

Kingdom of Cambodia

Kingdom of Cambodia

Preparatory Survey on BOP business on cotton farming by Cambodia Cotton Club

Summary

April 2014

Japan International Cooperation Agency

Cambodia Cotton Club

OS
JR
14-031

Contents of the Summary

1	Purpose and summary.....	1
1.1	Purpose	1
1.2	Summary	1
2	Current situation of Cambodian agriculture	4
3	Expected business model at the beginning of this survey	5
3.1	Experimental production site in Cambodia for this project.....	5
3.2	Project Concept.....	5
3.3	Value Chain	6
3.4	Local partner.....	8
4	The result of pilot production	8
4.1	The result of pure organic cotton	9
4.2	The result of natural cotton	9
5	Challenges towards realization of business plan.....	10
5.1	Purchase from farmers	10
5.2	Sales to Japanese companies	11
6	Cottonseed Oil	13
7	Business Plan.....	14
8	Developmental Impact.....	17
9	Collaboration Opportunities with JICA	19

List of Charts

Charts	Page
Chart 1: Cultivated Area by major farm products in Cambodia	4
Chart 2: Total value chain	7
Chart 3: Comparison of purchasing price of cotton	11
Chart 4: Business plan including sales of cottonseed oil	15
Chart 5: Households' income for sample farmers	17
Chart 6: Outcome of targeted farmers in 2011	18
Table 1: Result of pilot production	8
Table 2: Revenue and profit plan	16
Table 3: Pre-condition for revenue and profit plan	16

Photo List

Photo	Page
Photo 1: Remained mines in Battambang province	5
Photo 2: cotton producing family	6

1 Purpose and summary

1.1 Purpose

This Study is to verify the feasibility of BOP business in the follow business model:

- Turning a large-scale mine field into organic cotton farms in Battambang province in Cambodia,
- Selling the organic cottons to Japanese fashion manufactures for them to create an organic clothing brand and sell such brand in Japan, and
- Re-invest part of revenue from the sales of such brand into mine-sweeping activities in Cambodia

In more detail, the proposed business model tries to differentiate itself from normal cottons by (1) producing pure-organic cottons (use only pesticides and fertilizers with organic origins, and not use any defoliant at the cropping), (2) promoting cottons being made in old mine-fields, and (3) featuring Cambodian farmers who produce cottons. The project expects to earn the profits by selling the products made by Cambodian cotton to Japanese consumers, who sympathize with such concepts as written above.

The project was done during August 2012 to April 2014. However, Cambodia Cotton Club (hereinafter referred to as “CCC”) has made pilot production of organic cottons since 2011, in close cooperation with its Cambodian partner, and has negotiated with Japanese apparel companies who can sell the fashion brands in Japan. This feasibility report summarizes the results of such survey and pilot productions.

1.2 Summary

Cambodia Cotton Club, CCC, has surveyed and experimentally cropped organic cottons in Cambodia for the last few years. However, CCC has concluded that it is not viable under current circumstances to realize and maintain this BOP business model, and should suspend the implementation of the project.

The target BOP group of people under this project is the farmers who live in Battambang province in Cambodia. Most of target farmers earn their livings by doing agriculture with 3 cropping seasons. The average living standard of the target farmers is very low. According to the interviews made by CCC, the average yearly income of the target area is around 4,254 US dollars, and the net income after deducting the expenses from income is only 363 dollars. They are not able to produce high-value crops due to lack of the knowledge as well as motivation to expand the agriculture, which CCC considers is the key reason why they cannot get out from the current poor status. The purpose of the project is to improve the quality of life

of such BOP farmers.

There are 3 conditions for this business model become feasible.

Firstly, for the sales side, Japanese apparel companies who can purchase Cambodian cottons from CCC, and produce and sell the cloths in Japan must be found. Such Japanese companies are expected to buy a certain amount of cottons at the relatively higher price. Secondly, for the procurement/production side, stable but cheap production of cottons should be established in Cambodia. Thirdly, CCC can secure the economic and financial returns from such business model.

According to the survey and experimental cultivation, we concluded that there are problems what are not easily solved in each of the above condition, and realization of this project in the short run is not quite feasible.

As for the 1st condition for sales of cottons to Japanese apparel companies, CCC came to realize that the demand from Japanese apparel companies for the cottons is limited as compared to the original plan of CCC, and the price of cottons they purchase from CCC is also lower than expected.

