



# Gender in the Cassava Value Chain in Cambodia

# Background

Cambodia's economy is primarily dependent on agricultural production, as the majority of the population lives in rural areas and is engaged in agricultural activities as a main source of income. Within this context, more than 65% of women in the country are farmers. Females are responsible for 80% of food production, and contribute nearly 75% of all agricultural labour in rural areas.<sup>1</sup>

In the cassava value chain specifically, there seems to be a balance between men and women in terms of the tasks, responsibility, access to resources and benefit sharing, at least on the surface. Although IBC farmers pointed out that men and women share equally in decision-making processes, traditional gender roles still have a strong influence in Cambodian culture. Therefore, it is expected that women should complete all household tasks in addition to any activities and responsibilities they may have related to cassava production. Also, although women may participate in decision-making processes, it is usually the men who have the final decision-making power in male-headed households.

Women and men play equally important roles in the cassava production process. Many activities are implemented by both genders, while men are more likely to be responsible for the transportation of harvested cassava to the selling point and women are more likely to be involved in preparing planting materials. Farmers reported that they generally share in the tasks and decision-making processes in cassava production.

### Women's contributions to the IBC process

There are two key phases in cassava production: production and harvesting/selling. In the production phase, women and men are generally equally involved. When it comes to purchasing inputs for cassava production, usually, men have more understanding about agricultural inputs such as selecting planting materials or the type of fertiliser to purchase. Therefore, they usually take the lead in the purchase of fertilisers. Both men and women have participated in training for the project which has enabled women to learn more about what fertiliser to buy and how to choose appropriate planting materials.

Cassava is a labour-intensive venture and men are generally responsible for the heavy labour tasks and operation of tiller machines for ploughing. Women are not likely to operate these machines but may still be involved in other aspects of land preparation (raising mounds along the rows). According to participants in focus groups, land preparation is hard work and requires everyone, especially men and sons to work on the field. At this stage, women take more responsibility for cooking and taking care of their husbands in the fields. Weeding, harvesting, and other activities are then performed by both genders. Throughout the project, both men and women have learned how to improve cassava production by applying new techniques and technology. They expressed that new techniques in land preparation (raised rows), spacing, and inserting fertiliser into the soil rather than broadcasting were particularly important changes they have made.

The post-production phase involves harvest, transportation and selling. Due to the fact that cassava is a bulky produce, transportation is often done by tillers/tractors, consequently, transport is most often done by men, who operate these tillers. However, women may accompany the cassava to the selling point and participate in the negotiation process with the cassava collector or enterprise. Women often play a very active role in the selling phase.



<sup>1</sup> MAFF (2006), Gender Mainstreaming Policy and Strategy in Agriculture, Phnom Penh, February 2006.

"Women are clever in price negotiation – women are better than men at this. The men manage the transportation but often stand and observe the

*negotiation."* -Mr. Then, assistant at Huot CCC

### Challenges

In general, the challenges identified by female cassava farmers were challenges faced by all farmers in this sector, regardless of gender. These challenges include lack of finance to invest in fertiliser, time and labour mobilisation for using the pesticides and fertiliser, cassava diseases and pests, and lack of knowledge of appropriate chemical application.



The most challenging issue faced by women in particular in the cassava production process is balancing their household responsibilities and their economic work. The women are responsible for caregiving in their households and find it challenging to participate in activities outside the house.

Another important challenge for women in the cassava sector is ensuring personal safety. This is especially important for younger women who work as wage labourers and might travel further away to other production plantations. One way of increasing safety would be for the owner of the plantation to provide joint transportation for his/her workers.

"We have lots of tasks and business to complete at home such as taking care of the children, cooking, and cleaning. These are the activities that usually catch our attention and not allow us to join the meeting or training courses regularly." -FGD member Rorka Por Bram Muy Village



### Conclusion

It can be concluded that both men and women play strong roles across the cassava value chain. Although farmers have indicated that both genders participate in production processes and decision-making related to cassava equally, traditional gender roles and women's limited knowledge or capacity to travel far from home may create significant barriers to substantive contributions in these areas. However, as women participate more in training programmes and gain more confidence in their abilities, it is expected that respect for their opinions will continue to increase. Women would benefit from learning how to use postharvest equipment that could help ease the difficult labour required for harvesting cassava. Finally, providing both men and women with gender training may contribute to easing women's household burdens as attitudes towards traditional household gender roles slowly evolve.



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#### **Personal Experience**

Mrs. Naoy Thy, IBC Member and head of household in Rorka Por Bram Muy Village

"I have my own farm of 2.5 hectares, and I also rent 1 hectare. I decided to plant cassava because it provides a higher income than rice. I have participated in three different trainings (gender, how to grow cassava and using fertiliser).

Sometimes it is hard because I am the head of my household and all ideas and responsibilities are up to me, so it can be difficult to attend trainings. I have to rush all the time between household work and group work. For example, I might have to cook before training or meetings.

