bio-data for the caregiver;
- Each child's immunization schedule,
- Dietary feeding patterns for the child including breastfeeding practices;
- Trainings attended by the caregiver;
- Weekly measurement for weight, and MUAC for the child (growth and monitoring); and

[108] The UNICEF framework (Figure 3.2) categorizes the causes of malnutrition as immediate, underlying, and basic.
- **Immediate causes** include: Inadequate dietary intake and diseases.
- **Underlying causes** are barriers in the household, which precipitate malnutrition. These include: Insufficient food security; inadequate childcare; inadequate basic services, particularly those related to health; water and sanitation, which lead to disease; inadequate access to land and/or food markets; inadequate food production; and low household income.
- **Basic causes** are a result of structures and relationships in the society and include: Human, economic, and organizational resources; and political, social, and cultural factors.

[109] These measurements are important to for-calculating stunting, underweight and wasting ratios, which are necessary to monitor growth and improvement in the children. A child having a z score of -2SD is considered to either be stunted, underweight, or wasted.

- Number of births registered from the NEC.

Before the mothers leave the NEC they must have attended at all trainings offered, their children must have a MUAC registering as normal (green), and they must be able to prepare the porridge for the baby at home. If they are able to purchase the flour from the CHNW, they are encouraged to do so. The mothers must also join a mother support group and have an income-generating activity (IGA). They also receive a starter seed and planting materials (grain amaranth, soya, millet, orange fleshed sweet potato, and high-iron beans) to grow in their home gardens. Their gardens are monitored to ensure anticipated yield is achieved.

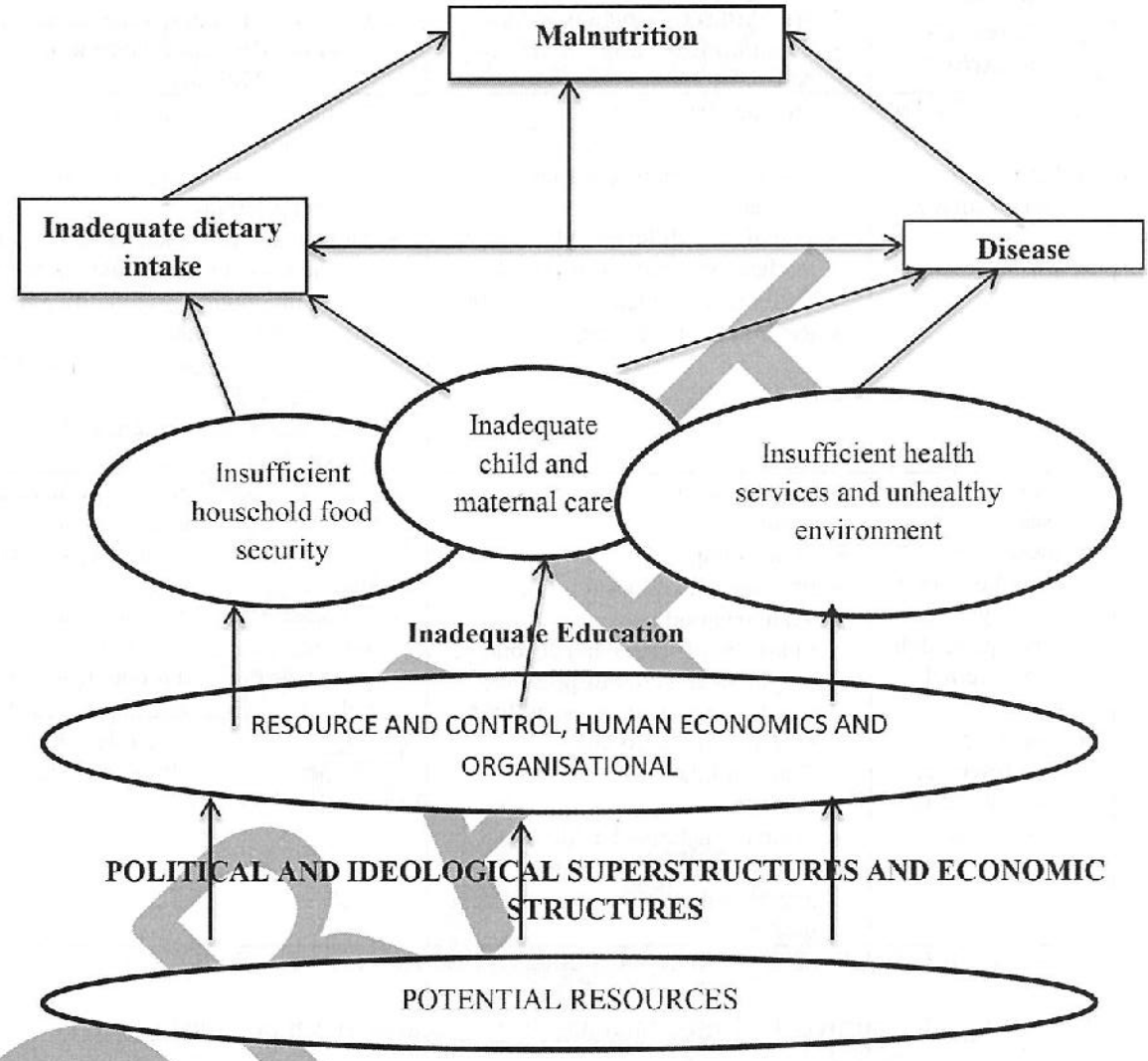
Text Box 3.3. VEDCO/SRL Nutrition Education Center Pilot Project in Naluwoli Parish, 2011-present

The VEDCO Nutrition Education Center (NEC) is a community-based facility that provides nutrition counseling, training, and rehabilitation of mild and moderately under-nourished children. NEC targets children up to 24 months, expectant mothers, and women of reproductive age. The NEC was started in 2011 as a response to the increasing number of moderate-to-severely malnourished cases identified by both VEDCO nutritionists and CNHWs. The management of the rehabilitation of children whose cases were considered too severe to be managed by their mothers in their home communities and not severe enough to require hospitalization started with 21 cases scattered in the different villages in Naluwoli Parish without a central location for activities. This made it difficult to monitor, educate, and follow up on the progress of the cases. The first pilot NEC focusing on infant and young child feeding practices was created in Butansi Parish in 2011 through a joint effort by former SRL Field Program Manager Dorothy Masinde, former Program Nutritionist VEDCO Kamuli Benon Musasizi, then-ISU nutrition graduate student Eric Nonnecke, and CSRL Community Nutritionist Laura Byaruhanga.

