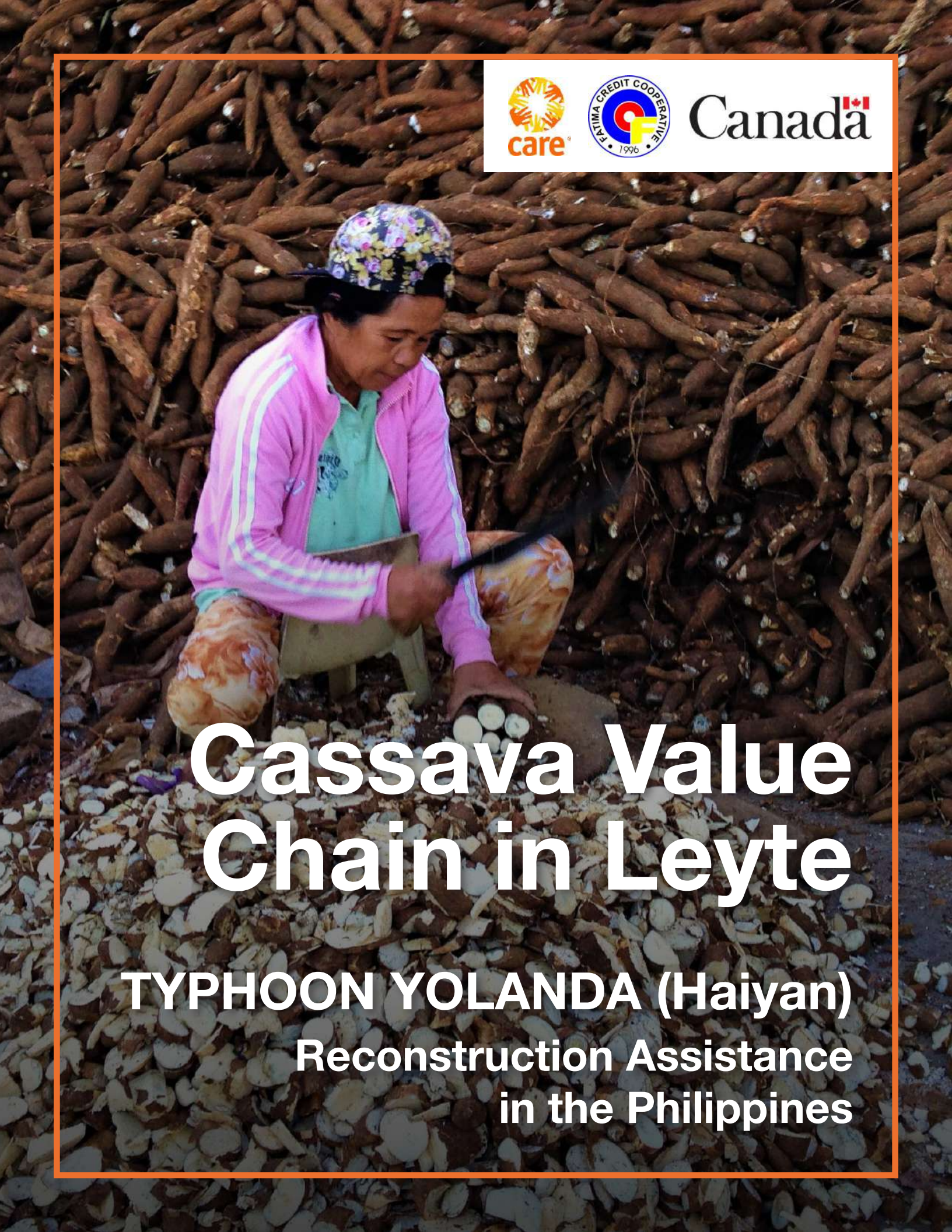


Cassava Value Chain in Leyte

TYPHOON YOLANDA (Haiyan)

Reconstruction Assistance in the Philippines

BACKGROUND

The Typhoon Haiyan (Yolanda) Reconstruction Assistance in the Philippines (THRA) project is a four-year initiative implemented by CARE with funding from the Government of Canada through the Global Affairs Canada (GAC).

The project supports the economic recovery of people affected by Typhoon Haiyan which struck the Visayas Region in November 2013. The THRA project aims to address the root causes preventing men and women's access to knowledge, skills, products and services, with a particular focus on strengthening women entrepreneurs. CARE's interventions intend to improve the economic well-being of women and men living in the region.