After negotiation with many Japanese apparel companies, three companies showed strong interest in selling these products made from organic cotton. However, their demand is limited owing to the fact that organic cotton will only be used to make premium products which are relatively high price from the viewpoint of CSR. Therefore, maximum expected demand in seed cotton is only 100 ton per year while CCC anticipated that 1000 tons are required to make the business profitable. Also, CCC planned to sell the cottons to Japanese companies at the price of US\$ 4 per kg on seed cotton base, which is higher than the international market price (US\$ 2 per kg). But, due to current instability of cotton production, Japanese apparel companies have committed the purchase price lower than CCC expectation.

As for the 2nd condition for stable cotton production, the result of the experimental cultivation showed that the price purchased from farmers is expensive, and CCC cannot make any profit at such purchase price.

Experimental cropping for the last three years shows that at the price of 0.7 dollars per kilogram, CCC can attract many farmers to produce at a large scale of cotton. On the contrary, if the purchasing price is below 0.7 dollars, farmers would not have enough incentives to crop cotton. The problem is CCC cannot make any profits at such expensive purchase price of 0.7 dollars.

As for the 3rd condition (economic and financial feasibility for CCC), we concluded economic and financial feasibility is hardly achieved, as the cotton sold to Japanese apparel companies is limited and with low price, on the contrary, the procurement price from farmers is relatively expensive.

To overcome such difficulties, CCC considered extracting cottonseed oils from cottons and selling them to Japan as the additional income. However, due to the problem of residual of pesticides on cottons, the sales of cotton seed oils to Japan turned out to be not feasible in the short run.

Furthermore, under such circumstance, Seldamaex, which is the partner for CCC under this project and the only company with modern ginning facilities in Cambodia, has decided to withdraw from the organic cotton business, because of its financial difficulty. Seldamaex experienced significant loss in 2011 because of the downturn of the cotton price in the international market while their purchase of cottons from farmers was as high as 0.7 dollar per kilogram. In addition, we didn't get clear prospect on the organic cotton business in short run as results of survey in 2012 and 2013; Seldamaex was obliged to withdraw.

Hereinafter, CCC regrettably reports the result of survey and experimental business is not feasible although CCC invested a lot of resources for the last three years.

2 Current situation of Cambodian agriculture

Rice, followed by cassava and corn, is the largest agricultural product in terms of production scale. These three agricultural products account for 70 percent of total cultivated area as shown in Chart 1.

Cambodia used to be a cotton producing country. However, most farmers had stopped cropping cotton since the era ruled by Pol Pot. As a result, current production of cotton is very low. The cultivated area for cotton now is just less than 1,000 ha, which means below 0.02 percent of the total area.

	2006	2007	2008	2009	2010	2011
Rice	2,541.4	2,585.9	2,615.7	2,719.1	2,795.9	2,968.5
Cassava	97.9	108.1	179.9	160.3	206.2	391.7
Corn	108.8	142.4	163.1	221.3	213.6	174.3
Soy	75.1	77.0	74.4	96.4	103.2	70.6
Vegetables	43.3	42.4	47.8	50.3	52.7	53.8
Sugarcane	8.4	10.5	13.3	13.5	17.2	22.6
Peanuts	13.0	21.5	18.2	16.5	20.0	16.3
Tobacco	8.8	7.3	9.4	9.3	10.1	8.3
Sweet Potatoes	10.4	8.6	8.2	9.2	11.5	8.2
Dry Natural Rubber	20.6	18.0	33.7	34.1	38.4	45.2

Note: In 100 Hectare
Source: Ministry of Agriculture, Forestry and Fisheries of Japan

#244203

Chart1: Cultivated Area by major farm products in Cambodia (source: Ministry of Agriculture, Fishery and Forestry in Japan)

3 Expected business model at the beginning of this survey

3.1 Experimental production site in Cambodia for this project

Battambang province located in Northern Cambodia was chosen for this experimental production. Battambang province is the largest granary thanks to abundant water resources and rich soil. Between dry seasons and rainy seasons, the scale of Tonle Sap River increases three-fold and this makes the water and soil richer. This province is historically long known for cropping cotton and cotton mills existed inside Battambang city before. In addition, this province is regarded as the region with the most mine reserves, another factor made Battambang suitable to this experiment.

