

## **CHAPTER 2**

### **Literature review and related research**

The researching in the Lesson Learned from the Success of the Royal Project to the Development of Royal Project Extended Areas in Thailand is study the operation model that resulted in success of the Royal Project for highland development during 44 years. The researcher reviews the document and relevant literature. This review of literature was divided into the following sections:

- 2.1 History of the Royal Project
- 2.2 Success and awards of success of the Royal Project Foundation
- 2.3 Highland development in the country and abroad
- 2.4 An operation of the Extended Project
- 2.5 Success concept and learning
- 2.6 Related research

#### **2.1 History of the Royal Project**

An interpretation of the court to stay at the Phu Ping palace Chiang Mai since 1962, His Majesty the King visited the people in the different areas in the Northern provinces and saw the peak of deforestation and shifting cultivation for opium. Beside it would violate to the law, it is also damaging water source forest, the source of major rivers by the ignorant as well. (The Royal Project Doi Kham Organization Committee, 1993)

In 1968, His Majesty the King went to see the tribe's life at Ban Doi Pui near Phu Ping palace. His Majesty had heard about opium cultivation but they were still in poor while the main income is from selling plum. (The Royal Project, 2012)

The concept for the Royal Project was born, right there, at Doi Pui, as the King himself describes in a Royal Address in 1970:

“I asked the Hmong how much a family earned in average from the selling of opium. The answer was 3,000 to 5,000 baht. When asked how much the annual selling of fruits would bring, the reply was that the local variety of peaches would bring 4,000 to 12,000 baht. It was then that we thought we had the answer. We could improve the wild fruits, such as local peaches, by grafting. We could also choose other fruits which are high-priced and in great number of wild trees and other plants to sell in the market”

This passage is particularly interesting because it shows that King Bhumibol was thinking about the importance of marketing and distribution from the beginning of the project. The beauty of concept, of the solution, can be seen by studying another of King Bhumibol’s addresses, where he discusses the objectives of the Royal Project. (Highland Research and Development Institute, 2007b)

His Majesty also heard about the Doi Pui Experiment Station which is Fruit Experiment Station especially cold region fruits of Kasetsart University led peach tree species with large local balls were woven. So the research of finding the proper species to get the juiciest peach that can do high income as opium cavitations. His Majesty gave the money for 200,000 Baht to Kasetsart University for land acquisition for the research the cold region fruits for the confined space as Doi Pui. This land is then called as the “Songsan garden ”. Then, H.S.H. Prince Bhisatej Rajani, was assigned as a president after establishment of the Royal Project. This project is starting from “the Royal Project fated tribes” to resolve the problem of opium cavitations to improve the quality of life of their inhabitants and watershed forests restoration.

In 1992, His Majesty had graciously listed the Royal Project as “the Royal Project Foundation” and gave the property of the initial for 500,000 baht to provide a permanent public organization that can be operated continuously, operational system, versatility administered, efficient operations and achieve even better results in the future. His Majesty was tenured president, H.S.H. Prince Bhisatej Rajani was the Foundation President and Dr. Chirayu Isarangkun Na Ayudhya was Foundation. (The Royal Project, 2012)

Objectives of the Royal Project are as following. (The Royal Project Doi Kham Organization Committee, 1993)

- 1) To prevent deforestation and destroy watershed, and promote reforestation.
- 2) To stop mobile plantation and planting opium which is illegal. Advise hill tribe to domicile and provide them to substitution crops which increase their incomes.
- 3) To educate people about highland agriculture and husbandry.
- 4) To research and demonstrate about plant and animal breeding.
- 5) To study in logistic and marketing in order to increase people income.
- 6) To promote education, public health and birth control to the people.

The guidelines for operation are following. (The Royal Project Foundation, 2009)

- 1) Reduction step
- 2) Acceleration
- 3) Help them to help them self
- 4) Do the thankless job

The Royal Project is a unique project by the prestige of the monarch. The project is a center of academic and private sector officials from various sources, which were reluctant to join the project dedicated untiring work. In addition of the local helping, the full support is also from international, because of the drug like opium and heroin is a problem of the entire world. (Highland Research and Development Institute, 2009a) There is defining the 3 main activities as following. (Highland Research and Development Institute, 2009)

**1) Research,** this is a first needing. Since the starting of the Royal Project to acquire the species of plants, animal and knowledge appropriate to the environment and society of the tribe by the research to find out plant or animal species appropriate to the highland area and the local culture. Most of the research is done by the staffs of universities. The supported by international agencies in the early stages of operation.