CARE is providing financial and technical support to a number of community-based organizations (CBOs) engaged in cassava production and post-harvest processing in several municipalities in Leyte through the Fatima Multi-Purpose Cooperative (FMPC). FMPC serves as the lead organization consolidating cassava produce from 133 farmers' associations, semi-process it into granules for animal feeds and collectively market to industrial users. Some CBOs and individual farmers sell fresh tubers in the market for food.

About Cassava

Cassava (Manihot esculenta), locally known as 'kamoteng kahoy' or' balanghoy', is a woody shrub native to South America of the spurge family, Euphorbiaceae. It is extensively cultivated as an annual crop in tropical and subtropical regions for its edible starchy tuberous root, a major source of carbohydrates.

Key facts:

- Mature plant can reach 9 feet in height, mainly grown for its tubers which are a rich source of carbohydrates, calcium and ascorbic acid.
- Third largest source of carbohydrates in the tropics, after rice and corn.
- Major staple food in the developing world, providing a basic diet for over half a billion people.
- One of the most drought-tolerant crops, capable of growing on marginal soils.
  Cassava propagates via stem cuttings. Planting of cassava takes place before the rainy season.

Uses of Cassava

Cassava is generally processed as food such as dried chips and native pastries like “suman”, “bibingka” and “sago”. Another important product is tapioca flour. Cassava is also used by different industries for pharmaceutical products, paper, adhesive, textile, mining, etc. The root of cassava can be used for the production of ethanol that is used as biofuel.

The use of cassava as livestock feed in the country has also shown that it can be utilized as a substitute for feed grains in compounded animal rations. On the other hand, cassava leaf meal contains 18-20% protein, so that it is a good livestock feed not only for poultry but also for other livestock.

Cassava Industry in the Philippines

Cassava is planted each year in about 120,000 hectares of agricultural land in the Philippines, producing about 1.8 million tonnes of cassava roots. As a food crop, demand for cassava is increasing and this trend is expected to continue with the increase in population and improvements in techniques for transforming cassava roots into more stable, convenient and attractive products, as reported by the Philippine Root Crops Research and Training Center.

Cassava is second next to sweet potato, in terms of area harvested (hectarage) among the root crops produced in the country. Cassava is grown mostly in Central Visayas, Bicol, Central Mindanao, Eastern and Western Visayas, Western and Southern Mindanao, and Southern Tagalog regions.

According to the Philippine Statistics Authority, the July-September 2017 production of cassava at 619.83 thousand metric tons was 1.9 percent higher than the same quarter of the previous year's level of 608.07 thousand metric tons.

The increase in output could be attributed to more areas planted in Isabela and Quirino due to continuous technical, financial and marketing assistance from San Miguel Corporation (SMC). Likewise, in Bukidnon due to increased demand for food, feeds and other industrial uses.

The Autonomous Region of Muslim Mindanao registered the highest production at 269.95 thousand metric tons sharing 43.6 percent to total cassava production this quarter. This was followed by Northern Mindanao and Cagayan Valley with 15.9 percent and 15.3 percent shares, respectively (PSA, 2017).

The demand of cassava as raw material for industrial uses dramatically increased. However, this demand is not fully satisfied due to low cassava production.

