



IMPLEMENTATION OF COFFEE VALUE CHAIN FOR ETHNIC MINORITIES

BUI TUAN (UFE)

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1. Introduction

The project on Rural Development Dak Lak (RDDDL) is implemented by the Department of Planning and Investment with assistance of the German Agency for Technical Cooperation (GTZ). It envisages alleviation of poverty and improved livelihood of the rural population through an increased participation of ethnic minorities in the economic development of Dak Lak Province. So far, phase I of RDDDL (2003-2005) had focused on the development and piloting of participatory models and procedures in community development planning (VDP/CDP), land use planning and allocation (LUP/LA), community forest management (CFM) and in sustainable upland farming (PTD/PAEM). Phase II (2006-2008) aims at integration of these approaches into the overall framework of public administration with regard to provincial planning, procedures of budget allocation and service delivery. Until the end of phase II it is anticipated that public development planning, budget allocation and services correspond in 2 districts with the needs of the ethnic minorities and that the administration of the province has approved the province-wide application of successfully implemented models.

Project intervention is focused on 3 components:

- I. Participatory development planning and budget allocation
- II. Upland farming and integration in value chains
- III. Participatory land use planning, land allocation and community forest management

Component 2 of the project aims to develop and improve upland farming systems in the project areas. RDDDL has cooperated with the Agriculture Extension Stations of Lak and Ea H'Leo Districts to test and select a number of upland farming options, which are suitable for ethnic minority farmers with regard to improving their staple food supply and generating additional income through production of marketable food and cash crops.

Although there is substantial demand on local, regional and international markets for all these products, most smallholders and particularly those from the ethnic minority communities find it difficult to either access these markets at all or realize better prices through improved product quality or feasible on-farm processing. The fact that most buyers, i.e. middlemen or processing factories, usually do not differentiate prices according to quality while providing most processing services themselves poses a major obstacle.

Located in the Southern part of Vietnam's central region, Dak Lak province's altitude ranges between 500 to 800 meters above sea level, the province covers 1,312,537 ha of natural area, in which agriculture land accounts for about 480,000 ha. Dak Lak's climate is tropical monsoon characterized by a distinctive rainy season from April to December and a dry season from December to April. With such climate and the fertile and plentiful natural resource land, Dak Lak province is regarded as "heaven" of coffee trees, which accounts for 178,000 ha to swiftly develop and meet market requirements.

In the last years, Dak Lak's socio economic development has progressed rapidly, many economic components have made contributions for the province development, in which, agriculture production has made up for a significant ratio in the province's total GDP. The above mentioned results thanks to the efforts of all economic sectors, sound decisions,

policies on shifting plant and animal structures, which are suitable with the local specific ecological conditions, local farmers' farming habits and especially to meet requirements of agriculture product market domestically and internationally.

However, in the last few years, there have been some difficulties in coffee production that cannot be solved soon, though the province's agriculture sector and agriculture extension have made great progresses to introduce advanced techniques and success models to farmers. RDDDL, in cooperation with AEC, Ea H'Leo AES and Man - Buon Ma Thuot Coffee Processing & Export Joint Venture Company (Dakman) to facilitate coffee value chains for EM farmers in Ea Hiao commune, Ea H'leo district, Dak Lak province with the objectives of improving incomes for EM coffee growers through marketing and participating actively in the value chains.

2. Summary of coffee production in Đắk Lắk and Ea H'Leo district

The Central highland provinces are the major coffee production areas of Vietnam, in which Dak Lak is a major Robusta coffee production and famous coffee production area in the world. Dak Lak province is able to produce around 330,000 – 400,000 tons of coffee beans annually accounting for over 40% of coffee output in Vietnam.

Ea Hleo district, which is 80 km from Buon Ma Thuot City, covers 133,512 ha of natural land with 53,348 ha of agriculture land, in which the coffee area is with the annual output of about 41,000 tons of coffee beans.

In general, ecological and climate conditions here are very suitable for coffee and Ea H'Leo is a district where numerous EM farmers live and grow coffee. However, according to statistics, coffee growers in Dak Lak in general and in Ea H'Leo in particular are smallholders with average area of 0.5-1 ha/household, consequently, these farmers have good conditions to take care and make investment for the coffee to improve coffee production and quality, but their difficulty is that because of smallholder production (small output and cannot sell their product directly to big Companies, so coffee price is not high), and it is difficult for them to access to big companies to sell coffee in accordance with the quality.

In the socio-economic development strategy of Dak Lak province in the coming years, coffee is a top-ranking tree in the plant structure. Nevertheless, it is specially focused on improving coffee bean quality and coffee area is stabilized at 178,000 ha. Techniques are encouraged to apply are: stumping old coffee plots for rejuvenation, coffee areas with low production (due to unselected varieties) is replaced by high yielding ones. At the same time, favorable conditions are created to link coffee growers and buyers to improve coffee bean quality, specially focus on harvesting, processing and post harvest management in every household.

EM farmers in Ea H'leo district are also the main component of coffee production community in Dak Lak province. However, they have limitations in approaching to advanced coffee farming techniques and market information due to lack of knowledge and living in rural and remote areas. Consequently, they need to be provided with knowledge and skills on improving coffee production, generating more incomes and stabilizing their household economy.