The pilot NEC was hosted in Naluwoli Parish at CNHW Jane Sabbi's home. During the first year, NEC enrolled 24 mothers whose infants were moderately to severely malnourished. The mothers' knowledge gaps on infant and young child feeding practices, hygiene and sanitation, importance of completing immunization, and production and utilization of nutrient-dense foods were enhanced. The infants and pregnant mothers were fed a nutrient-dense porridge, currently sourced and cooked by mothers in groups. The porridge is composed of a mixture of silver fish, soya flour, grain amaranth, millet, maize, milk, and sugar. Starter seed and planting materials were provided and every garden was monitored to ensure anticipated yield was achieved. The clientele has increased to 84 (20 mothers and 64 infants). Mothers come to NEC five days a week from villages within Butansi Sub-County, with the furthest walking a total distance of seven kilometers to and from the center. Children who present with observable signs of micronutrient deficiency are given multivitamins when they enroll at the center. Mothers pay 1,500 schillings ($0.60) on enrollment as a contribution to the porridge ingredients. Prior to enrolling at the center, children are referred to Butansi Health Center for check up and treatment of secondary infections, including HIV/AIDS. Children suffering from diarrheal diseases are also given oral rehydration mixture, which is obtained from the health center. Medical personnel from the health center visit the NEC to provide technical support. Mothers and caregivers are assisted to set up hygiene and sanitation facilities at their homes. The VEDCO/SRL community nutritionist maintains records on the infants' weights, heights, MUAC, and ages. The evidence collected to date shows that the general health of participating infants has improved. The weight of each infant is taken every end of week and growth curve plotted to monitor weight gain or loss. MUAC measurements are a quick indicator to show progress in weight gained by the child; and this is done on a weekly basis and mother advised accordingly. The project has weaned off a total of 13 mothers from the pilot NEC.

Source: Laura Byaruhanga, VEDCO/SRL Community Nutritionist, November 22, 2012. Byaruhanga L.A and Musasizi ,B. NEC Evolution story informant, November 21, 2012.

Figure 3.2. The UNICEF Conceptual Framework on the Causes of Malnutrition



Source: Adopted from UNICEF 1992.

Table 3.7. Link Between the UNICEF Conceptual Framework and the VEDCO/SRL Nutrition Education Centers and School Feeding Programs

Causes of Malnutrition	Activities Conducted at the Nutrition Education Center to Address Malnutrition Causes	Activities Conducted in conjunction with the School Feeding Program to Address Malnutrition Causes
Immediate Causes • Disease • Inadequate dietary intake	• Provide planting materials for the mother to grow at home • Provide nutrition education to the mothers • Provide the children and pregnant mothers with nutritious porridge • Training on hygiene and sanitation • Refer to the health center	• Ensuring adequate access to clean water (borehole) • Linking the school gardens to the school feeding program • Provide a cheap balanced meal combination of maize, beans, vegetable oil, and vegetables • Promoting poultry rearing for animal source protein other foods • Encourage parents to contribute 3 kg of maize towards the SFP • Increased on the nutrient and caloric intake of the meal served at the school
Underlying Causes • Insufficient household food security • Inadequate child and maternal care • Insufficient health services and unhealthy environment	• Link to the community health center • Deworming • Promote use of mosquito nets • Train on good hygiene and sanitation practices and encourage proper fecal matter disposal-construct pit latrines, use of tippy taps, use of bathrooms • Train on infant and young child feeding • Train on maternal health • Promote income-generating activities through mother support groups	• Use the school gardens as a training ground for teaching of modern farming skills and nutrition that lead technology transfer to homes • Through the nutrition and sanitation clubs formed, the pupils are taught basic skills on good nutrition and proper hygiene practices • Sell some of the garden proceeds to generate revenue to maintain garden and supplement the School Lunch Program (SLP)

Source: VEDCO/SRL Community Nutritionist Laura Byaruhanga, November 27, 2012.

2.7. IR 3.3. Improve the Nutritional and Health Status of Vulnerable Groups

To date, VEDCO/SRL has focused its support for vulnerable groups on two sub-groups of activities (Table 3.8):

- A series of supports for people living with HIV/AIDS organized into eight groups; and
- A school garden program that was designed to complement the school feeding program in nine primary schools.

Table 3.8. Evolution of VEDCO/SRL SO3, IR 3.3 Activities (X=Activity was executed in this year)

Activities	2004	2005	2006	2007[110]	2008	2009	2010	2011	2012
IR 3.3. Improve the nutritional and health status of vulnerable groups									
Sub-IR 3.3.1. Improve the nutritional and health status of people living with HIV/AIDS									
Identifying and strengthening new and existing HIV/AIDS groups		X	X	X	X	X	X	X	X
Provision of health and nutrition counseling support to the groups						X		X	X
Provide agricultural and IGA support for the HIV/AIDS groups in collaboration with SO1 and SO2		X	X	X	X	X	X	X	X
Sub-IR 3.3.2. Pilot test a new program for integrating school gardens with school feeding programs									
Advocate for and promote school feeding programs ( )=# of schools		X	X	X	X		X (1)		X (3)
Commemorate nutrition-related events to raise the profile of nutrition			X	X				X	
-World AIDS day								X	
-Child health days									
-World breast feeding week									Plan
-Safe motherhood day									Plan
-International day of the girl child									Plan
School Feeding Program									
No. of schools supporting the SFP Program									
-Namasagali PS			X	X	X	X	X[111]	X	X
-Nakanyonyi PS			X	X	X	X	X	X	X[112]
-Naluwoli PS			X	X	X	X	X	X	X
-Busambu PS			X	X	X	X	X	X	X
SFP-Enterprises									
-School Gardens[113]			X	X	X	X	X	X	X
-Chicken[114]						X		X	X
-Mushroom project[115]						X		X	
-Bee keeping[116]				X	X	X	X	X	X
-Fruit tree planting[117]				X	X	X	X	X	X

[110] Source: Sseguya, H. 2007. Annual Evaluation Report for the Livelihoods Programs in Uganda. Kampala: CSRL and VEDCO.

[111] A pilot SFP of ''nyoyo'' maize and beans diet was introduced in Namasagali P/s to increase on calorie intake. It was scaled in 2011 to date to cover the entire school.

[112] In 2012, the same meal will be introduced in Nakayonyi PS.

[113] School gardens are in all the schools highlighted above.

[114] Poultry project only in Namsagali PS

[115] Mushroom Project in Namasagali PS

[116] Namasagali and Nakanyonyi PS

[117] Namasagali, Nakayonyi, and Naluwoli primary schools.

Activities	2004	2005	2006	2007[110]	2008	2009	2010	2011	2012
SFP meals/lunch									
-Maize and beans (nyonyo)							X	X	X
-Vegetables			X	X	X	X	X	X	X
-Porridge[118]			X	X	X	X	X	X	X

Source: VEDCO/SRL M&E Workshop, Nutrition and HIV/AIDS Working Group, September 2012.
Acronyms: PS=primary school.

2.7.1. Sub-IR 3.3.1. Improve the Nutritional and Health Status of People Living with HIV/AIDS

Since 2006, SRL has targeted special nutrition and health assistance to eight HIV/AIDS groups who because of their poverty or health status are very food insecure.[119] HIV infection affects nutrition by:

- Increasing the time needed for resting total energy expenditure, and reducing food intake (because of reduced ability to farm); as well as
- Causing nutrient mal-absorption and loss and a variety of complex metabolic alterations that culminate in weight loss and wasting.

The combination of these factors renders people living with HIV and AIDS vulnerable in addition to reducing their capacity to produce food.

Since 2005, VEDCO/SRL SRL has supplemented the efforts of other regional and national players in the field of HIV and AIDS in Kamuli District through:

- Food and nutritional therapy;
- Support to household incomes of affected families; and
- Creating linkages for farmers to other service providers including JCRC and community health centers for such services like access and use of antiretroviral therapy (ART).