3.2 Project Concept

(1) Branding 1: Cotton made in Cambodia in the large minefields.

We should strongly promote the fashion brand that used material like cotton made in Cambodia in the old minefield. We anticipate that this branding strategy would enable us to differentiate from other brands as it would raise the social awareness from Japanese consumers. The idea of buying products, which can contribute to the reconstruction of Cambodia, might appeal consumers.



Photo 1: Remained mines in Battambang province

(2) Branding 2: Cotton produced by Cambodian farmers

We consider emphasizing the concept of traceable cotton which connects to cotton producers. Specifically, we expect that Japanese consumers would like to participate indirectly in the reconstruction of Cambodia. They can see photos and profiles of cotton producers and their families through the tag of products. These profiles will show the severe experience during Pol

Pot era, current situation of agricultural work and the dream of their family.



Photo 2: cotton producing family

(3) Branding 3: Pure organic cotton

There are many types of cotton named as “organic cotton” in the world. However, most of those are not pure organic cotton; which means the cotton fully cultivated by organic pesticides and fertilizers; instead it is produced with agrochemicals approved by global certification authority. CCC is trying to cultivate pure organic cotton in order to make clear difference from existing “organic” cotton

3.3 Value Chain

This project consists of three chains;

- 1) Producing cotton
- 2) Purchasing cotton
- 3) Manufacturing and marketing

3.4 Local partner

To implement this project, CCC partners with a local company named Seldamaex. This company owns a ginning plant with an annual processing capacity of 1500 tons in Battambang city. The capacity is enough to meet request from CCC, who plans to produce 1000 ginned cotton per year for the time being. In addition, the company has strong network with local farmers because of their recent experiment in cotton cropping.

4 The result of pilot production

CCC experimentally cropped two types of cotton from 2011 to 2013 in Battambang province.

1) Organic cotton

Organic cotton is cultivated without any chemical and picked by hands without defoliant in harvesting. CCC thinks that this method is technically difficult for farmers in Cambodia and experiment is necessary to establish the standard method. Local farmers, under the supervision of CCC, tried to grow organic cotton in the area of 12.5ha, next to the ginning factory of Seldamaex.

2) Natural cotton

Natural cotton, a coined word by CCC, cultivated with chemicals and picked by hands. In line with cropping the above organic cotton, we also tried to check feasibility to produce natural cotton which is easy for farmers to handle and produce at relatively large scale.

The actual production from 2011 to 2013 is as follows.

Table 1: Result of pilot production

	2011	2012	2013
Cropped cotton(t)	390	27	6
Ginned cotton(t)	130	7	-
of which organic	2.5	2.5	-
of which natural	125	5	-
Purchasing price of ginned cotton (US\$/kg)	0.7	0.5	0.7
# of Contracted farmers	153	21	5
Cultivated area (ha)	400	30	8

In general, 1 kg of ginned cotton is produced from 3 kg of cropped cotton.

4.1 The result of pure organic cotton

The volume of pure organic cotton production in 2011 and 2012 was 2.5 tons. We didn't crop in 2013 because of poor result in the past two years. CCC faced the challenge to produce fully organic cotton by making good soil, fertilizer, insecticide and clear impurity removal. However, we found that this method is quite technically difficult even in the farms that controlled directly by CCC. Taking the general level of knowledge and skills of Cambodian farmers, we concluded that contracted farmers could not do this method.

After discussing with Japanese apparel companies, who consider commercializing these products, we found that they value made-in-Cambodia and seeing the face of producers who belong to bottom of pyramid, not pure organic cotton. Therefore, we have concluded that this project should not pursue the concept of pure organic cotton.

4.2 The result of natural cotton

The result of experiment was very negative that volumes of production have significantly decreased year-by-year, 390 tons in 2011, 27 tons in 2012 and 6 tons in 2013.

Even though many farmers still received seeds from Seldamaex, the production in 2012 dropped dramatically because farmers did not cultivate natural cotton due to their dissatisfaction with Seldamaex. They reduced purchasing price to 0.5 dollar per kilogram in 2012, from 0.7 in 2011.

5 Challenges towards realization of business plan

The result of experimental cropping revealed 2 key challenges for realization of this business model.