3. Objectives

- To help EM coffee growers improve unreasonable production costs, produce competitive products with reasonable production costs.
- The selected EM coffee group will be provided with basic knowledge to approach to coffee market/value chains.
- To establish a model for EM for study and replication

4. Coffee value chains approach

- Coffee value chains trial is carried out in small scale
- Analyze and facilitate the chains
 - ✓ Analyze the actual situation of the chains
- Implementation of the chains
 - ✓ Enhance the linkage among the actors in the chains
 - ✓ Improve coffee quality in the chains
 - ✓ Adjust production costs
- Improve the services in the chains

5. Implementation of the coffee value chains trial in Ea Hiao, Ea Hleo

5.1 Limitation of the chains

- ***Piloting location***

The trial on coffee value chains trial for EM is carried out in Ea H'Leo district's Ea Hiao commune, where there is 13,040 ha of natural area, in which 10,219 ha of agriculture land and 2,800 ha of coffee. The coffee mainly belongs to stallholders of Kinh and EM farmers with unskilled farming techniques, many households cultivate coffee according to their experience; they have not approached to advanced technologies. As a result, coffee production is unstable and quality is not good.

A group including 42 EM coffee farmers with different levels of farming techniques were selected voluntarily to participate in the coffee value chains trial.

- ***Why coffee value chains trial is selected?***

Through the survey, Ea H'Leo district has a lot of potential products, such as coffee, pepper, maize... that can be piloted in the value chains. However, it was agreed to select coffee for the trial through discussions and criteria to select a product that suits local specific conditions, because:

- There are numerous of EM coffee growers in the district
- Farmers desire to cooperate with other partners to improve their coffee cultivation and marketing

- They are unskilled in farming techniques
- They almost have no knowledge on market information
- They are potential to produce high yielding, good quality coffee that can meet requirements of the market.
- There are a lot of local coffee buying agents/companies that are willing to cooperate with farmers to buy their coffee.
- With support from local authority in organization and provide trainings for the farmers to improve their farming techniques, coffee quality and marketing knowledge
- The trial can be replicated to other areas
- The trial is especially suitable with the sustainable coffee development strategy of Dak Lak province

- ***Limitation of the coffee value chains trial***

As defined in the trial objectives, this is only the small coffee value chains trial impacting 42 coffee farmers, thus, the actors in the chains are ranged from commune input providers to coffee buyers for export in Buon Ma Thuot.

5.2 Analysis of coffee value chains

5.2.1 The start point of the value chains

The main defined actors in the value chains are EM coffee growers, therefore, the start point of the coffee value chains will focus on the value additions gained for the farmers involved directly in coffee production who take part in the coffee group. Accordingly, the actors in the chains are limited as input providers, coffee growers, local coffee buyers and coffee exporters.

5.2.2 Inventory the actual situations

One of the important works in implementing value chains is to make inventory the agriculture productions in the district. It is necessary to collect relevant information and data during the survey, the more specific data and information, the better because data and information are very limited and scattered.

The inventory was based on the following questions:

- The criteria need to be collected for VC implementation.
- How many potential value chains in the district that are suitable with EM can be selected?
- When the value chains are selected, identify one that is most suitable with E farmers

5.2.3 Value chains mapping

In order to understand the selected value chains for implementation, the matter essence must be thoroughly understood, there are a lot of matters related to the linkages, provision channels... of coffee products such as trial, table/forms, data, diagram, ... However, there

is one way that make the actors swiftly understand all the aspects of the value chains: the information, data are visualized in a simple diagram. The diagram will:

- Help the VC actors imagine VC network, horizontal and vertical relationships
- Present the mutual impact of the actors in the VC
- Help actors in and out of the VC understand all VC activities and process.

- ***Map on the main functions of coffee value chains***

In fact, in order to carry out completely a coffee value chains, the core process of the value chains has to be identified domestically and internationally. Nevertheless, because the objective of the VC is to improve household economy for poor EM coffee farmers through production improvement to produce better quality products that can meet requirements of the market, at the same time, their marketing knowledge can be improved. As a result, all the core processes of the VC are presented in the diagram, but they are analyzed in the beginning stage of the VC:

The result of coffee VC analysis shows that the VC begins in the input provision stage for the production, followed by the utilization of resources to produce coffee beans, and the coffee beans are sold to local collectors or buyers and then sold to coffee processors for export. The coffee processing stage is often carried out in foreign countries (diagram 1)

Meanwhile, there is another coffee VC channel begins in the input provision stage, then to coffee beans production, and the coffee beans are sold to collectors,/buyers and afterward, sold to processors to produce instant coffee or ground coffee for domestic consumption or for export (diagram2).

However, as mentioned above, the analysis of coffee value chains for EM farmers in Ea Hiao commune is only carried out when the coffee beans are sold to exporters as the final stage (diagram 3).

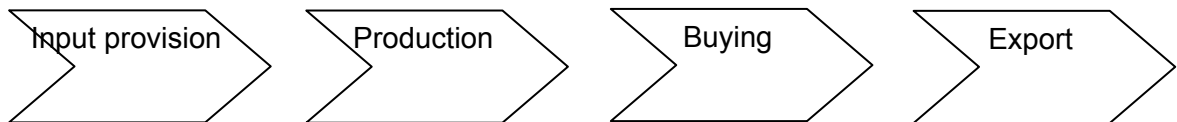
Diagram 1: the main steps of the coffee VC



Diagram 2: the main steps of the coffee VC



Diagram 3: the main steps of the coffee VC in Ea Hiao, Ea Hleo



- **Map on the actors participating in the chains**

In the coffee value chains for EM farmers in Ea Hiao commune, the start point can be the participation of input providers for farmers, such as fertilizer sellers, plant protection sellers. The role of coffee seedlings provider is not mentioned in this chains, because the coffee areas are in productive stage, thus, seedlings or varieties are not significant in the chains. The following actors in the chains are the EM coffee growers who have received technical trainings on coffee production practices to produce good quality coffee beans to meet requirement of the market, and the coffee buyers in Ea H'Leo district will buy their coffee and sell the coffee to big coffee buying companies for further processing for export out of Dak Lak province.