This assistance has been routed through eight HIV/AIDs groups. The selection of HIV and AIDS groups started with acquiring of group lists from local council officials and community development officers at the sub-county levels. Identified groups were subjected to profiling exercises using a specially designed tool. The exercise also benefited program implementers in understanding vulnerable households' strength, weaknesses, opportunities, and threats in addition to reducing group selection anomalies, e.g. double registration, ghost groups/households and family groups. The verification of group existence was done by PEOs, LC1s,[120] and community development officers (CDOs), and involved visiting groups and their members in their villages. The data collected on group members was analyzed to come up with eight suitable groups to work with based on, among other things, the existence of people living with HIV and AIDS. In addition, the program identified the vulnerable members of the target communities that were not part of the identified groups and encouraged the existing groups to include them. The HIV and AIDS groups were post-test groups and not groups for people living with HIV and AIDS. For one to become a member, you only needed to know your status, which could be positive or negative. This was done to mitigate stigma and allow continuity of these groups.

[118] The schools use the gardens to supplement the preparation of the porridge (the maize and amaranth)
[119] No special health and nutrition assistance was given to the other vulnerable groups assisted under SO2 and SO1.
[120] Local council.

Program inception workshops in the communities were conducted, during which the implementation strategy was shared with the groups. This was conducted to instill ownership of the program by the community and enhance program sustainability. Each of the groups received a wide range of services to help their members improve their living standards and access to health services.

- *Assistance with Developing Strong Groups that Help Members Access the Services They Need (in conjunction with the other SRL activities under SO4)*: Each group's leaders were trained in group dynamics, management of group assets, and formation of internal group savings. Capacity building was carried out for both CNHWs and the farmers. The trainings were both practical and theoretical.
- *Assistance with Developing Crop and Livestock Production (in conjunction with the other SRL activities under SO1)*: The establishment of one demonstration garden for each group complemented practical trainings on the agronomy of nutrient-dense crops and animal husbandry. Each of the eight groups was supported with seeds of selected nutrient-dense crop varieties, including grain amaranth, vitamin A sweet potatoes, pawpaws, passion fruits, soya beans, beans, ground nuts, and assorted vegetables. Each group—and various members of each group—was given access to the VEDCO/SRL Program, which helped vulnerable people build small-scale goat, poultry, and piggery enterprises.
- *Assistance with Helping Individuals Develop Income Earning Opportunities (in conjunction with the other SRL activities under SO2).* In order to build beneficiaries' capacities to generate incomes through agro-based trade, group members were trained in farming as a business, including goat, piggery, bananas, and cassava enterprises.
- *Assistance with Improving Nutrition and Accessing Health Services (in conjunction with the other SRL activities under SO3)*: To enhance capacities in the management of household nutrition, beneficiaries were trained on food storage, sanitation and hygiene, planning adequate diets for people living with HIV and AIDS, feeding children in the context of HIV and AIDS, and dietary management of HIV and AIDS-related disorders. In order to create awareness on HIV/AIDS, open discussions and trainings with groups were held by the nutritionist on the program team. Program beneficiaries were supported to participate in national events including International AIDS Day celebrations at district and sub-county level.

Text Box 3.4. Case Study of the Early Impact of SRL Support on One of the Targeted Vulnerable Groups—the Namasagali HIV/AIDS Group (2006)

The Namasagali HIV/AIDS group has 25 members drawn from a number of villages. Almost all members are HIV positive. They are actively involved with the program, from which they have—like other groups—accessed planting materials and training in agriculture and nutrition-related activities. As a vulnerable group, they have also received medical and counseling support from SRL. Apart from the SRL Program, they also got support from a government program (National Agricultural Advisory Services, or NAADS) in 2005 in the form of training and demonstration units for chicken, peanuts, and a cow.

The members have realized a number of improvements, including increased food for consumption arising from increased and variety production, improved diets and nutrition status, and improvements in sanitation and health status. They have also started up a savings scheme as a result of savings from money they feel they would have used to buy food and medications. Members are free to borrow for a modest interest rate. They have also established new friendships as a result of the group activities. Finally, and a bit interesting, is their enhanced social standing. They reported improved confidence and reduced shyness as well as an increase in membership. As one member observed, "We can confidently speak out regarding our status because we have an external actor who comforts us and brings us together to address our common problem." Another member stated, "Our numbers have increased as a result of the progress we are making. We started with six members and now we are over 20." Some of the major challenges reported by these groups include their limited access to labor-saving technologies, inadequate knowledge about savings or investment, and inadequate water for farm production and home use.

Source: H. Sseguya, 2006. Annual Evaluation Report for the Sustainable Rural Livelihoods in Uganda. Ames, Iowa: State University, Center for Sustainable Rural Livelihoods. Pg. 24.

2.7.2. *Sub-IR 3.3.2. Improve the Nutritional and Health Status of the Students and Student-Related Households Affected by the SRL Pilot Programs to Promote School Gardens and School Feeding*

In 2007, the VEDCO/SRL Program began supporting school gardens as a technology dissemination outlet (from child to parent), as pupils are expected to implement some of the practices at home, influencing the parents' adoption behaviors (Table 3.9). The program engaged parents and teachers associations, school children, faculty members from Makerere University (MAK) and Iowa State University (ISU), RDEs, and CNHWs. The initial target was nine primary schools of Kasambira, Nawanende, Nakanyonyi, Namasagali, Wandegeya, Naluwoli, Bwiiza, Kiwungu and Namasagali (Table 3.9).

Each of the schools received trainings in agronomy, basic nutrition, and sanitation and hygiene. In addition, the schools received agricultural inputs including hoes, wheelbarrows, *pangas*, and planting materials. Gardens, with crops like vegetables, cassava, sweet potatoes, and fruit trees, have been established at these schools. The VEDCO/SRL RDEs and CNHWs have played key roles in training teachers and pupils as well as setting up the gardens together with VEDCO staff in all nine schools.

Table 3.9. VEDCO/SRL Support to Nine Primary Schools in Kamuli District for School Gardens and the School Feeding Program

Activities Supported	Primary Schools Supported by VEDCO/SRL Since 2007								
	Namasagali	Nakanyonyi	Kasambira	Busambu	Bwiiza	Kiwungu	Namasagali Staff Teacher	Naluwoli	Wandegeya
Year VEDCO/SRL Started	2007	2007	2007	2007	2007	2007	2010	2010	2007
Year Service Learning Started	2007	2007	N/A	N/A	N/A	/A	2010	2010	2007
Year VEDCO Support for the Lunch Program Started	2010	2010	N/A	N/A	N/A	N/A	NA	NA	N/A
VEDCO/SRL Agricultural Support									
Trainings	X	X	X	X	X	X	X	X (2007)	X
Tools	X	X	X	X	X	X	X	X (2007)	X
Seed	X	X	X	X	X	X	X	X (2012)	X
Fertilizer	X	X		X	X	X	X	X (2012)	
Herbicide	X	X					X	X	
Labor-Saving Technology (Tractor/Ox Plough)	X	X							
Additional Projects Supported in the School by the ISU CSRL Service Learning Activities									
Poultry	X								
School Gardens	X	X							
School Feeding	X								
Bee Keeping	X								
Tree Nursery	X	X							
Mushroom	X								
Mosquito Nets	X								
Reusable sanitary pads		X							
Irrigation & Pump	X								
Borehole	X								
Additional Projects Supported in the School by Monsanto									
Piggery	None	X	X	None	None	None	None	None	None
Other Partners Supporting the School								Plan Child Fund	

Source: CSRL Community Nutritionist Laura Agaba Byaruhanga, November 2012.