After training, I always share information with other farmers and my household, but I don't know if other farmers 100% believe me. They want to see if I get higher yields to see if what I said was correct and reliable first. The most useful things that I have learned were planting techniques (making rows) and how to keep stems, but other farmers continue to follow traditional methods and ignore what I learned in training.

The difference between my household and male-headed households is that in my household I am the one who has to learn all the techniques and show the rest of the household. In other households, the man is the one with this knowledge and women depend on their husbands to make decisions.

My biggest change since joining the project has been the knowledge I gained on how to increase cassava productivity. This builds more confidence for me to advise my husband and household. My husband feels confident in me because I have technical knowledge. I expect to continue with these techniques in the future because I have experienced that this knowledge is applicable and has changed my productivity (especially the new land preparation techniques).

Being a female head of household is not a big matter for me. I can't think of any challenges I face that are different from male-headed households. The workload is not unmanageable, and I can manage the decisions and planting, as well as my household. We also have 10-12 labourers to help on the farm."











# Inclusive Business Models in Cambodia

# Background

Cassava has been identified as a priority cash crop<sup>1</sup> in Cambodia, given the potential of the subsector and increasing need to diversify the country's agricultural sector. Farmers are showing increased interest in cassava, supported by steadily increasing prices and expanding markets, mainly in China. The development of the cassava subsector in Cambodia has been associated with an inflow of processing firms and the expansion of land under cassava production.

To ensure a productive cassava sub-sector, both production and markets must be sustainable. Establishment of effective market linkages requires a functional support system in place and time investments. The multi-country IBC project implemented by SNV and CIAT, aimed to promote sustainable production involving good varieties of cassava and appropriate use of inputs, cultivation techniques, soil erosion control, intercropping, and crop management. The IBC model promoted market linkages between producers, traders and processors. The inclusive business model was designed to expose farmers to more market opportunities while protecting producers from risks, especially the risk of price fluctuation, often associated with opening markets and ensuring mutual benefits of players on both the demand and the supply sides of the value chain.

The IBC project had two key components implemented concurrently: sustainable production and establishing market linkages. On the production side, the project conducted trainings on sustainable fertiliser use, improved cassava agronomic practices, field trials on intercropping, variety testing and fertiliser application. Additionally, training was provided on selection and storage of planting materials as well as pest and disease management. To have a wider impact, farmer field schools were established within the project areas where farmers could learn and share ideas.

Establishing market linkages involved engaging with processors and a few selected cassava collection centres (CCCs) to have inclusive supply agreements with the project's farmers, who were organised into groups for ease of facilitating interaction. Special conditions within these arrangements were set up to ensure they were mutually favourable for all participating stakeholders.



Strong/goods connections ••••• Service provision — Competitive relationships

# IBC experience in Tboung Khmum Province

In the process of project implementation, various patterns of relationships representative of the Cambodian cassava value chain situation emerged in Tboung Khmum Province. They offer significant insights for future development of the sector.

It was expected that with signed agreements between cassava processors and producers, there would be increased interaction among them. However, direct linkages were not as strong as expected, as the processors have a low daily intake capacity, easily met by producers surrounding the factory or the increasing number of CCCs in the project area. It makes economic sense for the processor to get bulk supply through the CCCs, while it also makes sense for farmers to supply to the closest point. This was also necessitated by the fact that transport is normally provided by the seller, and cassava processors do not offer transport services. A survey conducted with IBC farmers shows that only a small percentage of farmers supplied their produce to the processors and mainly only those located close to those processors.

These circumstances have therefore led to a shift in relations with stronger ties developing between CCCs and processors (rather than directly between processors and farmers) where farmers would be more likely to supply CCCs, who in turn sell the produce to the processors. For

<sup>1</sup> Diagnostic Trade Integration Study RGC

example, according to Song Heng processor, his supply from CCCs increased from 25% of his total annual intake in 2013-14 to 50% in the 2014-15 harvesting season. The CCC Soy Thy also indicated interest in having contractual based supply with cassava processors.

Limited local processing capacity in the project area determines how much processors can accept at a given time. It is the limiting factor of the supply chain. For example, Song Heng Processor has a daily processing capacity of 200t. Once this is reached, then despite agreements, it is not possible to accept more supply as there are no storage facilities. In addition, the processor produces wet starch and relies on fresh produce, which is risky to store. Consequently, in these instances, farmers and CCCs are forced to look for alternative markets.

For CCCs, there are two aspects to their purchasing capacity. First, they operate based on the number of trips they can supply to the local processors or Vietnamese clients. They are likely to stop any purchase if they do not have a market for the produce they are holding. Secondly, most CCCs reported that the amount of cassava they can buy at a given time depends on their financial capacity.

The root cause for mistrust between producers, CCCs, and processors is mainly related to measuring/weighing systems. According to Song Heng, his weighing scale is fair compared to the ones used by CCCs, which are often set up to cheat the farmer on the weight. He insinuated that this is the main reason why CCCs can afford to give higher prices, even if they still cater for transportation cost to Vietnam. Although farmers often mistrust CCCs over fairness of scales, relations between CCCs in the project and farmers have been improving. For example, Huot CCC explained that relations have improved with farmers because they have fair scales compared to competitors and because they are providing inputs on credit, as well as loans to some farmers. Soy Thy CCC also had a good relationship, as some farmers indicated that they trust their scales.