- *Input providers*

In reality, the role of input providers (n=10) for coffee production in the commune is quite important, because in the input market is quite plentiful while the price is not much different compared with the price in Ea H'Leo district. Hence, the local input providers have made it possible for the coffee growers to buy high quality inputs for their production. However, the local inputs do not want to participate in the trial yet, because this trial is on small scale, but they promise to provide support when needed.

- *EM coffee farmers*

The number of EM coffee farmers in Ea Sol commune accounts for 50% (or nearly 800) households, but only some capable farmers were selected and they voluntarily take part in the trial. The selected farmers have to comply all the technical guidance in the field and other related issues.

In general, the coffee output in Ea Hiao commune is quite a lot, and the coffee quality can be improved to meet market requirement.

- *Coffee buyers in Ea Hiao commune*

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There are more than 20 coffee collectors in Ea Hiao commune who buy cherry coffee and coffee beans; they come to farmers' houses to buy coffee. The buying method is very simple and mainly based on their mutual trust and long term relationship. The coffee will then be sold to bigger coffee buying stations in the commune or in the district center.

Besides the collectors, there are 15 big coffee buying agents in the commune and 4 branches of big coffee Companies in district center, which also buy coffee in Ea Hiao commune. These buyers buy coffee in their place and at farmers' house with the quantity of over 500 kg. The transport cost is agreed between the buyers and the famers. The farmers are informed on the coffee market price by different channels and the coffee price in the commune and district is not much different.

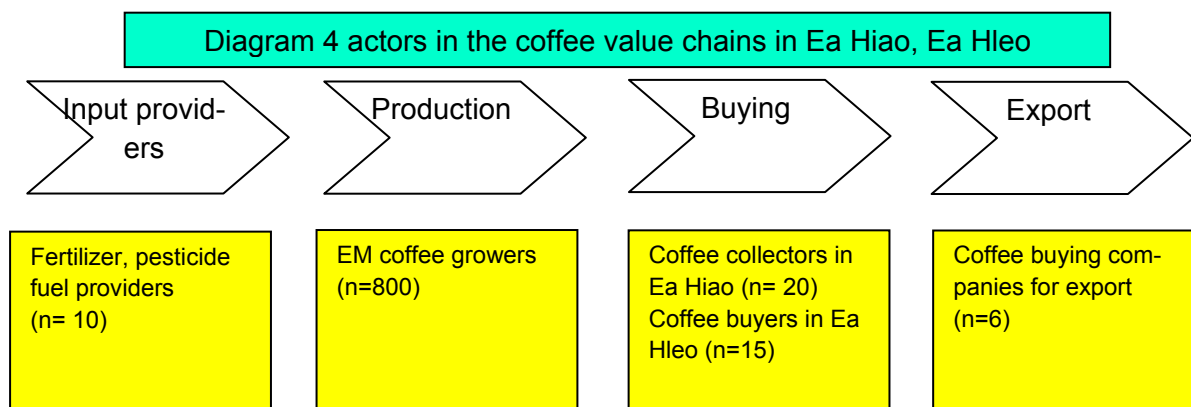
The buyers only pay attention to the following quality standards of the raw material coffee:

- ✓ Foreign matter, black, diseased, mouldy... beans
- ✓ Strange smell
- ✓ Moisture

The other criteria such as bean size and bean colors are not much paid attention by coffee farmers and buyers.

- *Coffee export Companies*

There are 4 branches of coffee export Companies and 2 coffee buying companies for direct export. There is one sub-branch of the coffee export company in Ea Hiao commune. These companies buy raw and processed coffee, and buy coffee directly from farmers to process for export.