The VEDCO/SRL school garden support gave birth to the VEDCO/SRL service learning activities in 2007, which introduced the concept of intern students from ISU and MAK and their faculty members serving the community/schools as they learn. The initial VEDCO/SRL 2007 service learning activities started in two schools primary schools of Namasagali and Nakanyonyi. In 2011, the SRL Program enrolled two other primary schools, Naluwoli and Namasagali Teacher Staff Primary schools (Table 3.8). The activities done by the bi-national team included:

- Conducting research;
- Teaching the pupils;
- Establishing demonstration gardens;
- Promoting hygiene and sanitation (tippy taps, pits, washing hands, personal hygiene);
- Sinking borehole; and
- Organizing home visits for technical back stopping.

In 2010, the VEDCO/SRL Program added a new wing of programs that focused on improving the lunches served in the schools. This intervention is important in light of Uganda's Universal Primary Education (UPE) Policy, whereby all children of school-going age attend school for free but the parents were expected to provide lunch (Text Box 3.5). Given the weak willingness and ability of the parents to support the program, most primary schools in Kamuli District continue to focus on providing one cup of maize meal porridge for lunches, which is grossly inadequate (50 kcal) in terms of quality and quantity and is never a guarantee.

Text Box 3.5. The Policy Framework for School Feeding Programs in Uganda

"The policy on school feeding in Uganda is that parents who can afford to pay are allowed to make feeding arrangements with the school management, and those pupils whose parents cannot afford the cost of a school meal, provide food for their children to carry to school (Uganda Budget, 2007/2008 in Kibwika et al., 2010). In view of the fact that many parts of Eastern Uganda experience unstable food security situation, the children may not be able to have enough food in their home. Over 80% of children drop out of primary school in Uganda, largely for lack of SFPs. Within Kamuli District, lack of SFPs has severely crippled their children's ability to learn while they spend most of the time hungry (Kirabo 2011)."

Uganda's launch of the UPE in 2007 was a landmark towards meeting the Millennium Development Goal (MDG) No. 2 of ensuring that all children complete primary education. But retention of the pupils and government to pay for or provide lunch for their children.

Source: L.A. Byaruhanga, 2012. Proposal: Nutrient Adequacy and Cost Effective of Garden Linked Feeding Programme in Rural Kamuli District Uganda: Case of Namasagali Primary School. A proposal submitted in fulfillment of the requirement for the award of degree of Masters of Science in Foods, Nutrition and Dietetics in the school of applied Human Sciences, Kenyatta University. July 2012.

In 2010, SRL added a series of activities designed to strengthen the nutritional impact of the school lunch program in the Namasagali Primary School where the SRL Program had supported service-learning activities since 2007 (Text Box 3.6). This support included:

- A full-time PEO who supports the agricultural activities;
- A full-time community nutritionist who oversees the school lunch program, as well as the nutrition and hygiene educational programs that accompany it; and
- Some limited financial support (about $641.00 per term, or $2566.40 per academic year) for a school lunch cook and food purchases to complement the support provided by the parents for the school lunch program.

In 2012, the community nutritionist conducted an intensive evaluation of the nutritional impact of the program as part of her master's thesis.

Text Box 3.6. Pilot Test for Integrating School Gardens with the School Lunch Program at Namasagali Primary School

SRL began a school lunch program at Namasagali Primary School as a pilot in the year 2010 with only 76 pupils from grade four to grade seven. The main aim for introducing the lunch program was to increase on the nutrient and caloric intake for the pupils. The pupils were initially feeding on maize meal porridge, which provided only 50 kcal, not sufficient for a school-going child. A primary school child of between six-12 years should receive at least a third of his/her daily caloric intake from lunch, i.e. between 700-900 kcal. The meal introduced by the program is a famous dish that is served in almost all schools in the neighboring country, Kenya. The dish, locally referred to as *nyoyo* or *githeri* by the Kenyan community, constitutes a mixture of maize and beans cooked whole with vegetable oil and some vegetables added to it. This meal is very nutritious, wholesome, and easy to prepare. The maize and beans are boiled in one pot and when almost ready the meal is seasoned with salt, vegetable oil and greens or beef. This meal is high in calories and provides approximately 314 kcal/100g of serving. Results from this first phase were positive. The program was well accepted in the school among the pupils, teachers, and parents. Children on the feeding program reported that their hunger during lessons is reduced and that they have more energy and interest in classwork. Teachers stated that children are more active, they can concentrate better, and learning is much easier for them. Increased attendance was also noted. Based on these observations and positive feedback from schools, the community, and VEDCO staff, the program was expanded in 2011 to feed the entire school of 240. The parents' contribution towards the SLP in Namasagali Primary School was not sufficient enough to feed the entire school population, therefore the school gardens were designed to supplement the feeding program in addition to providing knowledge. Namasagali Primary School has land coverage of about 300 acres that should be enough to produce and feed the pupils of the school. SRL is working to ensure that the SFP is sustained by the gardens and its community and research on the "cost effectiveness and nutrient adequacy of the SFP at Namasagali Primary School" is being conducted, and results of the study will inform the program and other stakeholders on the role of the SFP in improving nutritional status of the children, its impact on the school attendance and the possibilities of having school garden sustain it.

Source: Laura Agaba Byaruhanga, November 22, 2012.

2.8. IR 3.4. Strengthen Community Access to Clean Water and Improved Water and Sanitation/Hygiene Practices

2.8.1. Water and Sanitation/Hygiene Training

After training by PEOs, CNHWs, RDEs, and later CBTs, each of the targeted vulnerable households is expected to have a pit latrine, compost pit, hand washing facility, dish rack, bathing facility, and boil water as part of sanitation measures (Table 3.10).

Table 3.10. Evolution of SO3, IR 3.4 Activities (2004-2012) (x=activity took place in this year)

Activities	2004	2005	2006	2007[121]	2008	2009	2010	2011	2012
IR 3.4. Strengthen community access to clean water and improved water and sanitation/hygiene practices									
WASH									
Training on WASH									
-CNIIWs				X					
-CBTs								X	X
-Staff							X	X	
Training in food safety			X		X	X		X	X
Training farmers in hygiene and sanitation			X	X	X	X	X	X	X
Promote construction of pit latrines	X	X	X	X	X	X	X	X	X
Promote construction of a compost pit	X	X	X	X	X	X	X	X	X
Promote construction of bathroom	X	X	X	X	X	X	X	X	X
Promote construction of tip-tap for washing hands	X	X	X	X	X	X	X	X	X
Promote construction of dish racks	X	X	X	X	X	X	X	X	X
Carry out HH WASH competitions							X	X	X
Promote and ensure implementation of WASH activities in schools ()=# schools			X (6)	X (6)	X (6)	X (6)	X (2)	X (3)	X (4)
Creating awareness and education on water borne diseases and prevention[122]									
-Diarrhea									*Plan*
-Skin infections									*Plan*
-Jiggers									*Plan*
-Worm infestation									*Plan*
Boreholes									
Construction of boreholes[123]			X (2)	X (2)	X (2)	X (2)	X (2)		X (2)
Preliminary planning with communities for location and WASH needs			X	X	X	X	X		X
Selection and training of water user committee[124]			X	X	X	X	X		X

[121] Source: H. Sseguya, 2007. Annual Evaluation Report for the Livelihoods Programs in Uganda. Kampala: CSRL and VEDCO.

[122] This is a recommended indicator to be considered. To date this activity has not been tracked.

[123] Location of bore hole-Kiwungu PS, Namasagali PS, Nakanyonyi PS, Busambu PS, Bwiiza PS, Kibumbainebyo village, Kakanu village, Busige-Kananu village, Kabalira and Busige villages.