"I sold 25 tonnes to Song Heng and was happy that the scale was correct and not cheating, but not happy with the DC (starch content) that was given. I feel that our communication with Song Heng factory is a bit difficult, as this factory does not really follow the guidelines mentioned in the contract. If a price arrangement was in place in the future I would sell

#### to Song Heng again."

-Mrs. Huong Soknang, 25 years old, vice leader of farmer group - Lvea Touch Village

The issue of cassava quality is an increasingly important factor in the determination of the price. Buyers are attaching more value to produce with more starch content and fewer signs of diseases/pests. According to CCCs interviewed, Vietnamese traders often deduct a percentage based on the quality of supplied products, sometimes up to 8%. Prices are dependent on Vietnam border prices and all the players set their prices based on information they get on border prices.



The prices given as reported by farmers seem to reflect this reality. An important challenge faced by both farmers and CCCs is asymmetry of price information. Prices fluctuate significantly even in one day and price information available is unreliable. Ideally, farmer group leaders could check price information at different selling points and update their members. However, in reality, farmers do not operate as a group and each individual seeks price information on his or her own. Soy Thy CCC recognises that accurate price information is important to build trust with farmers. However, it is difficult for them because they may only get updated price information by 10am, when many farmers have already arrived and sold their produce. Then the farmers who come later complain that the price has changed.

The influence of traders/agents of cassava processors from Vietnam has had serious impact on the operation of the IBC model. These traders act as competitors to local cassava processors, CCCs, and input suppliers. When farmers supply local processors, they get paid in two or three days compared with selling to most traders, who pay immediately when produce is delivered. They also offer slightly higher prices. As agents, these traders come loaded with cash and want to finalise the transaction as soon as possible to deliver more to their business associates in Vietnam.

"It is difficult because I might buy at a certain price here in the morning without knowing what the price will be in Vietnam by the time I get there to sell it, and end up losing money." -Head of Soy Thuy CCC

Part of the process to enhance local market linkages involved the development of business plans. The concept was embraced by some groups, for example farmer groups in Prorpat and Andoung Thmor Villages. However, companies did not always follow through on the plans with farmers. In Ta Pao Bom Penh Tes I and II, Rokar Por Pram Commune, farmer groups developed production plans, but processors put emphasis on starch content as a measure of quality, making it difficult to set up prices in advance.

# Challenges

Despite the expansion of cassava production and improvements in the value chains nationally, there are still underlying challenges to various components. Production has been increasing, due to expansion into new and fertile lands and gradual improvements in production systems. However, at the farm level, producers are still facing challenges related to soil fertility management. Some farmers do not apply fertilisers, and those who do still do not apply the recommended rates nor have reliable sources of information on fertiliser application.

Furthermore, there have been outbreaks of diseases and pests, particularly Cassava Witches Broom disease (CWD) and Mealybugs, mainly due to imports of infected planting materials from Vietnam or Thailand. The diseases are spread through reuse and transfer of these planting materials across communes and districts. Climate change has also an impact, as farmers witnessed record losses this year, due to either lack of rain at the beginning of the expected rainy season, or flooding during peak rains. Finally, there is a lack of research focused on cassava production in Cambodia as compared to rice and the vibrant research environment in neighboring countries.

Weaknesses along the value chain are prominent in input supply and output disposal as the market is quite unstructured. Imports of agricultural inputs from neighboring countries are rarely controlled (imports of planting materials are not thoroughly subjected to safety checks). At the same time, there is a lot of unaccounted export of cassava tubers across the border. There is poor flow of market information affecting farmers, collection centers and processors, and indeed prices significantly influence the distribution of cassava produce to either side of the Vietnamese border. The situation is exacerbated by the fact that price information can change up to 3 or 4 times per day depending on supply and demand at the Vietnamese border. It is also worth noting that despite Cambodia securing markets in China and other importing countries, few if any local processors have complied with export requirements. The result of this is that processors have to depend on exports across to neighboring countries, particularly Thailand and Vietnam. The effect of dependence on these markets is that local processors have to accept the prices offered, which is often low and is subsequently passed over to farmers.

# Conclusion

The project has made many steps towards setting up an effective inclusive business model in the project area. The project was able to strengthen relationships between value chain actors through various interactive and participatory approaches. Better relationships were developed between input suppliers and farmers as well as the processors and CCCs; however, there is still a long way to go before trust can be fully built, which may be influenced by policy interventions. IBC has also been hindered by the low number of local processors, often with low processing capacity and external influences from traders in the project area emanating from the Vietnamese market.