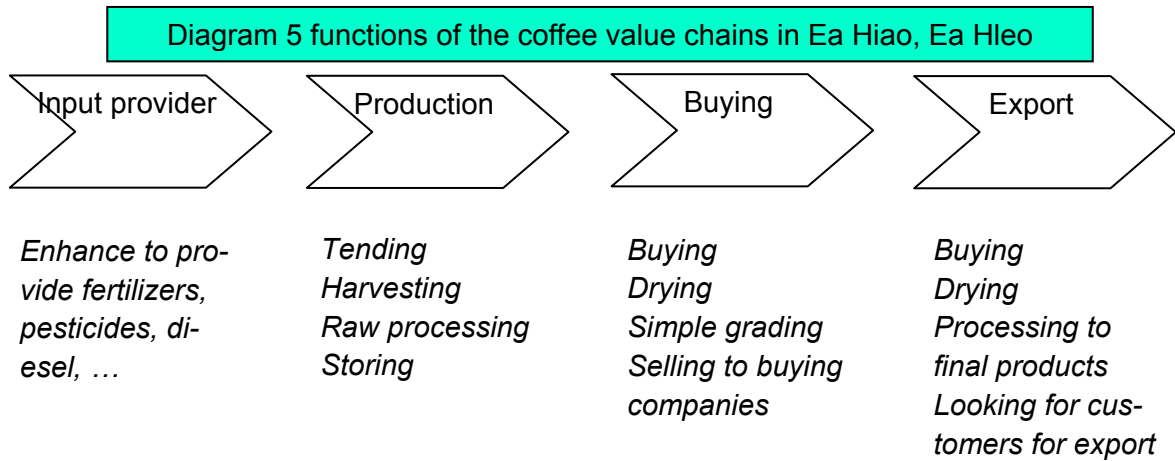


- **Map on the functions of coffee value chains**

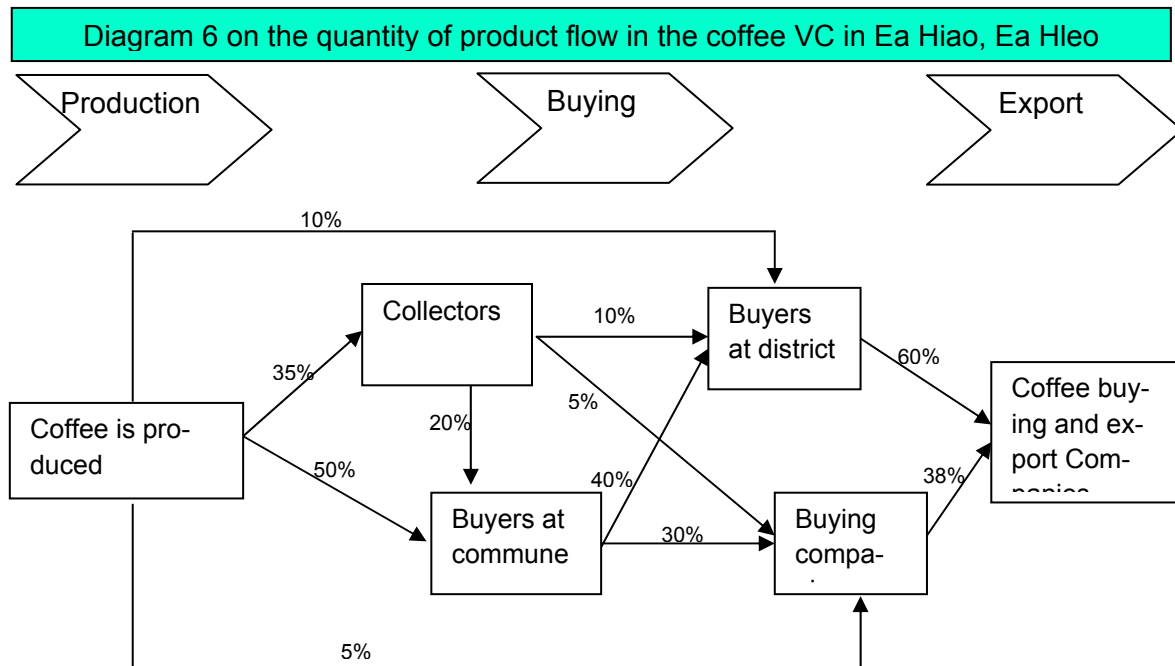
In the coffee value chains in Ea Hiao, the main functions of the input providers are to provide fertilizers, pesticides, diesel for irrigation system, transport and husking the coffee. During the production stage, the farmers have to carry out the followings: irrigation, pruning, applying fertilizers, spraying pesticides, harvesting, processing fresh coffee beans to dry coffee beans. In the buying stage, the collectors carry out the main functions to buy coffee directly from farmers, then sell the coffee to the big buyers (coffee buying agents), these big coffee buyers buy coffee from the collectors and from farmers directly for drying, grading to have standard moisture and even bean size for better quality and to sell to exporters. In the processing and export stage, the followings have to be done: buying coffee

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from coffee buyers, drying the coffee to have standard moisture, removing foreign matter, grading the coffee beans, packing, identifying customers, exporting (Diagram 5).



- **Map on the quantity of product flow in the coffee value chains**

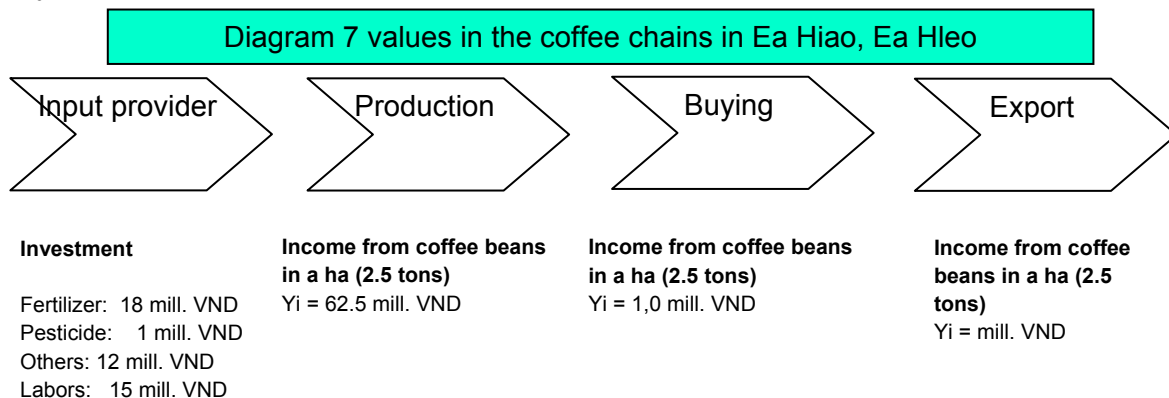


The result of the coffee product flow inventory shows that: the input providers have the role of providing inputs for coffee production to the farmers. When the coffee is processed to coffee beans, 35% of them will be sold to local collectors, 50% is sold to the buyers in Ea Hiao commune, 10 % is transported to Ea H'Leo district center to sell to big coffee buyers and 5% is sold to big coffee companies in Ea H'Leo district. 20% of the coffee bought by local collectors is sold to commune coffee buyers, 7% is sold to district coffee buying agents and the rest 3% is sold to district coffee Companies.