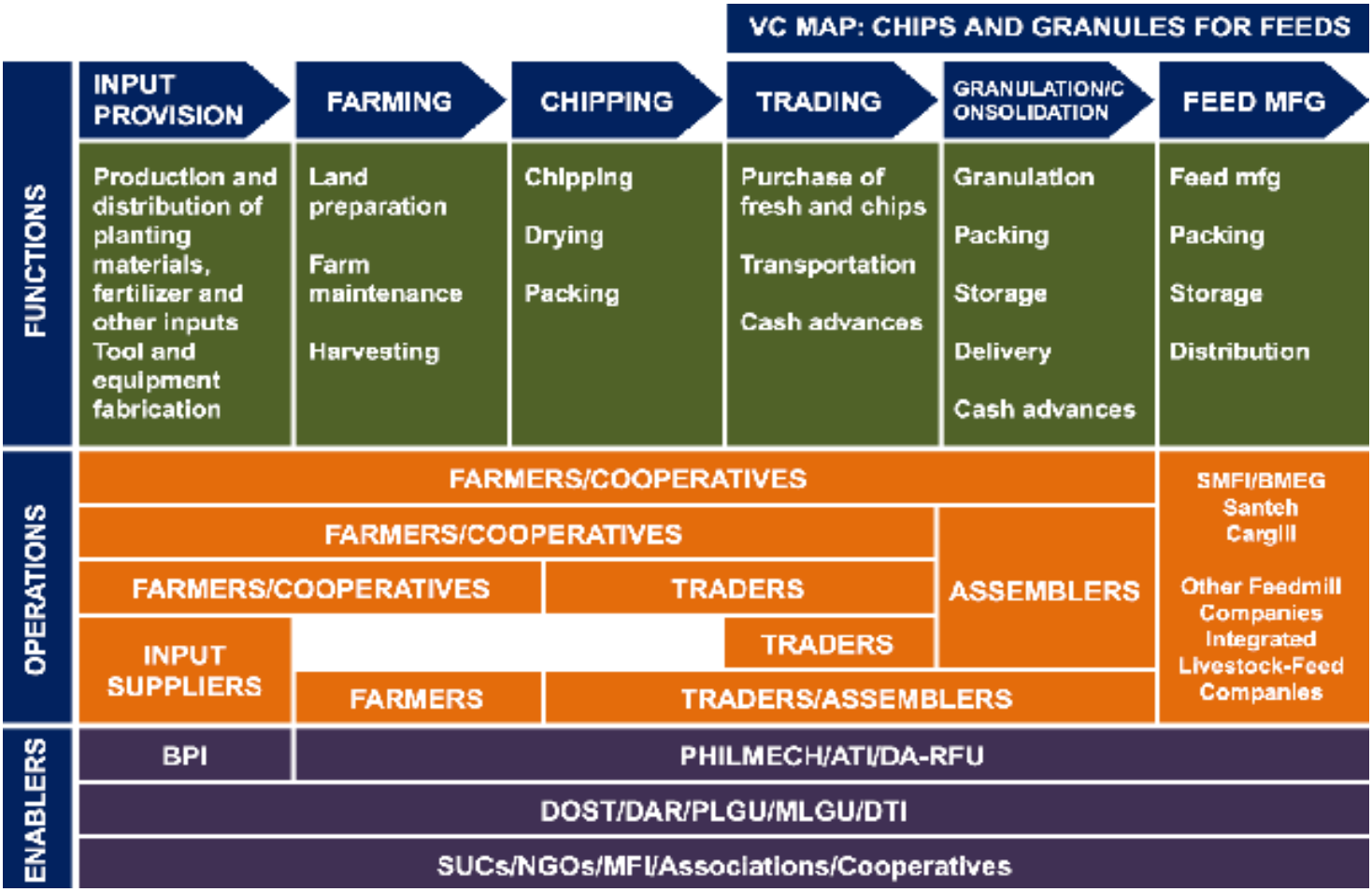
The Philippine cassava is generally cost competitive for export. The reason for this export competitiveness was due to low cost of production and high yield in different top producing provinces in the country (Philippine Cassava Industry Development Roadmap 2015-2022).

Cassava Value Chain in Leyte

Leyte is an island province in the Visayas and one of the most affected by typhoon Yolanda in 2013.

Cassava has a strong economic relationship with resource-constrained farmers situated in the forest margins and marginal lands. Hence, any development in cassava will have an implication on food security, poverty alleviation and protection and utilization of marginal lands in the Philippines that at present contribute very little to agriculture.

This scenario exists in areas such as Leyte with productive coconuts but were significantly devastated by typhoon Haiyan.



Source: Department of Agriculture, 2014.

Growing cassava entails simple farm operations such as land preparation, planting, weeding, fertilization, irrigation, and harvesting. Small-scale production requires 51 man-days to farm a hectare of land. On the other hand, plantation type of production needs 55 man-days per hectare to undertake all the necessary farm operations.

Aside from being a disaster-resilient crop, cassava in Leyte has already established a good market through the San Miguel Foods Inc. (SMFI), one of the largest animal feed manufacturers in the country.

Input Provision

Cassava is a tropical and sub-tropical plant. It grows well in regions with more or less evenly distributed rainfall throughout the year. Cassava thrives in an area with sandy loam or clay loam soil and not prone to water logging.