**2) Development,** The Royal Project promotes and develops of the career for farmers, coupled with the research from the early stages while there was no the

Royal Project development center as currently. It is done by the volunteers along with His Serene Highness Prince Bhisadej Rajani to visit and support the various occupations. Currently, there are central staffs act to advice and serves to convey the academic to promotion staffs, counseling and planting planning. The crop protection center take care the disorder problem and recommends the use of chemical pesticides closely. Currently, the Royal Projects supports the testing, demonstration, research and plant/animal production; promote to increase farmers' income and quality of life development basic resources, quality of life, conservation of natural resources and environment in conjunction with the relevant authorities.

**3) Marketing,** The Royal Project started work on marketing on 1981, which is bringing the products of the farmers for distribution. Most of them are the winter vegetable and fruit which unknown for the markets. Marketing operation is along with transportation, grading, packing and distribution. Including royal plant food is establishment for processing to add the value of products and product distribution. Products under the brand "Doi Kham" are focused on product freshness, cleanliness and safety.

Moreover, the Royal Project has been working on research and development the creating of the learning process and knowledge of the Royal Project's success and programs under the royal initiative to create the opportunities for production learning according to the sufficiency economy.

Now a day there are 38 Royal Project development centers in which cover area of 1,755,625 rai (in 5 northern province, 35,497 households, 150,019 people in total). (The Royal Project Foundation, 2012) Most of the areas are wilderness slope high/hill land 800 metres above sea level and located in preserved forest. Therefore they need to be taken care of in each center and in each area which is different benefit and disadvantage. (Highland Research and Development Institute, 2007)

### **2.1.1 The role of the Royal Project development center**

The Royal Project Foundation assigns the role of the Royal Project development center targeted to develop the people well being in 4 categories as following.



- 1) An operation in the center
  - 1.1) Support and cooperate in necessary research and demonstration.
  - 1.2) Service and support the post-harvest and marketing activities.
  - 1.3) Service and support the production factor.
  - 1.4) Produce the plants and animals in the center to demonstrate and to be the source of income deepens on the resources in the center.
- 2) Development and support the professional farmers
  - 2.1) Determine main and alternative occupational to the farmers depends on the area and environmental.
  - 2.2) Promote the occupational in agricultural and others.
- 3) Social and environmental development
  - 3.1) Promote an aggregation of the farmers to be strong self-reliance.
  - 3.2) Cooperate and collaborate with local authorities especially Sub-district Administration Organization.
  - 3.3) Promote the farmers to participate and response in guarding the commonwealth.
- 4) Coordinate and cooperate with the government and private office for development.

The coordinate and cooperate with the government, local authority and private office for development are done by using the mechanism of the Royal Project development center working group. The group is leading by the president of the Royal Project development center. The group consists of the representative of the related sections and the local Sub-district Administration Organization. (Noppakoonwong, 2007)

### **2.1.2 The Royal Project Foundation Organization**

The Royal Project Foundation itself is organized in a simple way, with the core activities of development, research and marketing comprising the three main branches of the organization tree. Let review the chart from left to right. Firstly, we have the research division. There are divisions for each of the major groups of crops (fruit tree, vegetables and flowers) and one group exploring biotechnology. In this chart, several other research functions (such as reporting and information) have been

combined into one box – “information and administration”. Next in the chart is the division for managing the four Research Stations, Ang Khang, Intanon, Pang Da and Mae Lod. These are not managed by the Research Division. This is because the Research Stations are organizations in their own right, with permanent staff and infrastructure. Thus, managing them is a different and more complicated task than managing research projects. (Highland Research and Development Institute, 2007b)