A number of lessons were learned regarding implementing inclusive business models (IBM). These models usually operate well where other systems are also developed. For example, the model was based on assumption that value chain players can easily access finance. This assumption does not always materialise in practice, as many farmers complained of high interest rates making them unable to take loans. This also meant they were not able to implement some of the project proposed activities. Also, IBM would be more successful where supply and demand are at equilibrium. In Cambodia, storage and processing capacity of CCCs/processors influences how much they demand. This means they may not buy all the cassava supplied to them, even when there is an agreement in place with farmers. Finally, accurate, reliable and timely market information plays a crucial role in the way partners in IBM operate.

A number of recommendations for future interventions can be made. CCCs and the Provincial Department of Agriculture (PDA) are the most trusted actors in the value chain, thus these should be the main points of entry for future projects. It will also be necessary to focus on building trust between farmers and CCCs, and linkages between CCCs and processors. Controlled supply agreements should also be explored, as they determine a given quantity of produce per day to be supplied by farmer groups to processing plants/CCCs. Given that the cassava harvesting season last over 2 to 3 months, harvest could be monitored in light of those supply agreements.

Another priority going forward should be promoting and facilitating standardisation of the local processing industry, including quality control on processing and measuring systems to ensure fair prices for farmers. Finally, the option of dry chip production should be explored to be able to extend the sales season and avoid flooding the market, to obtain more favourable prices. Farmers should also be trained to produce greater quantity and better quality cassava, as starch content is becoming an important factor to determine prices.

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# Inclusive cassava business model and Asian Agronomy Company Ltd.

# Background of the Company and Initial Project Involvement

Since 2013, the Inclusive Business Models to Promote Sustainable Smallholder Cassava Production (IBC) project has sought to bring positive economic impacts for actors across the cassava value chain, especially by improving linkages between smallholder farmers and local businesses.

One such business that worked with cassava farmers in the project's framework in Lao PDR is the Asian Agronomy Company, Ltd. The company was first established in 2011, as an agricultural product trading business, and is managed by Mr. Oudone Philomhak, who was assigned to be the key person for IBC project coordination.

The head office is located in Bajiang Chalernsouk District, Champassack Province, one of the main IBC project areas. The company originally began promoting farmers to grow cassava in 2011-2012, before the project inception, using the so-called "2+3" and "1+4" approach. However, these working approaches gave farmers low ownership and required high investment from the company. Thus, based on this experience, as well as on the inputs of the project, the company decided to shift its approach to a more innovative model.

In 2011, for many local people in Lao PDR, cassava was still a new cash crop. The company invested a lot to encourage farmers to grow cassava, trying to get farmers to know that growing cassava could bring extra income to their family. The company engaged in land clearing and fence construction, provided seedlings, and hired family labourers to grow cassava on their own land, including harvesting and weeding. The total company investment at that time reached nearly 100,000 US dollars. After this first year, farmers realised that growing cassava could earn them money, so some farmers started to grow more the following year. However, cassava production in 2012 was still far lower from what the company expected.

During the period that Asian Agronomy Company, Ltd was facing challenges to encourage farmers to grow cassava, and wanted to buy higher quantities of cassava dry chips, the IBC project came to the region.



"When the project came, we learned that the project had the objective to promote farmers to grow cassava by providing extension services, supporting groups' formation and strengthening farmer groups, so we assigned two staff from our company to work with the project."

-Mr. Oudone Philomhak, manager of Asian Agronomy Company, Ltd.

# The Company's Experience with the Project

From 2013 to 2015, the IBC project supported the increase in cassava production in the district, with a 185% increase in households planting cassava and 196% in planting area in the total project area since 2012. Asian Agronomy Company Ltd, together with two other enterprises in Lao PDR, agreed to participate in the IBC project's inclusive business model.

As a shortage of planting material was an initial shortcoming encountered by farmers, the company continued to provide seedlings from its own cassava production garden to 27 villages in Bajiang, Chalernsouk, and Pathoumphone Districts, Champassack Province. All in all, more than one million cassava stems were distributed over the course of the project and extension support services were also provided. The free seedlings helped farmers who needed them to get started cultivating cassava and also helped to familiarise the recipients with new varieties, and to build trust with the enterprise.

The company signed contracts with 1,427-smallholder farmer households to guarantee the minimum cassavabuying price for the registered cassava producers. When the market price is higher than the minimum guaranteed price, the company agreed to pay the market price, which helped to build good relationships with the farmers. The project saw an increase of purchases of cassava roots by the project enterprises (of which Asian Agronomy Company Ltd was the primary one) of over 124%. In 2012, 18,433 tonnes of cassava roots were purchased from the participating companies from the farmers, whereas in 41,442 tonnes were purchased by these same companies in 2015.

#### CASSAVA PLANTING HH AND AREAS (HA) DIRECT TO ASIAN AGRONOMY COMPANY



# Conclusion

Due to the increase of farmers growing cassava, the company expanded to include one more buying centre in Pathoumphone District, Champassack Province in 2014. There are plans in place to install two more buying centres in 2016, in order to create a secured market for the cassava producers and bring the selling points closer to farmers.