The first challenge is the purchase price of cottons from farmers must be relatively expensive. The second is the cotton sold to Japanese apparel companies is limited in volume and cheap in price, which makes revenue and profits for CCC very limited.

5.1 Purchase from farmers

Since more labor is required to grow cotton than other crops, farmers are very sensitive to its price. Compared to cassava, which relatively grows without much labor once it is planted, cotton requires a great amount of labor especially at the time of harvesting. Therefore, farmers are not willing to grow cotton unless proposed purchase price would meet its required labor and cost.

As the result of experimental cropping, the following points were found:

- The minimum price farmers are willing to produce cotton is 0.7 dollars on seed cotton base
- With this purchase price from farmers, the shipping price from Seldamaex is 2.6 dollars on ginned cotton base (including the cost for ginning, transportation, etc)
- However, this shipping price is quite high as compared to the current international price (1.8 dollars per kg on ginned cotton base), and CCC hardly secure the profit at such price.

In 2011, international market price of cotton was high and Seldamaex purchased seed cotton at 0.7 US dollars per kilogram. For farmers, the purchase price of 0.7 US dollars on the seed cotton base was sufficiently attractive compared to other commercial crops. As a result, 390 tons of cotton was harvested.

However, the cotton price that hit historical high in 2011, decreased suddenly to 1.8 US dollars in 2012. Given such circumstances, Seldamaex proposed a purchase price of seed cotton at 0.5 US dollars in 2012, which was 0.2 US dollars cheaper than 2011, 0.7 US dollars. As indicated in the chart 3 below, even at 0.5 US dollars, Seldamaex still cannot make profit. However, it was set to sustain farmers' motivations to grow cottons. But, harvested amount in 2012 went down sharply to 27 tons from 390 tons in the previous year. Although most farmers once received the seed from Seldamaex and started the contracted cultivation, they did not grow cotton and chose other commercial crops instead.

Thus, we concluded that 0.7 US dollars per kilogram is the minimum price for farmers have incentives to grow cottons.

However, this 0.7 US dollar price makes Seldamaex/CCC very difficult to make profit. Seldamaex do ginning the seed cotton they purchase from farmers and sell as ginned cotton. Since 3 kilogram of seed cottons are made into 1 kilogram of ginned cottons after ginning, if purchase price of seed cottons is 0.7 US dollars per kilogram, 1 kilogram of ginned cotton cost 2.1 US dollars. By adding various costs such as ginning and transportations, selling price should be around 2.6 US dollars not to make a loss. However, under the current international market price of 1.8 US dollars on ginned cotton base, Seldamaex bears the loss as they sell the cottons.