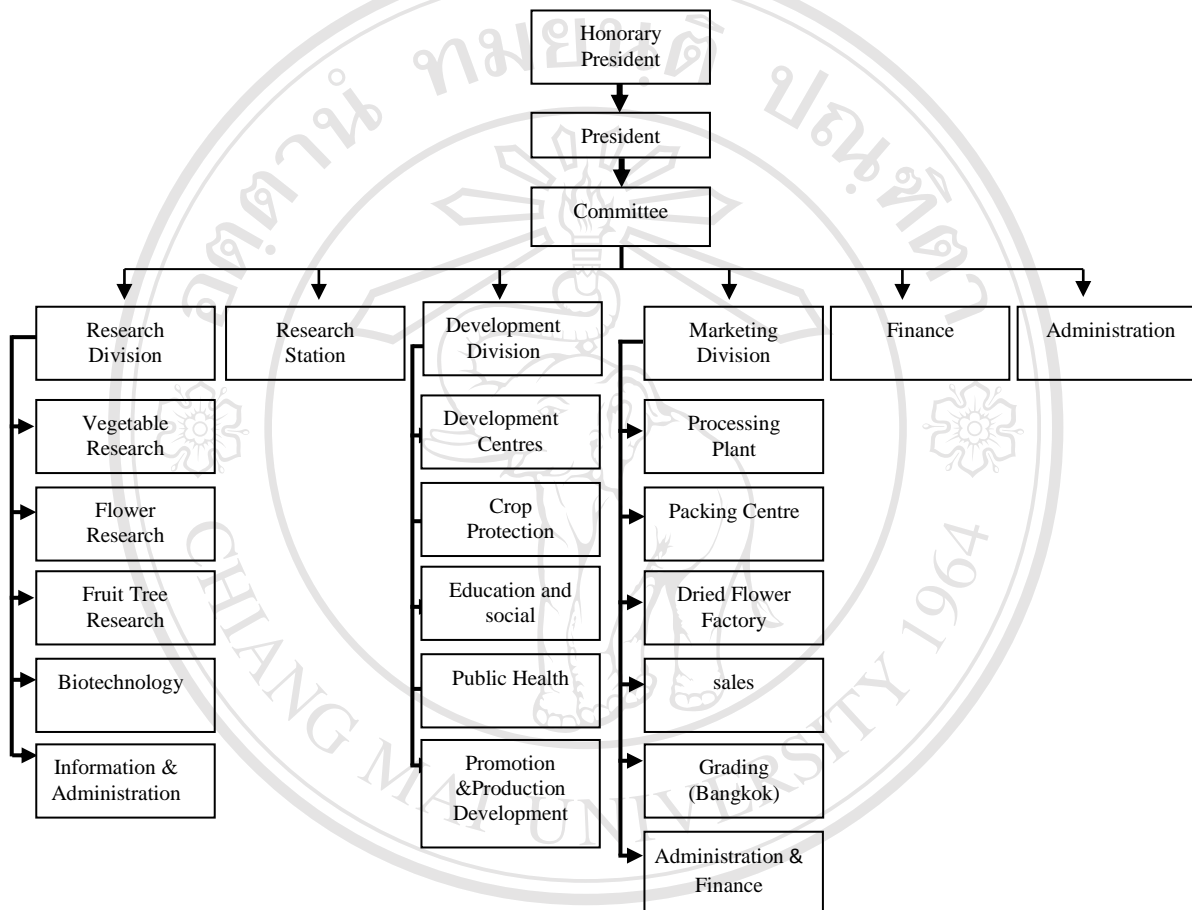


Figure 2.1 Chart of the Royal Project Foundation Organization

### 2.1.3 The operation of the Royal Project collaborated with other sections

Noppakoonwong (2007) noted that the coordinate and cooperate between the Royal Project and other sections in the first phase of the Royal Project, there are the cooperation and help in highland area development both internal and abroad as following.

**1) The internal cooperation,** there are both educational and government institutions cooperated in operation as following.

- 1.1) Kasetsart University cooperates in the research of winter crops.
- 1.2) Chiang Mai University is the volunteer to suggest and promote the highland agricultural to the hill-tribe and join to the research of winter crops.
- 1.3) The Border Patrol Police cooperates to suggest, caring and guarding for the officers promoted to the hill-tribe.
- 1.4) Royal Irrigation Department helps to solve the water shortage problem at the Royal Project development center or research station.
- 1.5) Department of Agriculture surveys the cultivation of opium including research and promotes Arabica planting.
- 1.6) Land Development Department surveys and classifies the soil, studies the Land Economical and land usage planning.
- 1.7) Royal Forest Department operates in reforestation.
- 1.8) Department of Agriculture Extension coordinates to develop and promote the highland agricultural.
- 1.9) Office of Permanent Secretary for Ministry of Agriculture and Cooperatives is the coordinate unit for the Royal Project.
- 1.10) Thailand Institute of Scientific and Technological Research researches and test to implantation the winter mushroom.
- 1.11) Department of Industry Promotion researches the Fiber creation from Linum plant.
- 1.12) Maejo University promotes the agricultural occupation to the hill-tribe.