Activities	2004	2005	2006	2007[121]	2008	2009	2010	2011	2012
Refresher training on maintenance of boreholes[125]									Plan

Source: VEDCO/SRL M&E Workshop, Nutrition and HIV/AIDS Working Group, September 2012.

2.8.2. Creation of Boreholes in Communities with Limited Potable Water Access

In Kamuli District, the Rural Water and Sanitation Project (RUWAS), Plan International, and VEDCO/SRL are the only organizations known to provide borehole water to the communities, with RUWAS being the largest contributor.

The distribution and location of the boreholes supported by SRL among the communities was—and continues to be—determined by a combination of factors, including:

- **Population Density:** The population density of school children vs. the community at large. Highly populated areas were given first priority presumably because crowded communities face higher chances of acquiring hygiene related diseases, which tended to become epidemic;
- **Distance from Potable Water Sources:** Distance and accessibility to the nearest clean water point, communities with longer distances were given priority; and
- **Latrine Coverage:** Areas with higher latrine coverage together with presence of other sanitation facilities like tip tap and drying racks were given priority to promote sanitation conditions.

To insure that the boreholes were drilled in the neediest communities, the program required the district water engineers to make the final decision on the locations based on the VEDCO/SRL criteria.[126] The communities were actively involved in the process of drilling the boreholes, mainly through provisions of food to the workers and entertainment through drumming, singing, and dancing. These activities made the workers happy and energized. To date, SRL has created 12 boreholes in 10 villages.

As opposed to wells that were managed communally or left to one individual who owned the land, each borehole has a water user committee (Text Box 3.7) comprised of a chair, vice chair, treasurer, mobiliser, defense secretary, and three committee members. The chair calls meetings, the vice-chair acts in the absence of the chair, the treasurer collects contributions from community members, and the secretary keeps records about any meeting about use and maintenance of the borehole. Each committee is responsible for monitoring the use of the borehole and making sure that it was protected and maintained. Some water user committees are considered to be effective; others are not (e.g., Namasagli PS borehole).

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[124] A technical specialist was trained in the Water User Committee (WUC) methodology. Each WUC has 8 members, they were trained on theory and practical on critical use and maintenance of the borehole-trainings conducted in Bugulumbya, Butansi and Namasagali. Refresher trainings have been held beginning 2007-2010

[125] This is a recommended indicator. To date the information has not been tracked.

[126] According to the community, many of the previous boreholes were created in the in their compounds or near their residences. Influence of the 'big shots' denied the neediest communities access to clean water because of the distances created.

Text Box 3.7. Role of the VEDCO/SRL Water User Committees in Butansi Parish, 2012

The defense secretary of the Butansi Water User Committees (locally referred to as *Kalinda Naikonto*) are charged with day-to-day monitoring of the well and sometimes even stayed at the borehole to ensure everything was in order.

Specifically, the committee encouraged people to clean their water fetching containers/jerry cans, ensured that the borehole and its surrounding was clean and well fenced, made sure the borehole was handled appropriately to minimize break downs, and ensured that the borehole was serviced and repaired in case it broke down. The maintenance strategy was pooling money from community members. This, however, was implemented differently: some made contributions after the borehole broke down (Butansi), others pooled in advance (Naluwoli and Namasagali). In Naluwoli, community members collect some money (in advance) at regular intervals of six months towards maintenance and servicing of the borehole. Every home contributed a sum of two thousand shillings (2,000 Uganda Schillings) every six months. For Namasagali, Bwiiza and Kasambira, the contributions are made annually. This money was kept in a bank account to minimize chances of the committee or any other member getting tempted to use it and to make sure money was available when needed. In Butansi–Kiwungu, the community made contributions towards repair only when the borehole broke down. This practice was not as safe, given that chances of the borehole breaking down during moments when people are unable to make adequate financial contributions are higher.

Source: H. Ssegujya, 2007. Annual Evaluation Report for the Livelihoods Programs in Uganda. Kampala: CSRL and VEDCO. Pg. 30.

In communities that didn't get boreholes, the program has promoted alternative water-treatment options, including using clean containers, exposing the water to ultra-violet rays from the sun for about 24 hours, and using the Aqua-safe drug.[127]

3.0. Early Evidence of Impact

3.1. Intermediate Results

3.1.1. IR 3.1. Build Community-Level Understanding About How Locally Grown Foods Can Be Used to Improve Nutrition

3.1.1.1. Qualitative Evidence

There is a great deal of qualitative evidence that the nutrition status of the communities has improved in the areas where SRL works, due to:

- Increased dietary diversity and knowledge about the importance of having a balanced diet;
- Promotion of flour made from the traditional grain amaranth plant; and
- Improved feeding and food-preparation techniques, especially for infants.

[127] In Uganda, the tablet form of the Aqua-safe drug is supplied by the Ministry of Water to local communities for clean water treatment. The SRL Program has provided it free of charge to communities with unsafe drinking water supplies.

(A) Consumption of a More Diversified Diet

Before SRL, the community ate only sweet potatoes meal after meal. Most of the locally available foods have one food value, yet a human body requires three food values—bodybuilding, energy giving, and protection—for effective functioning.

Eating only one type of food was mainly attributed to lack of planting material of other food types, and disappointingly poor yields of other crop types. People ate to get satisfied and had very little information about nutrition. Very few could adequately differentiate between quantity of food and quality of food (nutrition). The value of nutrition or food value in their bodies was not considered.

Farmers were exposed to the concept of nutrition and balanced diet. Whereas some people could adequately categorize the different available foodstuffs by value, the majority could not. To many, balanced diet was confused with variety. They looked at balanced diet as eating different types of food during the different meals, not necessarily looking at presence of the required three food values for a balanced diet. Although a balanced diet may reflect variety, variety may not necessarily connote a balanced diet. For example, eating *posho,* sweet potatoes and cassava only changes the taste but the food value remains the same (energy giving). Some ate a balanced diet by default (not by design) because that was the available food (greens, groundnuts, and sweet potatoes). "We were told to eat like that for a balanced diet," said one farmer.

Ensuring a balanced diet by design is more sustaining than promoting it by default. Instructing people to eat specific foods because they make a balanced diet may not make them learn what a balanced diet really is, especially in situations where the foods available are only the ones instructed upon. Making people learn the different food values in the locally available foods helps them to critically think through how to ensure that the meals have all the three required food values. One community member notes, "We no longer sell all our fruits or say they are for children. We eat them as well, after knowing the benefits."

(B) Consumption of Nutritious Traditional Crops

People had a negative attitude toward some traditional foods, especially fruits and amaranth, commonly called *maransa* by the farmers (*dodo* in local language). Whereas some people perceived amaranth to be a low-class food for the poor, some thought it was meant to be bought from town. Fruits were not considered to be important. They were seen as "playing" food for children. Animal products were believed to be the most nutritive foods, yet many could not afford them.

Through the nutrition and health component, the importance of eating food with nutrition value attached made people appreciate how to use their locally available food adequately to ensure nutrition. Provision of planting material of other food types as it was observed in the previous section did not only boost the food security status but nutrition status, too. Introduction of the grain amaranth and exposure to its highly nutritive flour appears to have a positive nutritional impact (Text Box 3.8). Today, six years after SRL started promoting nutritional value of the

crop, nearly every meal was mixed with grain amaranth flour. To many farmers, the term "nutrition" is more or less synonymous with using amaranth flour.