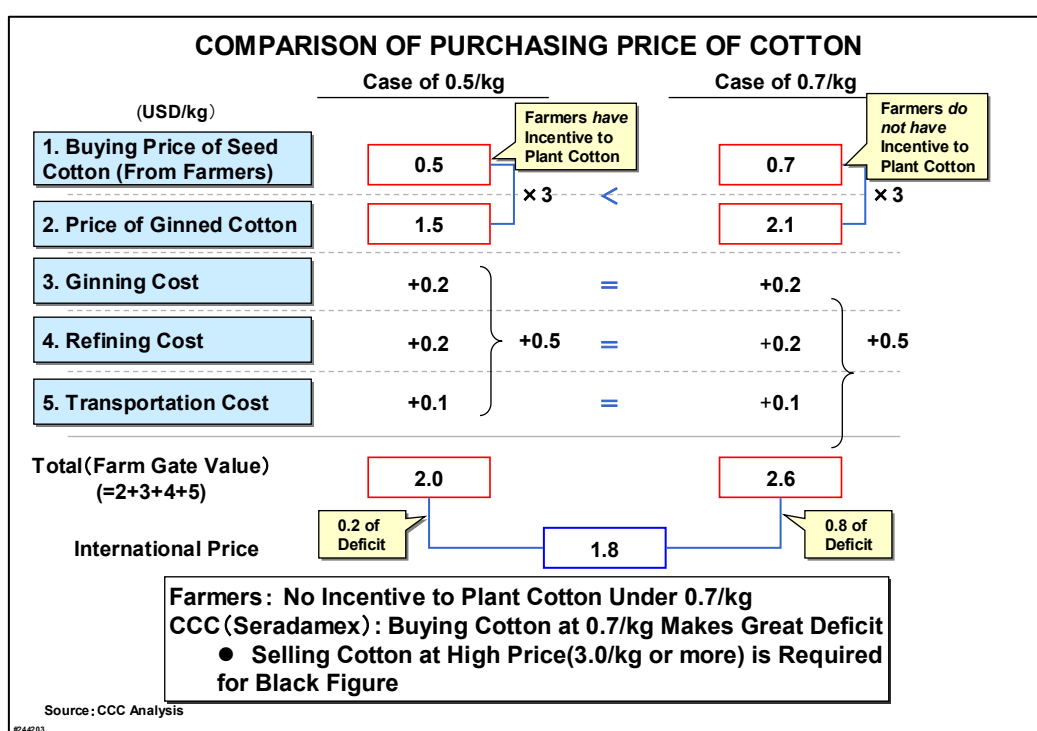


Chart 3: Comparison of purchasing price of cotton (source: CCC)

5.2 Sales to Japanese companies

On the other hand, As for sales of cottons to Japanese apparel companies, CCC came to face the difficulties that the demand from Japanese apparel companies for the cottons is limited in volume as compared to the original plan of CCC, and the price of cottons they purchase from CCC is also lower than expected.

As the result of the negotiation, there are 3 Japanese companies who showed their interests to cooperate:

- Out-door fashion: Company A

- Uniform: Company B
- Linen: Company C

Especially, Company A expressed great sympathy to the project purpose from the beginning. Therefore, there was a great progress in the discussion on samples making for their brand and detailed marketing plans.

However, after negotiating with Japanese companies on premium products, there was a huge gap from the original plan of CCC in terms of 1) the amount of purchased cotton by Japanese companies and 2) the purchase price.

Firstly, 1) the amount of cotton purchased by Japanese companies was far below the expected amount since the number of participant companies was less than expected. CCC calculated that it is necessary to secure at least 1,000 tons of seed cottons production, which is about 333 tons of ginned cotton, in order to sustain their business. If 333 tons of ginned cotton sold at the price of 3 US dollars, its earnings would reach around 100 million yen. On the other hand, the maximum demand for three Japanese companies mentioned above is just about 100 tons of seed cotton.

These Japanese companies planned to use Cambodian cotton for premium brands. Therefore, the amount of Cambodian cotton needed for such products will be very limited. Moreover, Cambodian cotton does not necessary to be 100% pure or organic since it was not a problem in the CSR or marketing point of view.

Additionally, regarding 2) the purchase price, CCC considered that it was possible for these Japanese companies to purchase at double market price, 4 US dollars, provided stable supply was guaranteed. However, after negotiating with Japanese companies who agreed to take part in this project, it was difficult for them to pay more than 3 US dollars per kilogram for the time being since it was just a trial.

There was hardly any profit for Seldamaex and CCC if the price of cotton is 3 US dollars per kilogram. However, because of the excess in capacity required for stable production of both Seldamaex and CCC compared to their Japanese partners' demand, so further negotiations for higher purchase price no longer needed in mid and long term point of view.

6 Cottonseed Oil

Since it turned out that sales and profit of premium cotton was limited, CCC studied the feasibility of exporting cottonseed oil to Japan.

Seed cotton is divided into ginned cotton and cottonseed through a ginning process. Ginned cotton is sold as a fiber material. On the other hand, cottonseed is generally used as a feedstuff. However, oil made of cottonseed was commercialized as cooking oil in Japan and there were a certain number of users such as traditional Japanese restaurants in Western part of Japan. Sales of cottonseed oil to its manufacturers and distributors in Japan can be an option for secondary profit.

After several negotiations with a Japanese cottonseed oil manufacturer, they also expressed certain interests in Cambodian cottonseed oil. However, it turned out that it was difficult to export them to Japan immediately due to the issue of residual pesticides.

Since cottonseed oil is a food product, it is necessary to examine the residual pesticides in order to make sure the high safety requirement. However, most agrichemicals used in Cambodia are made in Vietnam or Thailand. Those normally contained chemicals, which is prohibited in Japan. Additionally, some of them were sold with fake labels and contained ingredients were not mentioned accurately. For such reasons, it was necessary to establish the checking system to examine residual pesticides in order to export products to Japan. However, concrete ways had not been found at the time of research.