**2) An aboard cooperation**

- 2.1) United Nation: UN, in 1972 the United Nation realized the opium crop substitution and supported “UN/Thai Program for Drug Abuse Control” program, His Serene Highness Prince (Mom Chao) Bhisadej Rajani, the president of the Royal Project was the president. This is the starting of an Alternative Development Unit

of UNODC in the present. The UN/Thai Program for Drug Abuse Control supports for the budget and the staffs to help occasionally. At that time, the promotion and development were done in Chiang Mai province at BanMaetho (Hod district), Banpui (Maejaem district), Bankhunwang (Sanpatong district), Bankhunchangkhan (Muang district), Doisammuen (Chiangdao district) and Bankhum (Fang district).

2.2) U.S. Department of Agriculture, during 1973-1986 supports the budget to the Royal Project in the highland agricultural research for 20 million Baht annually. It was resulting in agricultural knowledge gaining especially the research of finding the appropriated species and varieties of plants for highland planting, study of planting and caring. The other researches total 81 projects including the winter fruits, shellac farming, Arabica coffee, tea, cut flowers, strawberry, planting system, mushroom cultivation, forest silk, dyed vegetable, soil conservation, potato rhizome production, onion breeding and production, winter vegetable, grains, herbs, dried ferns, chrysanthemum, vegetable oil for industrial purposes, economical use of water, improvement and seed production of rice, prevent and eliminate pests and weed control. (The Royal Project Foundation, 2010)

2.3) Taiwan, the Taiwan government cooperated and help since the project establishment in 1971. In the first phase, it was the proposed the specialists to give the knowledge and consulted in the winter plants and gave the winter plants for breeding, demonstration planting and encourage planting. Then, the vegetable project, forest project and village development were established with the cooperation until now.

2.4) Other countries, the Royal Project has got the cooperation from many counties in seeds, animals and the operation machines from Australia, France, India, Indonesia, Iran, Israel, Italy, Japan,

Lebanon, New Zealand, United Kingdom and West Germany.  
(Noppakoonwong, 2007)

From the above background of the Royal project, it is shown that during 44 years, the Royal Project had done the operations with clearly and steady target, approach and operation processing. In the operations to develop the highland area in Thailand for 38 places, they are covering the area of 1,755,625 Rais, 35,497 households with totally 150,019 people earning benefits. (The Royal Project Foundation, 2013b) Including the cooperation both internal and abroad in researching, development and marketing, they are in order to improve the people on the highland area's well-being, reduce the crop additive, properly and indissoluble living with the forest.

## **2.2 Success and success awards of the Royal Project Foundation**

His Majesty the King, was established the Royal Project to promote and develop the career for the hill-tribes for well-being, reduction of opium cultivation areas and restore the forest and stream. Nowadays, the task of the Royal Project is expanding widely covering the high mountain area and the operation results are as following. (The Royal Project Foundation, 2010b)

### **2.2.1 Economy**

#### **1) Increasing income for the people on the highland area**

In the past, the people on the highland area built their house in the forest and did the agricultural by shifting cultivation for planting and living by the wild products collecting. They are the forest and natural resource destruction which is the headwater. Besides, they were planted narcotics crops such as opium. This is affected to the stability of the country. From these reasons, the Royal Project aimed to develop the occupation for the hill-tribes to increase the well-being in the area of opium cultivation. This is resulting in restriction of shifting cultivation and forest destruction aiming in the research propagation to the farmers for the career. (Center for Applied Economics Research, 2004) The report of Pasowang (2002) noted that, the study of the changing in economic and society of Hmong farmers in the Inthanon Royal Project found that staffs have done the following.

- 1.1) Promote nearby farmers to earn more income by planting including the winter vegetables, flowers, fruits, farm products, husbandry and fishery.
- 1.2) Develop the basic factors and quality of life of the cooperated hill-tribes to get the better well-being.
- 1.3) Support the demonstration research and seeding, animal species.
- 1.4) Conserve, restore for the natural resources and environment cooperation with the related units by determining the clearly scope of either forest area or planting area. And the reforestation shall consider the benefit of the forest. For the agricultural area shall consider the slope of the ground and water supply.

Prasomsuay (2009) reported noted that the systematic and completeness of working, the tasks are divided into sections consist of Office, Accounting and Finance, Research, Development, Marketing, Research Station and special task.