Text Box 3.8. The Wonders Associated with the Grain Amaranth Flour Promoted by VEDCO/SRL, 2005-present

Amaranth has not been looked at merely as a food. It is commonly taken to be some kind of medicine. Looking at food as medicine shows a link between nutrition and health but may be misleading. The misleading element comes in more when people look at it as an all-around medicine that treats any disease ranging from malaria, diarrhea, vomiting, and HIV/AIDS, as was found to be the case. The grain amaranth flour has been taken to be the first treatment given to a patient, especially children. When children show signs of ill health, the parents first concentrate on giving amaranth for two to three days before seeking medical advice. The claim is that children have responded, but this needs to be researched. Although the richness of the flour contributes to rejuvenation of health, it is important to let people know that amaranth is actually not and cannot supplement medicine. Looking at amaranth as medicine may worsen some diseases that would have been otherwise corrected in time under medical treatment. Some mothers mentioned use of amaranth to increase breast milk production. This could be attributed to the high protein level in amaranth and an increased frequency of food intake in the name of porridge. Proteins are an important raw material in the manufacture of breast milk.

Source: VEDCO/SRL Nutrition and HIV/AIDS Officer Benon Musasizi, Monthly Reports.

(C) Improved Feeding and Food Preparation, Especially for Infants

To many, maize flour was the only thing that was known for porridge. This has changed. People have been exposed to different flours (millet) that can be used in preparing porridge. Besides milk and soya bean, mothers have known that eggs and amaranth are also protein sources than one can use in the absence of milk (Text Box 3.9). People learned that boiled food preserved more nutrients than fried food. Although most food was boiled or steamed, there was a myth that frying (especially the protein or vitamin food that was commonly referred to as sauce in the Ugandan context) made it more palatable. This was demystified. Instead of frying, farmers were encouraged to use groundnuts (peanuts) and *simsim* (sesame) to enrich their food.

Text Box 3.9. Case Study: The Impact of VEDCO/SRL Nutritional Education on the Rehabilitation of Four-Year-Old Daudi Mpoya in Namasagali Parrish, Kamuli District, 2007

When four-year old Daudi Mpoya was two, he weighed just 8 kg (17.6 lbs), was swollen all over, and had wounds on his lips and head. "I took him to the hospital until I had no money left, and they were not able to assist him," said Daudi's father William Mpoya. "I had given up and left it to God."

Two years ago, William Mpoya was unable to produce enough maize to feed his family. He did not know the proper growing techniques and had to buy what little maize he could afford. It wasn't enough. His family was malnourished and in poor health. Then Mpoya received training from SRL. "When SRL staff arrived they told me all Daudi really needed was food. I did not believe them because I had lost a daughter in the same way," Mpoya said. But after being fed a flour mixture fortified with amaranth seed for just one month, his son Daudi gained 4 kg (8.8 lbs). Now he is a happy, healthy boy weighing 24 kg (52.8 lbs).

After Daudi was cured, people started coming to Mpoya, who became a trained CNHW, when their children were sick. He advises them on what to feed their children to avoid the problems Daudi had. Mpoya now successfully grows maize, amaranth, cassava, papayas, and a variety of vegetables, providing his family nourishing meals three times daily. "I have acquired knowledge that I will continue to use to train other farmers," Mpoya said.

Source: VEDCO/SRL Nutrition and HIV/AIDS Officer Benon Musasizi, Monthly Reports.

3.1.1.2. Quantitative Evidence of Impact: Household Dietary Diversity Score

Since 2006, the VEDCO/SRL Program has used a standard USAID FANTA indicator of food access—the Household Dietary Diversity Score (HDDS)—to measure the impact of the program on household dietary diversity. This indicator is one of two SO-level indicators for SO2, which focuses on increasing food access.[128] Since no other impact indicators were identified to track the impact of the SRL SO3 activities, this indicator has been borrowed from SO2.

The initial quantitative surveys—those conducted in the 2006, 2007, 2008, and 2009—developed a list of 12 food categories and asked farmers to recall how many of the 12 food groups they had consumed in the last week. In 2010, the nutrition and HIV/AIDS officer conducted the same survey on the same sub-sample (n=308)[129] of target households, but reduced the number of food groups to eight and asked the respondents to note their level of consumption of each food group for the last week. [130]

The HDDS data for the 2006-2009 surveys was first analyzed for the 12 food groups then re-analyzed for eight food groups to make it more comparable (Table 3.11). The fact that there was not a larger increase in the HDDS score—despite ample qualitative evidence that this had changed—has raised questions about the accuracy of the way the data was collected (Table 3.11). Prior to conducting the next quantitative survey, SRL—with help from various Ugandan and ISU experts in nutrition—needs to:

- Develop a list of better indicators with which to track the impact of their nutritional interventions; and
- Identify better ways of training staff to conduct the HDDS if they decide to continue using it under SO2.

[128] See the relevant sections in the SO2 chapter.

[129] **Methodology:** Respondents were selected from the VEDCO/SRL baseline survey that was done in October 2010 that had been randomly selected in clusters. The clusters of target households (1200 target households starting in phase II in 2010) were categorized according to the parishes available in the sub-counties of VEDCO's jurisdiction of implementation. The survey data was collected using structure pre-piloted questionnaires comprising of questions on bio data, anthropometric measurements, nutrition and health related problem, HIV and AIDS support, food frequency questionnaire, and sanitary and hygiene related matters. The household interviews were conducted by 12 community-based trainers supervised by their respective extension officers and the Nutrition and HIV/AIDS officers. These were trained in data collection for anthropometric data. Weights, heights, and MUAC measurements were used to collect anthropometric data for classification of malnutrition.

[130] "Dietary diversity score was calculated from eight food groups of cereals, legumes, nuts, tubers, vegetables, fruits, animal products and fats, and oils and sugars. Analysis indicates that the average dietary diversity score in the period of a week is five, i.e. households consume foods from five groups. Further analysis indicates that 90% of the households consume equal to or more than the five groups indicated in the questionnaire as seen in the appendix. However, results show that 90% of the households do not have kitchen gardens required in the promotion of consumption of fresh vegetables." **Source:** Magezi Robert Winx. 2012. VEDCO-SRL Nutrition and Health Survey Report 2011-2012. Kampala: VEDCO. Pg. 16.

Table 3.11. Changes in the Household Dietary Diversity Score for Households Participating in the SRL Program (2005 – 11)[131]

Number of Households and Foods Consumed in the Last Month	SRL Quantitative Survey					SRL Health & Nutrition Survey	
	2006*	2007	2008		2009	2010	2011
			Time of Plenty	Time of Scarcity			
N=Number of households in survey	320 HH	338 HH	308 HH	308 HH	Not collected	308 HH	Not collected
Number of food groups consumed in the last month	7.4 /8	7.8/8	7.5 */8	5.9/8*	Not collected	5/8	Not collected
Number of food groups consumed in the last month	9/12	10/12	10/12	7/12	Not collected		Not collected

Source: The 2006, 2007 and 2008 data was calculated as part of the annual quantitative SRL Program survey under the leadership of Haroon Sseguya using the standard HDDS guidance. The 2010 data was generated by a separate health and nutrition survey on the same sample of households covered by the SRL quantitative survey under the leadership of Magezi Robert Winx.