The company conducts a full-time business in the season from December to April. At the project start in 2013 there were eight paid workers and one unpaid family worker



during this season. At the close in 2015 this number had grown to 14 paid workers and two unpaid family workers who were working in these months.

The company also hired one of the best project farmers, Mr. Khammy Keobuaphan from Huaypheun Village, Bajiangchalernsouk District, who was trained by the IBC project, to become a primary company staff responsible for farmer extension, relationship building with the cassava producers, and cassava moisture content inspection.

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![](_page_8_Picture_1.jpeg)

# Cassava, the Golden Root: Farmers' Benefits in Laos

## Background

Since 2013, the Inclusive Business Models to Promote Sustainable Smallholder Cassava Production (IBC) project has sought to bring positive economic impacts for actors across the cassava value chain, especially by improving linkages between smallholder farmers and local businesses.

One focus of the IBC project has been to support smallholder farmers to improve their cassava cultivation methods and help to link them to participating enterprises. The main goal was to improve the income security and livelihoods of women and men smallholder producers by improving the productivity and sustainability of cassava production and creating profitable relationships with processors.

By the end of the project, 47 villages in Laos were participating in the project. One family who benefited from the project in Southern Laos was that of Mr. Mounxai. The Mounxai family owned 6 hectares of land around 3 Km from their village, Ban Phialard, prior to the project's start. The family used to grow peanuts, sweet potatoes, fodder maize and pumpkins. Initially the family focused on sweet potatoes, but due to the fluctuating price of this crop, they felt that it posed too high of a risk. After this, they switched to grow fodder maize in 2010 after learning information from a fodder maize trading company. The company provided seeds and extension services, however, they ended up earning only 1,000 USD per hectare, which did not even cover the cost of labour, so they stopped. The family then shifted to growing peanuts in 2012, but they couldn't make use of all their land as this was quite labour-intensive work, in particular the weed control and harvesting aspects. They did manage to earn around 2,500 USD per hectare from selling peanuts, and used this income to buy a hand tractor, which is still in use.

In 2013, when Mr. Mounxai and his family decided to switch to cultivate cassava, there were only two households growing cassava in his village. By 2014, after the project intervention had begun, half of the households in the village were growing cassava, and all farmer households (156 households in total) in his village were growing cassava by 2015 with a total of 298.5 hectares under cultivation. They did not apply any fertiliser to their cassava production, as the soil was still fertile.

![](_page_8_Picture_8.jpeg)

# Conclusion

Following the project intervention in his area, Mr. Mounxai has tried to persuade others in his village and nearby villages to grow cassava. He has also told them how to grow and maintain cassava crops, along with other information from his IBC project trainings. To date, many farmers have come to visit his cassava garden and learned from him.

Mr. Mounxai's family has used the money from cassava sales to purchase one additional hectare of land this year. In 2015, they grew cassava on 8 hectares of land, strictly following the cassava production techniques of the IBC project. In 2015, he expects to receive a gross income of 20,000 USD from selling cassava.

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![](_page_9_Picture_0.jpeg)

**Personal Experience** Mr. Mounxai Phaisythong, Cassava Producer in Phialard Village, Bajiang Chalernsouk District, Champassack Province

"My family started growing cassava in 2013 on one hectare of land, when one of my friends from Huaypheun Village, in the same district, introduced us to the IBC project staff and Asian Agronomy Company Ltd. Then the project came to work with my villagers and me. Under the facilitation of the IBC project and Asian Agronomy Company Ltd staff, we were motivated to voluntarily form a cassava producers' group. We received training on cassava production techniques, soil erosion prevention, protection against cassava diseases and insects, cassava harvesting, cassava processing, leadership, and group management. We learnt from cassava field visits to model farmers and companies, both domestic and abroad.

In 2014, with the aid of the project, my family started a trial on cassava intercropping with peanuts and mung beans on one hectare, and grew cassava alone on five hectares. I earned 15,000 USD from selling cassava chips and 3,000 USD from selling peanuts and mung beans.

Cassava has many advantages compared to other cash crops like peanuts, fodder maize and sweet potatoes. I can select good quality and healthy cassava stems from my existing garden to use as seedlings for the next round of cropping. This saves my money from buying new seedlings. Also, land preparation and planting is easy and fast, which helps to save my money on the labour costs of planting. Thirdly, growing cassava requires only a single weeding, compared to growing upland rice, peanuts or other cash crops, for which I need to weed at least three times. In addition, the harvesting time of cassava lasts for a longer period of time; I can start to harvest cassava from early of December until late May. A long harvest time allows me to harvest by using labour from my own family and save money on hiring additional labourers from outside. Finally, up to now, the cassava market has a very high demand and price is still stable. I have been able to sell all of my dried cassava chips at any time, and there are many buyers near my village offering similar prices (1,000 to 1,500 LAK/kg of dried cassava chips)."