There are several varieties of cassava grown in the Philippines, but commercially, the following are recommended: Lakan 1 (fresh root yield: 32 tons per hectare), Sultan 6 (39.1 tons per hectare), Sultan 7 (37.9 tons per hectare), Rajah 3 (37 tons per hectare), and Sultan 10 (40 tons per hectare). Sultan 6, Sultan 7, and Sultan 10 are industrial types suitable for starch and feed production while Lakan 1 and Rajah 3 are both all-purpose types appropriate for food, starch, and feed production.

In preparing planting materials, it is recommended to select only physiologically mature, fresh and healthy stems. A stem is healthy if it is free from insects, pests and diseases and its diameter is not less than 1.5 cm. Also, it is fresh if the latex or sap comes out within three seconds after cutting. A stem is mature if the diameter of the pith or cork is not more than half the diameter of the cortex.

Farming

Cassava is mostly grown by small-scale farmers and is usually cultivated in areas that can be maintained with minimal supervision since cassava can survive in isolated areas with poor soils, and low and unpredictable rainfall. Cassava prefers good soil but can also grow in poor soil because it can tolerate low pH and higher level of soluble aluminum and low available phosphorous. It can also grow in soil where other crops couldn't.

Land preparation is similar to any upland crop. Clear the area of existing vegetation and debris. For flat areas, tractor cultivation is recommended. Perform disc plowing and disc harrowing depending on the soil type and weed incidence. For sloping areas, use animal-drawn cultivation with furrows oriented along the contour of the terrain.

Before planting, submit soil sample for soil analysis to determine the amount and kind of fertilizer needed. If fertilization is necessary, fertilizer application is performed 30 to 60 days after planting.

Using a sharp bolo, cassava stems are cut into stakes one (1) day before planting. Prepare cutting with at least 5 nodes or approximately 20 cm in length. Recommended distance of planting is 0.75 - 1 meter between rows and 0.70 meter between hills. The actual planting distance may vary depending upon the availability of planting materials and the inherent fertility of the soil. For areas with distinct wet and dry climate, it is recommended to plant at the start of the rainy season. In areas with evenly-distributed rainfall, it is acceptable to plant anytime of the year. Plant the cuttings on ridges in either vertical or slanting position. Two thirds of the stalk length must be buried or covered with soil. Ensure that the mature end of the cutting is buried in the soil. Replant missing hills 10 -14 days after planting.

Harvesting of cassava is done 8-12 months after planting. This can be done manually or mechanically. Cassava is sweet if harvested at the right age; it is tasteless and rots easily if harvested premature. When over mature, it will have harbored mold (bukbok) and/or will be eaten by pests, and the fibers will be tough. It is not advisable to harvest just after a rain or when the soil is wet. The crops will rot easily and it will be difficult to clean off the soil around it. Cassava is a highly perishable crop. It starts to deteriorate as early as one to three days after harvest. Harvesting should be done during the dry season. This minimizes the occurrence of molds in cassava chips or granules.

To prolong its shell life, it needs to be stored properly if not processed within two days from harvest.

Drying, Chipping, Granulating

Newly harvested roots are sun dried for four hours or less to easily remove soil particles. Then cassava is being chipped through manual or mechanical chopping of fresh roots. The ideal thickness is ½ inch. Manual chipping can be done by cutting the roots diagonally or crosswise using a sharp knife or bolo. Mechanical chipper can process larger volume of roots in a shorter period of time with lesser cost.

After chipping, cassava is dried under the sun. In areas with frequent rains, drying is done through a "Papag dryer" with UV plastic roofing. Cassava chips/granules shouldn't be dried in sandy areas to avoid contamination.

Dried chips/granules are packed in clean laminated sacks or Polypropylene sacks. Cassava needs to be stored in dry, shaded and well ventilated area. Wooden pallet is used to elevate sacks from the flooring.

Trading and Consolidation

The traders and cooperatives can also deliver the chips or granules to assemblers or to feed companies. Most traders and assemblers are identified to be vertically integrated companies that already include most of the steps in the value chain from input provision up to production and selling to feed companies. On the other hand, market players that are involved in starch production have a much simpler supply chain. Cassava farmers and starch companies have a direct business transaction with each other. Farmers have the option to directly deliver to the companies (PDRF, 2017).