7 Business Plan

From the result of survey and experimental cropping, CCC has concluded that it is not viable under current circumstances to realize this business model, and should suspend the implementation of the project. The detail reason for such conclusion is as written in the previous charter.

Such conclusion being given, CCC calculated how much revenue, costs and profits are expected as below, assuming all the problems that make the project suspended will be solved.

CCC plans to sell the 3 products:

- 1) Premium Cotton, selling to Japanese apparel companies
Some of the natural cotton is going to be sold to Japanese apparel companies at higher price than the market. It is mainly for high price products and the expected sales amount of ginned cotton is limited to only 100 tons.
- 2) Normal Cotton, selling at the international market price
It is cultivated to produce cottonseed oil. It is not for Japanese apparel companies and has to be sold at a normal international market price, which is 1.8–2.0 US dollars per kilogram. If the price is below 2.6 US dollars, Seldamaex and CCC would make a loss. This loss is planned to recover by earnings from cottonseed oil.
- 3) Cottonseed oil
These will be sold to Japanese cottonseed oil manufacturers
Assumed sales price is 4 US dollars per 1 kilogram. However, the problem of residual pesticides remains as a bottleneck in the realization of business.

Sales plan including the sales of cottons seed oil is show in Chart 4.

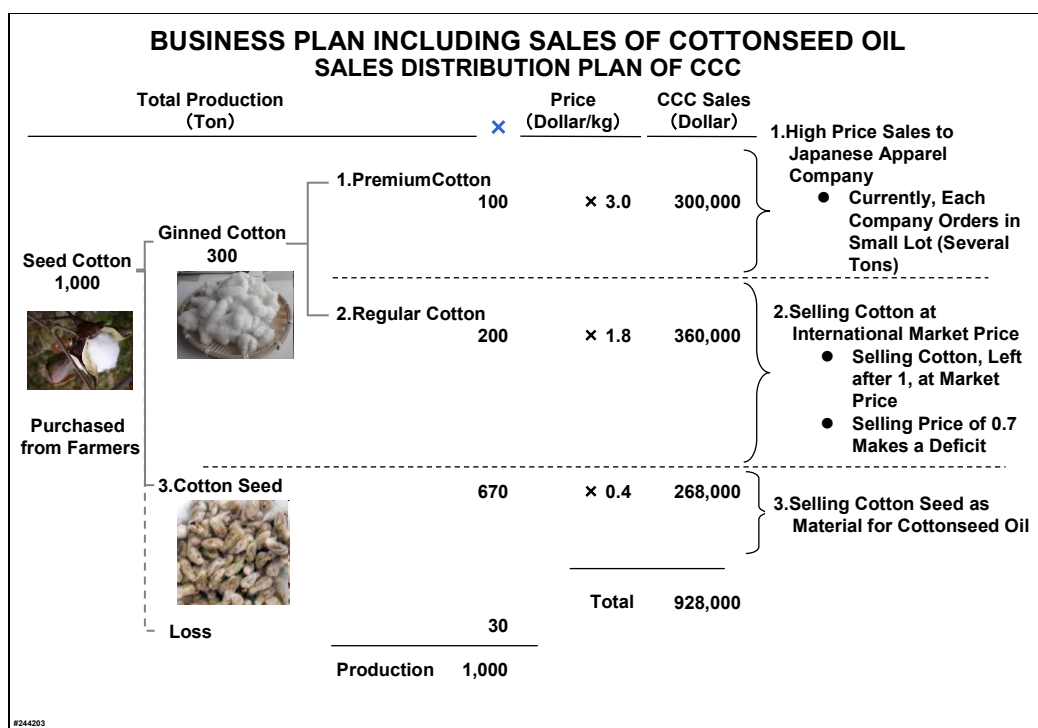


Chart 4: Business plan including sales of cottonseed oil (source: CCC)

To sell the above 3 products, business plan is divided into 2 phases.

In the first phase, as order to put business on track, total earnings target is set at 928,000 US dollars. In particular, total production amount of cotton is 1,000 tons and sales amounts are 100 tons for premium cotton, 200 tons for normal cotton, 670 tons for cottonseed oil, as shown in chart 3 and 4.