![](_page_9_Picture_5.jpeg)

![](_page_9_Picture_6.jpeg)

![](_page_9_Picture_7.jpeg)

![](_page_10_Picture_0.jpeg)

![](_page_10_Picture_1.jpeg)

# Linking farmers to factories in Vietnam

### Background

In Vietnam in general, and in Quang Binh in particular, linkages between producers and processors of cassava, are a challenging issue. Since 2014, the Inclusive Business Models to Promote Sustainable Smallholder Cassava Production (IBC) project has not only helped to bring economic impact and increased incomes for the actors in the value chain (farmers, cassava processing plants) but has also supported the local Government officers to change the approach they had on technology transfer to cassava farmers.

Before joining the project, the cassava farmers in the project areas were not organised into producer groups or cooperatives. Cassava production plans were usually established by the local government, and sometimes there were no plans at all. The sales of cassava totally depended on local traders or cassava processing factories. The relationships between farmers, traders and factories were not close, with limited or no legally binding contracts. The farmers lacked information on the market and access to advanced technologies in cassava cultivation mainly depended on their provision through local Government Agencies (ex. Department of Agriculture and Rural Development, Agricultural Extension Centre). There was limited cooperation and information sharing with input suppliers, as well as with businesses buying raw cassava. Cassava cultivation area of the households was still small scale, which made it difficult to invest in production (limited revenues) and negotiate prices with factories (limited supply capacity).

Previously, factories often collected raw cassava through local traders, leading to an unstable supply of high quality raw cassava. The factories' raw individual cassava procurement planning was not well organised, as it was highly reliant on traders. There were no direct linkages with cassava farmers.

The value chain approach applied by the IBC project in Quang Binh has been regarded as a new approach for the actors of the sector. By June 2015, within the framework of the IBC project, there have been 11 sales contracts signed between factories and farmers' representatives for an area of 2,720 hectares, and it is expected that approximately 4,500 households will benefit from the signing of sales contracts.

The linkage between Long Giang Thinh Starch Processing Factory and the farmers through farmer groups in Quang Binh, Vietnam, which is examined below, is a good example of the new and innovative approach.

![](_page_10_Picture_10.jpeg)

# Design and implementation of market solutions

To help farmers to be more proactive in the value chain, the IBC project has supported the piloting of farmers' business groups. Each group has 4-6 people, including representatives of farmers, representatives of commune extension workers, and representatives of local authorities at commune/village levels. The farmers' business group represents farmers to sign cassava sales contracts, negotiate prices, develop cassava harvesting plans with each member, and agree on the quantity and timing of the supply to the factory.

Along with the support provided for farmers in the farmers' business group establishment, the IBC project developed capacity building training courses on value chain, market knowledge, and contract negotiation skills. Support for setting up business plans and production plans for the farmers' business group has been identified as a key activity. The linkages between the farmers' business group and the factories have been developed through meetings with representatives of the two parties, and under the coordination of the local governments.

Identifying and supporting cassava starch processing factories was one of the most important factors in the success of the cassava value chain set up. The concepts of value chain, linkages, and the importance of working together with farmers were still new to factories. To strengthen their capacity, the IBC project has conducted activities such as training workshops and study tours. The project has especially focused on supporting capacity building for technical staff and sales staff of the factories.

Compliance with terms mentioned in cassava sales contracts between farmers and the factories is always a complicated issue. There have been numerous sales contracts that could not be executed or have been broken due to limited awareness of the parties. The IBC project has provided advice to both parties in the process of contract negotiation, which initially ensured contract compliance between parties.

![](_page_11_Picture_4.jpeg)

"Benefit and risk sharing between the parties is important. Cassava purchase price depends on the market but how to set the acceptable cassava purchase prices will decide the success of the farmer-factory linkages,"

-Mr. Hoang Van Min, Deputy Director of the Department of Agriculture and Rural Development To share risks with cassava farmers, contract negotiations between the factories and farmers' business groups were conducted before the cassava crop season, under the supervision of local commune authorities. In Long Giang Thinh Factory, one of the terms mentioned in the contract was the formation of a "minimum price" and a "ceiling price." The "minimum price" is determined based on the level of investment and the production cost of 1 kg of cassava. With the principle of "minimum price" as an acceptable price, cassava farmers who sign contracts with the factory will always have reasonable profits. In 2015, according to the calculation and agreement between the factory and farmers, the "minimum price" was set at 1,000 VND/kg of cassava. Therefore, if the cassava yield reached 20 tons/ha, the profit (after deduction of production costs) would be about 4-5 million VND/ha.

At the time of cassava harvest, the farmers' business group agrees on cassava purchase plans with the factory. Then the farmers' business group, with the role of coordinator, ensures the cassava volume is provided for the factory as planned (cassava volume per day or per week). It needs to ensure that all the farmers do not harvest cassava at the same time to avoid being overloaded, as all the cassava cannot be transported to the factory at once. Thus, the regulation of harvest time among participating farmers is a very important factor.