3.1.2. IR 3.2. Strengthen Community Capacity to Identify and Manage Malnourished Children

3.1.2.1. Sub-IR 3.2.1. Promote Community-Based Management of Moderately Malnourished Children (2006-2009)

The successful rehabilitation of most of the children appears to have generated a great deal of support for this component of the SRL Program (Text Boxes 3.10). The nutrition survey conducted in January 2011, comprising of 368 households that had children targeted by these activities, reported that the prevalence of malnutrition cases amongst children had declined, with 80% of the children considered normal, 17% moderately malnourished, and 3% severely malnourished.[132] Four children died due to medical complications and negligence of parents/caretakers.

[131] **Methodology:** The version of the HDSS used by SRL grouped foods into eight groups: cereals, legumes, nuts, tubers, vegetables, fruits, animal products and fats, and oils and sugars. Farmers were asked whether they consume the above foods in the last weeks. Each of the surveys collected data using a standard form adapted to the context of Kamuli District the Food Aid and Technical Assistance (FANTA)-recommended HDDS that asked household to recall their consumption of foods from eight food groups for the week. The figures reported in the table represent the weighted mean for all of the case. The 2008 survey asked household to calculate the food groups in a time of plenty and a time of scarcity. This was the only time this was done. Unfortunately, SRL did not have a copy of the raw data used in 2010 to check the analysis that was presented in the 2010 health and nutrition report.

[132] Magezi Robert Winx. 2012. VEDCO-SRL Nutrition and Health Survey Report 2011-2012. Kampala: VEDCO. Pg.

Text Box 3.10. Case Study: Four-Year-Old Pauline Nakigude Overcame Severe Malnutrition with the Help of VEDCO/SRL CNHW Susan Namabiro

Susan Namabiro is a CNHW from Naluwoli Parish. She is also a small-landholder farmer who now realizes the importance of grain amaranth in the diet of children under five years of age. When SRL began working in Kamuli, Susan was pregnant with twins; Babirye and Nakato were born soon thereafter. Her introduction to grain amaranth was a blessing for Susan and her twins, and she immediately included grain amaranth in their diets. Both girls, now five years of age, are healthy and strong. Susan tells how her work as a CNHW has impacted the health of young children and other vulnerable people in her community. "We had a lot of children suffering from marasmus [infant malnutrition] and kwashiorkor [toddler malnutrition]. We used to throw plates on the ground and we did not care about hygiene in our cooking places. There were no dish racks. We shared our kitchens with livestock. We never washed our hands after using the toilet...and we had no toilets. After I was trained as a CNHW, I mobilized mothers with young children to feed them with grain amaranth. As the children's health improved, I became referred to as a *musawo* [doctor]." Susan also noted it was considered normal for most households to lack food and suffer periods of hunger. But now her household has food throughout the year. She can even derive an income from food sales during these periods since food prices are higher. She sold her surplus maize for UGX 250,000 (~$125) the first year and UGX 500,000 (~ $250) the next year. She has made similar income selling grain amaranth.

A notable case of malnutrition Susan has handled was that of four-year-old Pauline Nakigude. Pauline lived in Kampala with her mother, who sold charcoal for income. The girl's health had deteriorated to the point that her mother brought the child to the village to die. Despite her age, Pauline was not walking. When Susan came in contact with Pauline, she started her on a porridge made from a composite flour of grain amaranth, millet, and other grains. As Susan recalls, "The child's malnutrition was so severe that the mother was contemplating abandoning the child. I gave them a mosquito net, assisted them to construct a dish rack to keep the utensils clean, taught them to sweep the house and keep it clean." Within a year, Pauline had recovered and started walking.

Source: CSRL Reports.

3.1.2.2. Sub-IR 3.2.2. Pilot Test a Nutrition Education Center Pilot Project in Naluwoli Parish as a Strategy for the Rehabilitation of Moderately and Severely Malnourished Children

Results collected from the NEC since the year 2011 indicate a total of 89 children and 20 pregnant women have visited the NECs, bringing the number of clientele having visited the center since this program began at 109. The NEC is currently managing 64 children and has registered 25 dropouts since its inception. Over 90% of the 64 children have been managed (i.e. their parents have brought them every day) have entered with a MUAC of moderate (yellow) to severe (red) wasting.

To date the major indicator of success has been the high percentage of children managed by the program who have improved or been completely rehabilitated:

- All the children who have attended the NEC for more than one month have registered a normal (green) score on the MUAC, which is the major indicator being tracked to show weight gain;
- The children gained an average of 0.3Kg (0.66lb); and
- Only one death has been registered.

Another indicator of success is the number of pregnant mothers—nine out of XX—who were referred to the center as malnourished and who have given birth to healthy babies (i.e. over 2.5 kg).

During the SRL Report Writing Workshop, the nutrition team developed a list of indicators which it anticipates using to track the impact of the NEC in the future (Table 3.12).

Table 3.12. Current Monitoring, Output, and Impact Indicators Being Proposed to Track VEDCO/SRL SO1, SO2, SO3, and SO4 Activities in Kamuli District Related to the Nutrition Education Centers, 2011-2012 (Note: Data is in the process of being calculated for these indicators)

Indicators	2011	2012	2013	2014	2015
Total Number of Centers					
Established NECs		1			
Planned NECs					
SO3 Indicators for Nutrition and Health Impacts of the NEC					
Children Referred to the Centers					
Children Referred to the NEC by:					
-Hospital					
-Fellow Mother					
-CNHW					
-PEO					
-CBT					
-Home Visits by Community Nutritionist					
-Another Community Member					
Number of Children Seen at Least Once and Weighted by the Program					
Baseline Nutritional Status of New Arrivals Based on MUAC Initial Classification:					
-MUAC					
-Red (acute)					
-Moderate (at risk)					
-Green (normal)					
Baseline Nutritional Status of New Arrivals Based on the Initial Anthropometric Classification:					
-Wasted					
-Stunted					
-Underweight					
Age at Entry (estimated):					
-Less than <6 months					
-6-12 months					
-12-24					
-24-36					
-36+					
Number of Children Coming to NEC Who Get Referred to Hospital Center					
Children Admitted to Program					
Defaulters Children Who Drop Out of Program Without Reappearing					
Actively Managed Clients: Children who are considered to have been or to be actively managed (i.e. their mothers bring them to the center M-F for 3 months)=*denominator for the indicators that follow*					
-Clients Who Showed Weight Gain					
-Clients Who Attained Their Target Weight (in 3 months or less)					
-Clients Who Did Not Attain Their Target Weight					
-Clients Who Died					
-Clients Who were Discharged (Graduated)					
-Clients Who were Discharged and Readmitted					
-Clients Discharged Whose Father or Grandfather is/was Actively Involved in the Program and Management the Child					

Indicators	2011	2012	2013	2014	2015
Mothers/Grandparents of Child Clients					
Categories of Mothers/Grandparents Involved in Management of Client:					
A. Malnourished Pregnant Mothers Being Managed					
-Under 18 Years of Age					
-Over 18 Years of Age					
B. Mothers of Children Under Treatment Who are Not Clients					
C. Grandmothers and Grandfathers Who are Not Clients Who Have Children at the Center					
D. Mothers Currently in the Program					
E. Mothers Who Have Been Released					
Mothers Linked to Other Service Providers (Category C Mothers):					
-For Birth Control					
-For X					
-For X					
Mothers of Children Currently or Previously Managed (Categories C & D) Who Are Helped to Develop Agriculture Through SRL Program					
Crops Distributed Mothers of Children Currently or Previously Managed (Categories C & D):					
-Amaranth					
-Soy					
-Maize					
-OSP					
-Millet					
Mothers Actively Monitored by CBT and PEO Covering Their Village (Categories C & D)					
Mothers (Categories C&D) Helped in Acquiring Animals					
Mothers SRL Helped to Created IGAs					
-Enterprise 1					
-Enterprise 2					
-Enterprise 3					
Mothers SRL Helped Get Access to Microfinance					
SO4 to Build Organizational Capacity Mothers in Order to Increase Their Food Security and Prevent Readmission					
Mothers That Join Mothers' Group (i.e. Collection of Women Leaving the Group):					
-Graduates Who Join Mother's Groups		12			
-Graduates Who Do Not Join Groups		0			
-Mothers' Groups		1			
-Registered Mothers' Groups		0			
Mothers Who Join Pre-Existing SRL Group Post-Rehab					

Source: Laura Byaruhanga, November 27, 2012.