However, production volume of phase 1 resulted in the deficit of around 90,000 US dollars and is not sustainable. Therefore, in phase 2, production amount will be double to 2,000 tons, and sales amounts are 100 tons for premium cotton (no increase due to limited demands), 500 tons for normal cotton (300 tons increases), and 1,340 tons for cottonseed oil (670 tons increases). In total, earning targets would be 1,830,000 US dollars and profits before tax would be about 18,000 US dollars under the assumption that sales price of premium cotton for Japanese companies would be raised to 4 US dollars from its original price of 3 US dollars as a result of stabilized production.

In conclusion, it will be extremely unlikely for us to make profit in phase 2 even if the sales volume was to be increased. Only with 18,000 US dollars profit out of 1,836,000 US dollars sales (1% profit rates), it is not feasible to take a risk of developing one's business in foreign country and especially in the agriculture sector. The variety of reasons that prevent us from securing profitability as listed below.

- Sales amount of premium cotton with high selling price would be limited
- Sales of cottonseed oil could generate certain profit but it would be cancelled out from the loss by selling normal cotton at the international market price (1.8-2.0 US dollars) which is necessary to produce cottonseed oil
- Additionally, regarding the sales of cottonseed oil, there was a problem in realization its business due to issues with residual pesticides

Table 2: Revenue and profit plan

USD			
Sales/Profit Plan	Short Term Goal	Profit Line Goal	
Sales	928,000	1,836,000	
Premium Cotton	300,000	400,000	
Regular Cotton	360,000	900,000	
Cottonseed Oil	268,000	536,000	
Costs of Goods Sold	745,300	1,445,300	
Direct Material	715,000	1,415,000	
Labor Costs	30,300	30,300	
Gross Profit	182,700	390,700	
Administrative Costs	123,400	222,400	
Zinning Costs	84,000	168,000	
Others	39,400	54,400	
Salary for Japanese(1 Person)	150,000	150,000	
Pretax Sales	(90,700)	18,300	

Table 3: Pre-condition for revenue and profit plan

Precondition1(Sales×Price)		Unit		
A	Amount of Cotton Purchase from Farmers	Ton	1000	2000
B	Amount Zinned of Cotton(30% of Purchased Cotton)	Ton	300	600
B-1	Premium Cotton (Amount of Sales)	Ton	100	100
B-2	International Price(Amount of Sales)	Ton	200	500
C	Amount of Seed Cotton	Ton	670	1340
D	Purchasing Price from Farmers	US\$/kg	0.7	0.7
G	Premium Cotton Price	US\$/kg	3.0	4.0
H	International Market Price	US\$/kg	1.8	1.8
I	Seed Cotton Sales Price	US\$/kg	0.4	0.4
Preconditions2 (Cost Estimation)				
J	Commitment Fee for Zinning	US\$	0.15	0.15
K	Fuel Fee	US\$	24,000	48,000
L	Salary for Workers	US\$	21,900	21,900
M	Food Expenses for Workers	US\$	8,400	8,400
N	Packing Material for Zinned Cotton	US\$	15,000	30,000

8 Developmental Impact

The target BOP group of people under this project is the farmers who live in Battambang province in Cambodia. Most of target farmers earn their livings by doing agriculture with 3 cropping seasons. The average living standard of the target farmers is very low. According to the interviews made by CCC, the average yearly income of the target area is around 4,254 US dollars, and the net income after deducting the expenses from income is only 363 US dollars, as shown in Chart 5 below.

HOUSEHOLDS' INCOME FOR SAMPLE FARMERS (2012)											
(Unit: USD)											
RESULT OF 10 SAMPLE FARMS											
Item	1	2	3	4	5	6	7	8	9	10	Average
Income	Cotton	750	750	750	574	560	1,500	0	200	0	2,500
	Corn	0	0	1,350	950	500	10,000	0	0	0	7,500
	Papaya	0	0	0	0	0	0	0	0	1,560	0
	Rice	0	0	0	0	0	0	0	100	0	0
	Egg plants	0	0	0	0	0	0	0	0	540	0
	Other crops	0	0	0	2,190	0	0	0	0	0	0
	Paid job	0	1,825	0	0	1,460	0	2,534	1,460	1,200	0
	Borrowing	290	0	1,500	0	0	0	0	0	0	0
	others	0	0	0	0	0	0	0	0	0	0
	total	1,040	2,575	3,600	3,714	2,520	11,500	2,534	1,760	3,300	10,000
Expense	Agriculture	367	244	2,160	407	120	2,410	235	340	203	3,000
	Living	913	1,368	913	1,825	913	1,825	1,095	1,460	730	4,000
	other	1,000	500	3,000	1,000	1,000	2,500	800	500	600	3,000
	repayment	10	0	480	0	0	0	0	0	0	0
	total	2,290	2,112	6,553	3,232	2,033	6,735	2,130	2,300	1,533	10,000
Net profit	-1,250	463	-2,953	482	488	4,766	404	-540	1,767	0	363

Chart 5: Average households income for targets BOP farmers (source: CCC)

The largest impact that this project brings to the BOP people is the increase of their income.