The idea of a cassava purchase order has been agreed upon and applied by the parties. The factory provides cassava purchase orders for farmers' business groups based on the mutually agreed cassava volume purchased per day. The cassava purchase order is distributed to farmers by the farmers' business group with a number of guiding principles. These include following a cassava planting calendar from the beginning of the crop (early-cultivated cassava will be early harvested), harvesting cassava grown in the lowlands earlier (harvest time within October and November, which is the rainy season in Quang Binh) and providing incentives for cassava cultivated in remote areas with difficult transportation conditions. Through the implementation process, the initiative of cassava purchase orders has been promoted efficiently., The farmers have been proactive in implementing the harvesting calendar and the factory has also been proactive in implementing the cassava processing plan.

In addition to the guaranteed price, the factory agreed to provide some support services for cassava farmers such as: technical training on cassava planting, information about sales prices of cassava and good places that sell agricultural supplies (fertilisers, seeds) and consultancy on cassava transportation. The factory also agreed to invest in the development of cassava demonstration trials to introduce new cassava varieties of high yield and quality and conducts demonstration trials on effective use of fertilisers.

"Along with identification of "minimum price", the farmers now know about the profits gained before planting. This will not only encourage the farmers to comply with the contracts, but also help the factory predict the cassava volume that can be purchased and provide better visibility for factory operation and

#### development."

-Mr Le Van Tho - Director of Long Giang Thinh Cassava Starch Factory

![](_page_12_Picture_0.jpeg)

## Conclusion

Based on farmers' group discussions in Nam Trach and Xuan Truong communes, Quang Binh Province, Vietnam<sup>1</sup>, the model of farmers' business group has generated important benefits. The farmers have a better position in the sales contract negotiations with the cassava processing factory<sup>2</sup>. Information on cassava sales prices has been regularly updated from the factory (no "price pressure" from local traders). Farmers can now make their own cassava production and harvest plans, ensuring consistent supply to factories. Finally, the farmers can get better support from the factory through training and other support services. However, to make the model of farmers' business groups more effective, the regulations of farmers' business groups should continue to be improved and the roles and responsibilities of each member must be clearly defined.

The example of Long Giang Thinh Starch Processing Factory, Quang Binh Province (one of the two factories participating in the IBC project) shows that during the project duration, production of cassava (fresh cassava tubers) purchased by the factory increased from 19,000 tonnes (2013 - 2014<sup>3</sup>) to 32,000 tonnes (2014-2015). This remarkable increase in cassava processing can be attributed to the fact that the factory partly changed their model from buying cassava directly from farmers and local traders to purchasing cassava under contracts with a farmers' business group under the supervision of commune authorities. In 2015-2016, cassava purchased under contracts is expected to increase by 20%. The contract signing has helped the factory to stabilise raw cassava supply and make its own Results of farmer group discussions in Truong Xuan Com-1 mune, May 15, 2015

2 In particular, in a number of farmers' group business, they can negotiate with the cassava processing factory to obtain a "minimum price" (1,000 VND/kg), so it will ensure the profit of at least 200 VND/kg of cassava after deducting all the costs of production.

3 Cassava harvest usually takes place from August and September of the previous year to March and April of the next year. processing plan and business plan.

Moreover, the proactivity of the factory in providing technical services and conducting demonstration models plays a very important role in ensuring successful linkages with farmers and factories in the cassava value chain.

The linking model in the value chain has been highly appreciated and recognised by the local specialised agencies.

"The value chain approach of the project is a new way that contributes to fundamental changes of perceptions of the professional staff of the Department of Agriculture and Rural Development in supporting local farmers. The outcomes of effective linkages between farmers and businesses in cassava production will be documented and experiences/ lessons will be drawn for the development of our Department towards a more market oriented direction in the future." -Mr. Hoang Van Min, Deputy Director of DARD

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# New approaches to technology transfer in Vietnam

# Background

Since 2014, the Inclusive Business Models to Promote Sustainable Smallholder Cassava Production (IBC) project has not only helped to bring positive economic impacts and increased incomes for the actors of the value chain, but also supported local officers to change the approach they are using for technology transfer to cassava farmers, which has been highly appreciated by the local authorities and professional bodies.

One of the outstanding outcomes of the project is the technology transfer in cassava farming through a Farmer Participatory Research and Extension (FPR&E) approach including Farmer/Extension Trainings, On-Farm Demonstration Trials, Participatory Monitoring of Trials, and Farmer Field Days at harvests of trials. Farmer and extension workers' trainings involved a two-step process. Lead farmers from farmer groups and local extension workers from factories and government extension services were trained by CIAT staff and research partners in a two day training-of-trainers (ToT) course that included both classroom training on principles of sustainable cassava production and practical implementation by establishing on-farm demonstration trials. Lead farmers and extension workers who had completed the ToT were then mentored (by CIAT staff and partners) in farmer trainings that included establishment of more on-farm demonstrations at target villages. This two-step approach built technical expertise of farmer leaders and local extension workers and facilitated the outreach of technical information to a larger number of cassava farmers.