Opportunities and Challenges

In Western Leyte, the Fatima Multi-Purpose Cooperative (FMPC) has been operating as cassava integrator for San Miguel Foods Inc. (SMFI) for over five years now. SMFI is one of the country's largest companies engaging in the agro-industrial sector. The challenge being faced by FMPC is to consistently deliver the requested volume of cassava of SMFI and maintain the quality.

As CARE's partner, FMPC hopes to translate its existing market opportunity with SMFI to benefit more cassava-farming communities. With the surge on the number of participating farmer-entrepreneurs, FMPC must enhance its capacity to carry out efficient and effective business operations. Consequently, it hopes to uphold its crucial role as cassava assembler in Leyte to help more small-holder farmers in Leyte for their economic sustainability in order to reduce their vulnerability to disaster and climate risks.

Below are some other challenges in the development of cassava value chain in Leyte:

- Small farmers with limited capital and mostly disorganized
- Limited access to quality technical assistance
- Limited farm machineries and post-harvest facilities
- Limited supply of quality planting materials
- High cost of product consolidation and inter-island transport
- Lags behind on GAP certification compared with other ASEAN countries
- In some areas in Leyte, small-hold farmers spend more in production due to manual labor instead of the use of mechanized equipment.

CARE's Typhoon Haiyan Reconstruction Assistance

Through the THRA project, CARE employs a strategy on improving access to resources required in rebuilding agricultural, livestock, fisheries and commerce-related livelihoods aimed at optimizing income and providing diversified and resilient livelihood opportunities for most affected households. As such, CARE provides financial and technical support to a number of community-based organizations (CBOs) engaged in cassava production in 16 municipalities in Leyte that were heavily affected by typhoon Yolanda.

CARE has partnered with FMPC based in Calubian, Leyte to implement the "Cassava Value Chain Enhancement Project" that supports over 2,000 small-holder farmers in 16 municipalities in the province. The project aims to contribute to the economic recovery of the Yolanda-affected farmers and promote cassava production as alternative source of income.

CARE has provided financial grants to community associations and technical assistance to farmers through trainings and cross-learning activities on good agricultural practices, enterprise management, financial literacy, values formation, gender and environmental management.

CARE's program approach goes beyond addressing the needs of one group, and applies the 'Value Chain Framework' to gain a deeper understanding of market dynamics, demand, supply and inter-firm relationships. Through this approach, CARE-assisted associations are involved in various phases of cassava value chain – from inputs to production to processing to trading.

FMPC is an accredited assembler and cassava consolidator of SMFI. FMPC pools local farmers in cassava production. In 2017, FMPC needed to supply SMFI a minimum guaranteed volume of 500 metric tons of cassava granules. In the same year, FMPC was able to supply 2,300 MT of cassava granules to SMFI compared to 1,218 MT in 2016.

CARE and FMPC both partnered with PhilRootcrops and SMFI to train farmers on production technologies such as variety selection, site identification, land preparation, harvesting, good cultural management practices, and proper drying and chipping.

Following a community-led approach to development, CARE has also trained and engaged Community-based Development Facilitators (CBDFs) from assisted local communities to become training facilitators. CARE believes that community trainings are best delivered by the local CBDFs as they have a strong sense of identification with the community members, relationships with the local people and authorities, and first-hand knowledge of the socio-economic conditions in the area making them more effective in conveying and connecting entrepreneurial possibilities.

The CBDFs assistance were valuable in the roll out trainings such as Community-Based Enterprise Development; Financial Literacy; Value Chain Orientation, Values Formation among others.

Through CARE's support, FMPC was able to expand cassava plantations by farmer-members, establish at sub-consolidation centers, and increase processing capacity for cassava granules to achieve economies of scale in meeting market demand. The target is to involve at least 100 barangays in more Leyte municipalities over a period of five years under the expansion plan for the enterprise.

This will be achieved through expanded operation of cassava plantation of the farmer-members from the current 649 hectares to at least 2,000 hectares and increase viability of the sub-consolidation centers. With this expansion, more poor farmers can be assisted and offered improvement of their quality of life. The project will also employ more vulnerable people as chippers and wage earners in the cassava processing and provide them income which averages to P250.00 daily.