If buying price of cotton is set at 0.7 dollars per kilogram, the average annual income from cotton is 1,549 dollars and it gives annual profit of 1,238 dollars (310 dollars of expenses, such as labor cost of harvesting, removed from their annual income) as shown in Chart 6. As the average net profit of target farmers is only US\$ 363 as written above, it is reasonable to say planting cotton can give considerable economic impact on farmers.

Outcome of Targeted Farmers in 2011 (Purchasing Price at 0.7\$)

Results of Sample Farmers (US dollars)

Item	1	2	3	4	5	6	7	8	9	10	Average		
Income	Crop Per ha (ton)	3.5		1.0	1.0	0.8	2.5	0.3	1.0	0.7		1.35	
	Planted Land (ha)	1.0		6.0	0.4	1.0	2.0	1.0	1.0	1.0		1.11	
	Total Crop (ton)	3.5		6.0	0.4	0.8	5.0	0.3	1.0	0.7		2.21	
	Purchasing Price	0.7		0.70	0.70	0.70	0.70	0.70	0.70	0.70		0.70	
	Total	2,450		4,200	280	560	3,500	210	700	490		1,549	
Expenditure	Labor Cost of												
	Harvesting	420	Did Not Plant Cotton	720	48	0	600	0	0	0	Did Not Plant Cotton		
	Seed Fee	0		50	91	0	0	0	0	0			
	Chemical Herbicide	0		0	15	0	0	0	0	0			
	Pesticide	0		0	12	0	0	0	0	0			
	Fertilizer	0		0	0	0	0	0	0	0			
	Farming Cost	90		100	7	4	75	75	75	75			
	Transport Cost	10		0	3	0	4	0	0	0			
	Interest	10		0	0	0	0	0	0	0			
	Total	530			870	176	4	679	75	75		75	
Balance (USD)	1,920			3,330	104	556	2,821	135	625	415			1,238

Source: CCC Interview

#244203

Chart 6: Outcome of targeted farmers in 2011 (source: CCC)

9 Collaboration Opportunities with JICA

CCC concluded that this project is not feasible under the current circumstances. Therefore, collaboration opportunities with JICA are summarized as below, on the assumption if the project were to be realized.

Collaboration Opportunities with JICA can be sought in these following 4 areas.

(A) Investment in this Project

Firstly, JICA can consider investing in this project. This scheme could be an investment form JICA as contribution to increase the income level of farmers of BOP and help to raise consciousness of demining activity in Cambodia among consumers in Japan. However, a certain size of this business and profitability should be established before JICA considers such option.

(B) Indirect Marketing Support in Japan

This project, with the support of Japanese apparel company, tries to establish the status of Cambodian cotton as a brand through marketing. JICA can publish articles on this project, as the example of BOP development projects, in its publicity materials. This will allow JICA to educate a wide range of consumers about their project.

(C) Technical/Agronomical Support of Cotton Harvesting

Farmers were facing great technical difficulty during the process of planting pure organic cotton. As shown throughout the research, in spite of many attempts CCC had been struggling to find out and establish effective cultivation process that enable a large amount of cotton to be produced.

Thus, if JICA could consider to provide technical expertise in form of sending its senior volunteers or JOCV (Japan Overseas Cooperation Volunteers) to Cambodia to share know hows and look over the necessary development process of organic fertilizers, herbicides, pesticide chemicals which are suitable for local land. Planting organic cotton might be successful in some extend.

(D) Support for Demining

In Battambang Province, great amount of land mines is still placed under the ground and demining process is in operation. CCC can support areas where mine clearance has commenced and it is highly recommended that JICA should further develop the current support under CMAC on clearance of land mines and unexplosive bombs, since resources in Cambodian demining are limited.