### Technology transfer

authorities Previously, provincial (Department of Agriculture and Rural Development (DARD), Agricultural Extension Centre (AEC)) often applied traditional methods in technology transfer to farmers through classroom styles of technical training for farmers, without any practical guidance in the field. In some cases, demonstration models were developed but did not incorporate technical guidance to farmers in the fields. In order to change the traditional method, the IBC project developed a new method for technology transfer in the form of FPR&E through development of demonstration models (e.g. model on cassava varieties selection, model on fertiliser trial).

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"With the FPR&E training method, the training in classrooms has been combined with direct guidance to farmers through demonstration trial models on seed and fertiliser in the fields. This method, which has been applied by the IBC project, has quickly changed the farmers' awareness. Instead of boring theory presentations, the farmers now can review and evaluate the results in the fields, so that they are confident in the application of new technical methods... The technology transfer activities have been conducted according to the growth stages of the cassava such as: planting,

*fertilisation, and harvest stages."* -Mr. Tran Dinh Hiep (Head of Agricultural Engineering Section – Quang Binh DARD) With this method of technology transfer to farmers, the IBC project provided local agricultural officers and extension workers with a new method for dissemination of technical progress not only to cassava producers but also to growers of other crops, like rice and vegetables.

After attending ToT courses with basic content such as sustainable cassava planting techniques, value chain, and marketing, the staff involved in the IBC project developed ideas for the preparation of Training of Farmers (ToF) training materials that are easy to understand and suitable for the cassava farmers in the area.

"After joining technical training courses organised by IBC project, I can make my own tools for dissemination of the information to cassava farmers in the form of 'flyers' or 'news briefs' that are realistic and fit with the local soil and climate conditions as well as farming practices of the local people."

-Ms. Nguyen Thi Suot, a member of the agricultural extension staff of Nam Trach Commune, Bo Trach District

Although the training materials still need to be improved in terms of images and colours, it can be seen that the local staff, instead of relying on the technical documents prepared as before (by project consultants), are now able to proactively develop training materials, and adjust them to the local reality and the level of awareness of farmers. This was highly appreciated by the project's technical experts from Thai Nguyen University who encouraged replication of the approach at scale. In addition, the opinions and feedback of the local farmers and officers also helped the project consultants to complete and standardise the agricultural extension documents on sustainable cassava cultivation, which are suitable to the conditions in Quang Binh Province.

The knowledge of cassava cultivation techniques of the farmers participating in the project will be transferred to other cassava farmers (who are not participating in the project) in the village. Group discussions with the farmers participating in the project in Nam Trach commune revealed that most of them were confident to share the knowledge they received with other farmers on various issues such as cassava varieties, fertilisation methods, planting density, and other topics. The knowledge can be shared through their daily conversations, community meetings, communication on speaker systems in each village/ hamlet, and practices in the cassava fields, especially in the cassava fields with demonstration models.

Typically, the technology transfer/knowledge sharing is proactively done by the farmer groups participating in the project, but in some cases the farmers who are not involved in the project can come to support (without payment of wages) in order to learn about cassava cultivation techniques or sometimes to observe what is done in the field. Obviously, farmer-to-farmer dissemination has helped to transfer cassava cultivation techniques faster;

![](_page_14_Picture_7.jpeg)

the demonstration models in the community will help effective technology transfer. The farmers will more easily believe and apply techniques that they have learnt in cassava production when seeing the models with their own eyes.

### Conclusion

Farmer-to-farmer technology transfer is very important and has had a significant impact on cassava production in the target province.

### "On average, out of every 10 farmers who have shared knowledge, 8 farmers can apply what they have learned in their cassava production."

-Ms. Vo Hai Yen (41 years old, Dong Thanh hamlet, Nam Trach commune, Bo Trach district, Quang Binh, Vietnam) "The yield increased from 1.7 tonnes/500m2 under traditional methods to 2 tons/500m2 under the IBC project."

It is important to realise that among these 600 households, only 1 household was directly involved in the demonstration model in the first year, and 23 households participated in the high-yield cassava cultivation models in the second year.

Through farmer group discussions in Nam Trach commune, Quang Binh, it was noted that Farmer Field Days combined with demonstrations in the fields helped the farmers quickly apply the knowledge and techniques of sustainable cassava farming. This helped to improve the economic efficiency of cassava cultivation.

Technology transfer for sustainable cassava cultivation through training courses cannot be successful without demonstration models.

*"Out of 600 farmer households participating in cassava cultivation, up to 50% of them know all cassava varieties introduced by IBC project just after 1 year of implementation and 10% of them know about* 

#### cassava cultivation techniques."

-Ms. Suot (agricultural extension staff - Nam Trach commune)

# "Technology transfer can be really efficient and effective through demonstration plots because

#### observation is the best teacher."

-A member in a farmers' group discussion under the IBC project in Truong Xuan commune, Bo Trach district, Quang Binh, Vietnam.

![](_page_15_Picture_8.jpeg)

![](_page_15_Picture_9.jpeg)

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