70% of the coffee bought from coffee buyers and collectors in Ea Hiao commune is sold to coffee buying agents (40%) and coffee buying Companies in the district (30%). Following, coffee buying agents in the district will sell out all the coffee quantity bought from farmers (10%), from the collectors (10%) and from buying agents in the commune (40%)

- **Map on the product values**

In reality, coffee farmers have encountered a lot of problems in improving coffee production and quality. The coffee beans have quite a high production costs (18.5 million VND/ton), and the coffee with low quality that cannot meet market requirements is sold at low price. As a result, incomes of the coffee farmers are limited. With the same coffee quantity, the collectors or coffee buying agent bought and processed to have higher quality, can be sold to exporters at higher price (1.6%). The reason of the price difference is that the coffee is sold to several mediators: 3 collectors, that's why when the coffee is sold at district, the price is different. For the exporters, the price different is not high, only 200 VND/kg, however, the exporters can get high incomes because of exporting large quantity.



- **Map of the coffee value chains supporters**

- a. *Farmer Association (FA) of Ea Hiao commune*

FA plays an important role on group forming and management, and facilitating the linkage the group members. At the same time, the FA also helps the group complete the legal procedures for the group operation. Moreover, FA makes favorable conditions for the group members to access to loans from the Government for their production.

- b. *Agriculture extension of Ea Hiao commune*

Agriculture extension of Ea Hiao commune is in charge of forming the group and helps the group function effectively during their implementation, and provides technical guidance to group members to apply advanced techniques in their actual production to improve coffee production and quality. In the last time, commune extension has also organized meetings for mutual study, sharing experience. Group members are also informed on the coffee market and quality.

- c. *Ea Hleo AES*

With the objective to improve coffee production process at household level, the application of field management techniques has much influenced to coffee production and quality, and incomes of the farmers. Therefore, AES plays an important role in providing supporting services, such as training courses on sustainable coffee production techniques, trainings on IPM, training on coffee quality requirements, providing information on agriculture product market, training on group forming and management.

- d. *Ea Hleo Economic section*

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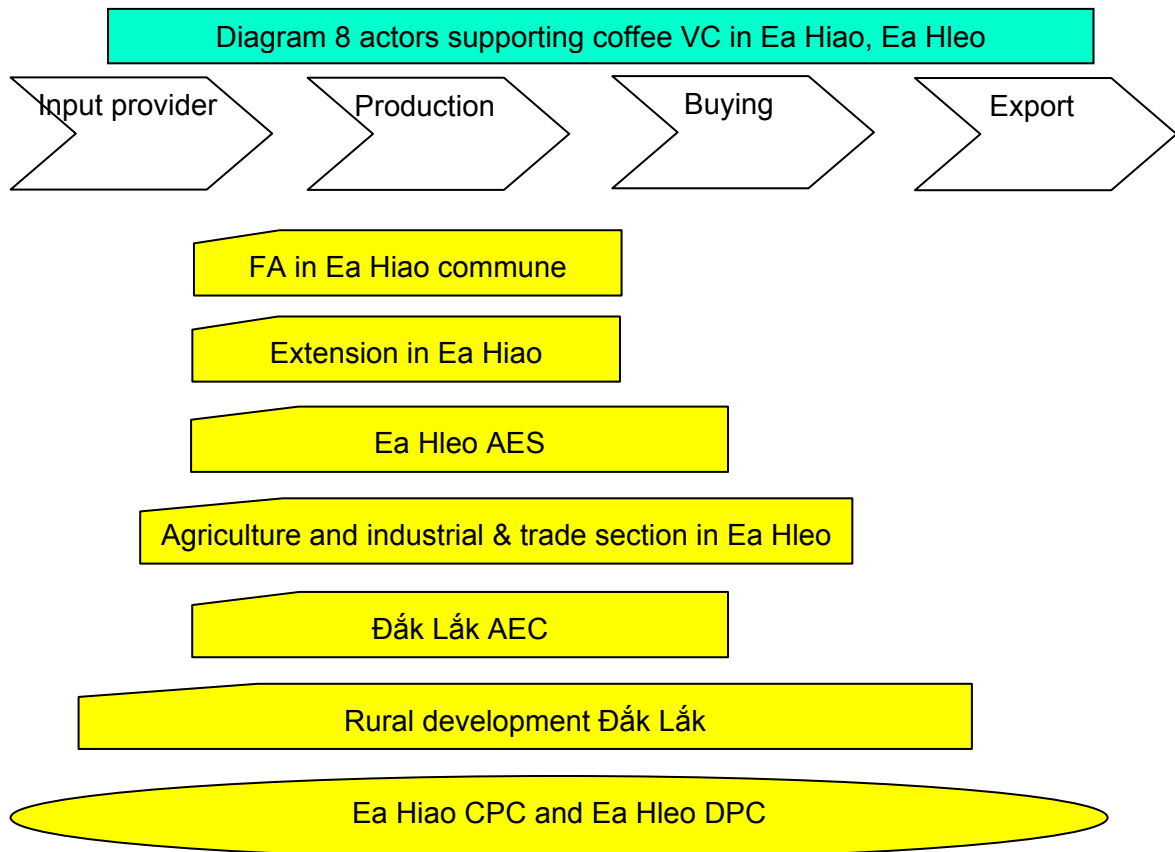
Economic section provides support on economic policies and district economic orientation in different stages so that the group can catch up for suitable implementation. Moreover, economic section can introduce local potential buyers to cooperate for the coffee value chains implementation.

e. Agriculture extension center (AEC)

Provides advanced techniques in the field and coffee quality requirements and coffee market in the province and nationwide.

f. Rural development Đắk Lắk

Provides technical support regarding to the pilot, from the initial inventory on the local actual agriculture production, identifying the value chains for implementation, analyzing and mapping the value chains, facilitating the value chains implementation, and especially acts as a bridge to link the value chains actors.