3.1.3. IR 3.3. Improve the Nutritional and Health Status of Vulnerable Groups

3.1.3.1. Sub-IR 3.3.1. Improve the Nutritional and Health Status of People Living with HIV/AIDS

Each PEO and CBT kept detailed records on the HIV/AIDS groups they supported. Although there is a great deal of anecdotal data that most groups have been very successful, most of the data has been qualitative (Table 3.13). A key challenge for the next phase will be to identify a core set of indicators with which to track the execution and impact of this targeted support.

Table 3.13. Activities and Structure of the Associations that VEDCO/SRL Supports in Kamuli District

Name of Association and Year Created	Membership and Origins of Group	Principal Members of SRL Team That Work with Group	Early Evidence of Global Impact of VEDCO/SRL Program			Autonomous Resources and Negotiated Deals	Level of Success and Major Challenges
			On Members Livelihood Systems	On Health and Nutrition of Members	On Members' Quality of Life and Assets		
Leeta HIV/AIDS Group							
Namasagali HIV/AIDS Group							
Butansi HIV/AIDS Group							
Mpawoatalikaba HIV/AIDS Group							
Mpatalilira HIV/AIDS Group							
Bonet-Bugeywa HIV Network							
Kasambira HIV/AIDS Group							

Source: Program notes from Benon Musasizi, November-December 2012.

3.1.3.2. Sub-IR 3.3.2. Improve the Nutritional and Health Status of the Students and Student-Related Households Affected by the SRL Pilot Programs to Promote School Gardens and School Feeding School

Our best data to date on the nutritional impact of the SRL support for school feedings comes from the Namasagali School feeding study executed by Laura Byaruhanga in 2012. The study enrolled 226 pupils in January 2012, which was the entire school population at that time, with 50.4% males and 49.6% females. The mean age was 11 years. All the pupils received 250g of lunch portion (maize, beans, and vegetables combination) containing 341 Kcal per 100g of serving for five days. Preliminary results from the analysis of data collected for Namasagali School feeding program indicates nutritional status and health benefits include:

- Children do not eat lunch at home, which saves parents money and time;
- Children get more nutritious food due to balanced meals they receive from the lunch program;
- The children are stronger, less sick, grow better, and are willing to work in the garden after having a meal;
- The pupils are more enthusiastic to go to school and perform better. The younger siblings who have not attended school look forward to beginning so that they can also be a part of the school lunch program; and
- There has been a rise in enrollment and school attendance due to the school lunch program SLP (a 175-person increase from x in month year to xx in December 2012).

Sensory evaluation information collected from the pupils indicates that a majority of the pupils liked the taste, appearance, and mouth feel of the meal. The study also indicated that it is much cheaper to produce food from the school gardens with support from the parents to supplement the SLP than buying food to be used in the lunch program from the local market. The parents and teachers mentioned a wide range of benefits perceived from the SLP, including motivation for the children and their siblings to attend school, increased energy and attention while at school, and willingness to stay for the whole day in school. The teacher also noted benefits such as reduced in short time hunger, better attendance and memory, and improved learning capacity. Generally the comments received from parents and school administration show a very positive attitude towards the program and a general desire to see it continue and expand.[133]

3.1.4. IR 3.4. Strengthen Community Access to Clean Water and Improved Water and Sanitation/Hygiene Practices

3.1.4.1. Water and Sanitation/Hygiene

There is extensive qualitative and quantitative data from the program's internal tracking systems of WASH and the boreholes that suggests that the SRL training and WASH infrastructure support has had a major impact on WASH practices for the target farmers. Each PEO reported on this for his/her specific parish.

[133] **Source:** L.A. Byaruhanga, 2012. Thesis: Nutrient Adequacy and Cost Effective of Garden Linked Feeding Programme in Rural Kamuli District Uganda: Case of Namasagali Primary School. A thesis submitted in fulfillment of the requirement for the award of degree of Masters of Science in Foods, Nutrition and Dietetics in the school of applied Human Sciences, Kenyatta University. Preliminary results Dec 2012.

To assess impact on WASH the annual survey included a series of questions to track household level adoption of key WASH practices (Table 3.14). In 2010, the same questions were asked in a separate health and nutrition survey (Table 3.14). The analysis shows WASH impact on only two of the eight variables being tracked, household level adoption of boiled drinking water and improved usage of improved stoves (Table 3.14). One reason for this is that the quantitative survey only tracked ownership not sure or state all of which were improved by the SRL activities.

Based on the issues the quantitative survey, the nutrition and HIV/AIDS officer developed a simple data collection tool for the PEOs and CBTs to use to report WASH practices for the groups they monitor. This was done weekly and looked all of the same sanitation and hygiene practices as the survey except improved stoves. This weekly update provides mechanism for the CBT and the PEO to review the importance of the practice and to assess the state of the infrastructure and use as well as ownership. Although the data is collected, the program has not yet developed a system for analyzing it. There is clear need for the M&E officer to work with the PEOs and the nutrition and HIV/AIDS officer to develop a simple excel-based table that the PEOs can use to enter and analyze this data.

Table 3.14. Early Evidence of SRL Program Impact on Water and Sanitation/Hygiene Practices Based on the SRL Quantitative Surveys, 2006-2011 (n=% of households in the survey that responded yes)[134]

Sanitation and Hygiene Facilities Established	SRL Quantitative Survey					SRL Health and Nutrition Survey	
				2009		2010	
	2006	2007	2008	Old (n=263)	New (n=55)	All[135] (n=318)	New (n=55)
Latrine	95.6	98.8	99.0	96.6	96.4	97	N/A
Bathroom	75.4	91.1	92.2	85.6	80.0	81	N/A
Kitchen	91.5	95.9	95.8	91.3	89.1	89	N/A
Drying Rack	66.2	80.2	80.2	N/A	N/A	59	N/A
Rubbish Pit	53.2	63.3	69.8	55.5	43.6	43	N/A
Can for Washing Hands	61.3	76.3	75.0	35.4	25.5	36	N/A
Boil Drinking Water	N/A	29.9	36.0	89.1	N/A	92	N/A
Improved Stove	N/A	23.1	52.6	47.5	49.1	N/A	N/A

Sources: H. Sseguya, R. Mazur, D. Masinde 2012. Evidence of Impact and Transformation in Kamuli. Ames, Iowa: CSRL.

[134] **Methodology:** The 2006, 2007, 2008, and 2009 data was calculated as part of the annual quantitative SRL Program survey.
[135] In 2010, the statistics for both the old and the new households in this survey were combined.