FMPC has diversified its market for other root crops by establishing connection with manufacturing company Sunlight Foods Inc. for the supply of purple yam (ube). Sunlight Foods supplies processed products like ube to Unilever (Selecta and Gardenia) and other food chains.

Similarly, CARE partnered with the Department of Agriculture in Regions 6 and 8 to conduct the Good Agricultural Practice (GAP) Training across the five value chains. Part of this arrangement includes consultations with Bureau of Fisheries and Aquatic Resources, Agricultural Training Institute, Department of Agriculture, PhilRootcrops and Philippine Fiber Industry Development Authority. CARE and FMPC have established demo farms that will help the farmers for the GAP certification.

Gender Roles and Issues

Typical of small-scale production, cassava farming uses traditional methods. It is not treated as a business or enterprise for profit-making or future expansion. However, if there is a market available, farmers are enthusiastic to expand their production to generate more sales.

The cassava value chain system seems to be more gender- fair compared to others. Strong social cohesion, as exemplified by the practice of the community in giving free and voluntary assistance in support of farming, is also apparent. Another note-worthy exercise being done in the cassava value chain is men giving discounted rates of labor services to widows, single mothers, and spinsters who are living and managing their farms alone.

In the cassava value chain, more women have access to non-mechanical farming equipment. This is relative to their high participation in the planting and harvesting of cassava. Also women are active in processing cassava to produce food, tea and other products.

At the household level, wives and husbands share in decision-making in the use of money, production schedules, attending trainings, and their children's schooling. At the community-level, there are a number of traditional self-help initiatives aiding each farmer in the cassava enterprise. Araglayon (a self-help group, also known as ayunay) is a traditional practice that extends favors to other farmers. Tools and farm equipment are shared, especially during harvest time. Sharing of 'paka' or planting materials to farmers in need is also quite common.

Environmental Management and Disaster Resilience

Cassava plantations are less vulnerable to disasters and adverse effects of climate change as cassava is characterized as a resilient crop. It can withstand harsh conditions such as drought, long dry spell, infertile soils and short-time flooding.

There is no serious pest that attacks the cassava plant and the use of chemicals is not practical or economical. To avoid the attack of pests, farmers apply crop rotation or burn all the infested or infected plants.

But still, the capacity to manage and mitigate risks posed by disasters and climate change in the cassava value chain in Western Leyte needs a lot of improvement, particularly in developing climate-smart and risk-informed enterprises in the communities. Although the municipalities have developed contingency plans and early warning systems, these have yet to be cascaded into the communities and their enterprises, which is indicative of their lack of emergency preparedness both in their households and enterprises. There is also an insufficient mainstreaming of disaster risk reduction-climate change adaptation into the communities' economic activities, which could eventually lead in slower recovery in the event of a disaster.

Cassava is an easy-to-grow crop. The crop grows well on poor soils found on eroded hillsides because it resists adverse conditions such as drought. When farmers can't grow corn or beans in depleted soils, cassava is an ideal alternative.

A tripartite agreement between CARE, FMPC and Philippine Crop Insurance Corporation (PCIC) was signed, providing farmer beneficiaries with insurance cover for crops and livestock and personal insurance for both accident and life. This is seen as a risk mitigating measure and a first step towards the promotion of resiliency and sustainability among the communities that CARE works with.

Commitment to ensuring that sustainable practices are carried out in their activities was guaranteed by farmers/producers and members of the associations, which will be continuously monitored for improvements. As the environmental impact of the production activities are relatively low even with the planned expansion of production areas, an exemption certification will be obtained. The Municipal Environment and Natural Resources Office of each municipality will be engaged in this. For level of operations that go beyond the minimal environmental impact, the environmental clearances will be secured.

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Founded in 1945, CARE is a global leader within a worldwide movement dedicated to ending poverty. We are known everywhere for our unshakeable commitment to the dignity of people. CARE has worked in the Philippines since 1949, providing emergency relief when disaster strikes, helping communities prepare for disasters, and implementing sustainable livelihood projects.

CARE implements the THRA project in collaboration with:

DEPARTMENT OF AGRICULTURE
PHILIPPINE CROP
INSURANCE CORPORATION

And the Municipal Government of Barugo, Carigara, Jaro, Tunga, Burauen, Calubian, Capoocan, Kananga, La Paz, Ormoc, San Isidro, San Miguel and Villaba in Leyte and Almeria, Cabucgayan, Caibiran in Biliran

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