6. Analysis of opportunities and constraints

- Strength and opportunity analysis**

Suitable ecological conditions: many study results show that soil and climate conditions in Ea H'Leo district in particular and Dak lak in general are very suitable for coffee growth and development. For this reason, coffee grower is able to produce good quality and high productivity coffee.

Plenty resource: The main inputs for coffee production are fertilizers, pesticides, fuel for irrigation, transport and husking, labor costs. Inputs are available in Ea Hiao market and in some village centers. The input are plenty and multiform, and can be delivered to farmers' houses.

Capacity building opportunity: The inventory shows that: EM coffee farmers' degree of understanding on coffee production techniques for good coffee quality is very limited. However, many different EM live in Ea Hiao commune together, so they can share their experience and mutual study.

In addition, there are many Government programs and supporting project programs annually to provide trainings on coffee production techniques and coffee quality, loans approach and management in small business ... for farmers, especially for EM farmers and for local buyers in Ea Hiao commune and Ea Hleo district.

Broad market: Coffee can be sold to any local collectors or local buyer. The collectors can buy coffee in farmers' houses without any unfavorable conditions for farmers; even some collectors buy coffee at the same market price without deducting transport costs.

During the last years, though sometimes, coffee price was very low, coffee can be sold easily. This shows that coffee market is very broad and coffee needs are quite stable.

Good traffic system: Ea Hiao commune owns quite a good traffic system with wide inter-commune and inter-village roads so that trucks can access to many places in the commune, coffee can be circulated easily.

Be suitable with local authority's orientation: Sustainable coffee development with close cooperation among farmers, buyers, AES and Enterprises is encouraged by local authorities at various levels. Coffee value chains development is one of the models of this cooperation and it is strongly supported by local authority to have good results.

- **Analysis of weaknesses and challenges**

Farming skills: As mentioned above, the actors participating in the coffee value chains are EM, though they have had a lot of opportunities to be trained on coffee production techniques, coffee quality, due to education limitation and weak approach, they are not good at coffee field management resulting in high production costs, unreasonable investment and low coffee quality. On the other hand, the local farmers do not comply any coffee production codes or standards, though coffee production codes for Vietnamese standards were issued long time ago.

Input price is increasing: The adequate provision of water, fertilizer and pest and disease management play a decisive role to produce high quality coffee. In the last 2 years, input price has continuously increased and are very high at the moment causing difficulties for farmers in production investment.

Weather influence: In coffee production techniques, from field management techniques to harvesting, processing techniques are considerably influenced by the weather. Weather is one of the causes influencing the coffee quality.

Lack of preliminary processing conditions: As mentioned above, the weather greatly influences to the coffee beans quality; coffee cannot be dried when harvesting in the continuously rains leading to low quality coffee beans. On the other hand, farmers often harvest coffee for 3-4 times, and in the last harvest, all cherry and green beans are harvested, thus, the rate of green beans in this harvest is quite high, and can reach to 20%, if there is inadequate processing condition, the green beans will become black coffee beans.

Lack of information: Not only farmers but also local collectors and buyers lack of information on coffee quality and market needs. Correspondingly, the access coffee market in the district of farmers and collectors are limited.

Lack of linkage: Coffee production in Ea Hiao in particular is smallholder production with average coffee area is 1 ha/household, thus, every household applies coffee field management in their own way, as a result, coffee beans quality is not equal that cannot meet requirements of customers so that farmers cannot negotiate for higher price. One other important issue is that the linkage between farmers and local buyers is so weak and they do not have any commitment in buying and selling coffee, consequently, their mutual trust decreases.

Several mediators: The diagram 6 shows that the coffee beans are produced by coffee farmers, then the coffee is bought by collectors and sold to commune buying agents, then the coffee is sold to coffee buyers/companies in the district center and finally, coffee is sold to exporters. Because of several mediators, the coffee price is quite different from farmers in the commune to Ea H'Leo district, while the distant from the commune to the district is not so far, and the traffic system is good to transport coffee to district during the dry season.

7. Activities to improve coffee value chains

From the above analysis, it is easy to recognize that the strengths and opportunities need promoting and the weaknesses should be overcome to improve the actual situations and to better facilitate the coffee value chains. The intervention activities to improve the coffee value chains should be discussed by the actors in the chains and supporting partners to select the best measures. Namely:

7.1 Creating the linkage

In order to improve the shortage of linkage in production, investment, marketing, information exchanging... among coffee farmers in ea Hiao, it is necessary to encourage farmers to join common interest group because they will have a lot of benefits in order to:

- have chances to share mutual study and their experience in sustainable coffee production
- The members can help one another during their production, selling and purchasing
- They have the general objective is to produce good quality coffee

- The coffee quality is equal and good because of being applied the same practices so that coffee quality can meet requirements of the buyers
- The members study the market together to collect a lot of ideas, information and they can share information
- Once a group is formed, they will have more strength and be competitive
- The members can join hands to negotiate input prices; when they buy inputs at bigger amount, they will have more opportunity to be discounted.
- On the other hand, when they sell their product at a big amount, they can negotiate to have higher price.

On the other hand, the linkage among exporters, buyers in the district and commune and the farmer group has to be created in order to provide correct information on coffee price, quality and quantity requirements and reduce incorrect information for the actors in the chains. Moreover, this linkage can create a long term and sustainable relationship among the actors to make right decisions in production and business.

7.2 Provide training on coffee production to farmers

Training courses on sustainable coffee production to help the group members improve their knowledge and skills on coffee production, to produce high quality coffee with more reasonable production costs. On the other hand, the training courses also help the group members in effective management method by recording information, data, inputs and incomes to farmer field book so that they can calculate the incomes and expenditures during the year and base on the data, the unreasonable investment can be improved.

7.3 Demonstration model

Demonstration model on GAP application in the coffee plantation is carried out in the commune to help farmers, especially farmers in the coffee value chains apply what they have learnt in the field. At the same time, the model is also a place for the farmers to study and share their actual experience in the field trainings so that they can apply the same practices on their fields.

7.4 Training on marketing

Implementing farmers, collectors and buyers in the commune need to participate in the training courses on coffee quality standards; methods and tools to measure coffee bean quality; provision of coffee market in the province, in the country and in the world. Coffee buyers need training on knowledge for the approach and exploitation on coffee sector, quality requirements of the respective customers and the risks that may occur.

7.5 Improvement of the buying chains

It is essential to improve the provision chains to be more compact so that farmers can sell their coffee directly to the buyers in the commune, and these buyers sell the coffee to (buyers) companies in the district for selling to exporters. With this organization, the price difference from the companies to farmers will be lower and the actors in the chains will have more benefits from this transaction.

7.6 Application of Common codes for coffee community (4C)

As mentioned above, the farmers do not apply any farming criteria, thus, the product is not competitive in the market, and there is no opportunity to introduce the coffee to customers in general and to exporters in particular. Therefore, when the common codes for coffee community is applied in the chains, the close linkage among the group members will be created because coffee exporters have their own customers who buy 4C coffee at stable price and they are willing to provide incentives for 4C coffee. Incentives then can be allocated to the relevant actors in the chains and the coffee farmers can benefit from the incentives. However, to do so, the actors in the chains have to trust one another and pledge to comply the regulations.

7.7 Creating the linkage among 4 partners

In reality, when the 4C is applied, the linkage between coffee buyers and farmers is created; but it is necessary to have technical support from scientists to improve technical weaknesses in the chains for better operation. However, the role of local authority is very important in supporting the chains through technical training courses, market information, mechanism ... Thus; the close linkage of these 4 partners will help the chains be stable and sustainable.

8. Results

There have been some initial results after 2 years applying interventions to the coffee value chains. Coffee growers can enjoy more benefit though appropriate management methods in the field, harvesting and post harvest management. Buyers have innovated the way they buy coffee to get more benefit, exporters have had their potential customers to buy coffee at higher price.

8.1 Value additions for farmers

- ***Appropriate investment in production***

In the coffee value chains, there are many ways to gain value additions and incomes for respective actors in respective main stages of the value chains. For the practical conditions of production actors of the chains, the adjustment of the inputs, stabilizing and improving coffee production will increase the value to each kg of coffee. The limitations show that when the water amount for irrigation is suitably adjusted, irrigation cost for the coffee during dry season is decreased. Namely in 2006, the average watering amount was 760m³/ha/time and ranged from 580 to 883m³. This can be said that the watering amount 580m³ is enough for the coffee grow and stabilize coffee production with the climate conditions in Ea Hiao commune.

Table 1 : Investment for watering for 1 ha of coffee						
Degree of irrigation	2006		2007		2008	
	m ³ /time	No. of HH	m ³ /time	No. of HH	m ³ /time	No. of HH
Very high	883	16	810	12	620	12
High	750	16	650	15	570	14
Medium	580	10	530	15	520	16
Average	760	-	653	-	565	-

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From the above comments, in combination of science research, and watering amount norms for productive Robusta coffee, coffee farmers have been trained and requested to apply suitable irrigation in order to save production cost. As a result, in 2007, the average watering amount for 1 ha was 653m³, 107m³ less than in 2006, and in 2008, the watering amount continuing decreasing to a suitable amount of 565m³, decrease 88m³ compared with 2007 and about 200m³ compared with 2006 (see table 1). Not only economic effect but also environmental effect in exploiting water source is a great benefit to the society. On average, during the dry season, if the coffee is irrigated 3.5 times/ha, more than 300m³ of water can be saved, and if this number is multiplied by the coffee area in Ea H'Leo district (19,214ha), the result number is very huge.

Fertilizer	2006	2007	2008
Urea	1.000	600	550
S.A	400	200	200
Phosphate	300	700	700
Potassium	300	500	500
Organic fertilizer	1.000	3.000	5.000

Another issue is that the coffee producers do not make suitable fertilizer investment, not in terms of quantity but types of fertilizers. Therefore, not only the coffee growth and development but also coffee beans quality has been effected. In fact, the total mineral fertilizer quantity applied for 1 ha of coffee in 2006 and 2007 was not different (2,000 kg), but in 2006, the coffee was applied too much N - 1,400kg/ha), but Potassium and Phosphate were not much applied. Only some households applied manure (see table 2). Consequently, it is necessary to help the farmers to improve the effectiveness of fertilizer utilization. All the farmers in the coffee value chains and the farmers in the commune were trained on fertilizer management in 2007 and 2008, and they have been requested to apply what they have learnt for their coffee. The result was that the mineral fertilizer amount was more suitable used, and the organic fertilizer was applied more for the coffee for better growth and development, and better coffee beans quality.

- ***Value additions form coffee productivity***

Year	Investment cost ('000 VNĐ)				Production (kg/ha)	Gross benefit ('000 VNĐ)	Net benefit ('000 VNĐ)
	Water	Fertilizer	Other	Total			
2006	5.320	17.860	20.000	43.180	2.700	67.500	24.320
2007	4.570	18.340	20.000	42.910	3.000	75.000	32.090
2008	3.955	19.865	20.000	43.820	3.500	87.500	43.680

Note:
- Irrigation, fertilizer, labor and other input costs are calculated the same in the last

years
- Price of coffee beans is 25,000 VND/kg

The application of GAP for coffee has brought significant value additions for 1 ha of coffee, namely the investment for 1 ha of coffee/year does not make significant difference, but the appropriate technical and input investment have helped the coffee to better grow and develop more stable, as a result, coffee production has been improved year by year, thus income is generated more in the same coffee area. The table 3 shows that the total investment during the 3 years was about 43 million VND per ha, but the coffee production in 2008, as estimated, was 500 kg of coffee beans higher than that in 2007 and 800 kg higher than in 2006. With coffee price is 25,000 VND/kg, the net benefits in 2006, 2007 and 2008 was respectively 24,320,000 VND, 32,090,000 VND and 43,680,000 VND. If incentive of 200 VND/kg of coffee beans is added because of 4C application, the net benefits for 1 ha in 2007 and 2008 respectively is 32,690,000 VND and 44,280,000 VND/ha.

8.2 Value additions for the coffee buyers

In 2007, all the actors in the coffee value chains were recognized as 4C coffee members by Dakman Company. All the actors in the chains must implement/apply the Common codes for coffee Community (4C) in their coffee production and buying in order to get incentives. Hence, coffee buyers in Ea Hiao commune and Ea H'Leo district can also benefit from incentives.

The analysis of coffee beans business of Hung Vi coffee buying agent buying coffee beans in the district and from the coffee farmers in Ea Hiao commune shows that the gross benefit per 1000 kg of coffee beans is the same compared with previous years (50,000 VND), but because of the coffee in the chains is 4C and good quality, the price is higher after being preliminary processed and they can get a value addition of 100,000 VND/ton. On the other hand, as the member of 4C, the agent can enjoy the incentive of 150,000 VND. So, the coffee buying agent gets 300,000 VND/ton of coffee beans as the value addition.

If the coffee buying is separated into 2 levels: (1) Coffee buying agent at commune level and (2) coffee buying agent at district level, these agents can get 150,000 VND per tons of coffee beans.

8.3 Value additions for the coffee exporter

Dak Man Company, who has participated in the value chains, acts as a facilitator and supporter for the inferior actors to become 4C members. The company not only has the benefit but it is their responsibility to contribute to the sustainable coffee development of coffee sector in Dak Lak province. However, the Company also gets significant benefit (150,000 VND/ton of coffee beans) from the incentive of the 4C coffee buyers because the Company has applied 4C for their business. Besides, the company also can get incentive from stable coffee provision for the actors in the chains and potential 4C coffee buyers.

8.4 Other value additions

- ***Awareness of actors increased***

A lot of benefits the farmers have gained when participating in the group to approach to the value chains, these benefits can be seen from different aspects:

- Awareness of the group members on the value chains and marketing has been raised
- Knowledge on sustainable coffee production of group members has considerably been raised
- They can approach to advanced technology on good agriculture practice, good coffee processing and storing techniques, as a result, investment for the coffee is decreased and the coffee bean quality is increased
- Better coffee field management, coffee production is more stable
- Better input and output management, thus, the households can have resolutions to restrict and overcome shortcomings, mistakes to uphold the strengths in farming management
- They have a lot of benefits because they are recognized as member of 4C coffee
- The 4C coffee has been accepted by the market and the price is higher.

- ***4 party cooperation model***

The coffee value chains pilot in Ea Hiao commune has been applied 4 party cooperation model in supporting EM farmers improving their production situations and coffee quality and gradually approach to coffee information and marketing in the commune and in the nationwide. The coffee value chains pilot gets the active contribution from commune and district authorities in supporting policies, information and providing technical and marketing training courses for the actors in the chains. AES and other agencies act as scientists to provide consultancy on advanced techniques, VC management knowledge and business management to facilitate the VC for better operation from production stage to export stage.

- ***Promotion of sustainable coffee production***

The implementation of coffee value chains and application of 4C in the chains requires the limitations in coffee production and business from farmers to exporters to be improved. As a result, all actors in the chains were provided with GAP, post harvest management knowledge in order to improve respective stages in the chains. On the other hand, the application of 4C for the coffee value chains has promoted economic, social and environmental sustainability for the VC actors.

9. Shortcomings

- Group members do not have knowledge and are inexperienced in group management
- Group leader is inexperienced and lack of knowledge on group management
- Most of the group members are EM with low education and awareness, thus, their acquiring is very limited
- The members do not closely unite to facilitate all the activities
- The actors in the chains do not trust one another yet, so they do not provide adequate information on coffee price, coffee needs and quality to others in the chains

- The vertical and horizontal connection is in the chains not strong enough for better operation.
- Activities of the group depend on external technical and financial supports; so the group cannot be very active, therefore, it is unsustainable.

10. Conclusion and recommendations

- **Conclusion**

- The coffee value chains pilot in Ea Hiao has brought practical benefit for coffee EM farmers through suitable investment to improve coffee production and to get value additions from 4C coffee.
- GAP knowledge for EM coffee farmers in the chains was improved.
- EM coffee farmers were provided with basic marketing knowledge
- Awareness on coffee requirements and quality for farmers and buyers in the chains is raised.
- Knowledge and skills on coffee business for coffee buyers are improved.
- All the actors in the chains can enjoy value additions for coffee production and business activities
- The value adding benefit is equally shared among the actors in the chains
- Being a basic for 4 party cooperation in sustainable coffee production and business

- **Recommendations**

- The group should be provided training courses and support for better operation in the coming time
- Training material on coffee value chains/marketing should be elaborated for EM farmers.
- Group leader should be trained to have enough knowledge and skills so that the group can run independently in the future.
- The relationship among the chains should be enhanced to share information, coffee needs and market price.