It is resulting in the better well-being of the hill-tribes in the Royal Project development center as well as income from agricultural by using the development and research. From the research by Chiang Mai University (2010), the calculation of the poverty line in 2010, the average income of the hill-tribe farmers in the Royal Project development center is 144,375 Baht/household. The average of the poverty line for food is 38,580 Baht/household and the gap of poverty is 140.13 and food poverty is 216.16. The both poverties are in positive; they are shown that in average the households in the Royal Project development center are not in poverty and very far from poverty. But, about 27% of the households are poverty and about 20% are in food poverty.

From that research, it is shown that the success of helping the hill-tribe farmers to gain more income above the poverty line for 73%. The almost income is from agricultural that the Royal Project is purchased the agricultural products from the farmers. For the products, the product value for Thai people and the hill-tribes in the northern is increased year by tear. The value of the products passes the marketing section of the Royal Project is not less than 280 million Baht and Doi Kham factory produces the food approximately 200 million Baht annually. The Royal Project is aimed



to improve the quality of the products. In 1988, “Doi Kham” products are awarded the honor of Thailand export in vegetable, fruit and canned fruits of the year 1998 from THAI EXPO AWARD 1998. (The Royal Project Foundation, 2010a)

In addition, an alternative income is from the development the Royal Project development center as the traveling spot. From the study of Chiang Mai University (2010), there are 8 centers are traveling spots consist of Huayiluek, Watchan, Maesamai, Nonghoi, Intanon, Angkhang, Huaypong and Numrin. In the 2009 fiscal year, the income from ticket fee is 115,555,000 Baht. (The Royal Project Foundation, 2012)

### **2.2.2 Social**

#### **1) Quality of life**

Almost of the highland area, the transportation is in difficulty, the people have a less chance to get the government’s welfare in educational and sanitation. In the past, there are few numbers of the people on the highland area that can read and write Thai. And if they were getting sick, the treatment was done by the way of tribe or using opium to relieve the pain. But, their quality of life is better when the Royal Project came to do the project in the area.

Research by the Highland Agricultural Development in year 2000 found that people aged over 13 years are educated 65.40% and 34.60% percent are not educated (Highland Agricultural Development, 2000) but, almost of the working age are not educated. And the study of Chiang Mai University (2010) reported that the hill-tribes in the Royal Project area with age over 13 years and have not been studied are at 24% and the hill-tribes who are in school age (7-12 years), they are only 3% not in education. It is shown that the education currently is thoroughly in the Royal Project area and the hill-tribes are higher focusing on education compared to the past.

The Royal Project is also promote and develop for the socials to keep the hill-tribes stability in their career, develop the life-skill, develop the leadership, honest career, promote an aggregation in community by using the closely participation of the community, local authority and the government offices. (The Royal Project Foundation, 2011b)

Reduction of the number of the citizen on the highland area by campaign of the birth control practice comparing to the birth rate in the past. It is shown in the study of Chiang Mai University (2010) that the result of citizen increasing rate is in negative at -0.53%. And the survey result of the attitude for having the children more than 2 in the family, the 57% of the household in the Royal Project development center mentioned the children over 2 is adverse effect. It is accordingly with the study of the economy and social conditions for the farmers in the Royal Project development center in 2005, the result of birth rate is reduced for 6.15%, showing the better birth control practice and sanitation on the highland area. (Chiang Mai University, 2005)

In drug condition, from the preventive and correction of the drug problem by the foundation in the community, these actions are treatment and follow up, restoration after treatment, the community surveillance for drug, resulting in reduction of drug problem. (The Royal Project Foundation, 2009a)

For the sanitation of the people, from the survey by Chiang Mai University (2010) found that almost of the households are accessed to the sanatorium or public health service at 93% and 15% of using the hospital service. It is shown that the hill-tribe can obtain the health service in high level. Almost of the illness are stomachache and diabetes.

The accommodation of the farmer is also better either the stability of housing and using the good material for housing. The few numbers of the farmers are still used the impaired material for housing. The toilet using, it is only 3% has no toilet. And electrical using, 98% of the farmers' household are living with electricity. (Chiang Mai University, 2010a)

## **2) Reduction of the opium cultivation area.**

From the royal initiative of His Majesty who want prosperity, equality of various tribes living on them in different places and a life that is not dependent on income from opium, His Majesty gave the Royal Project which is the pilot project since 1969. (Chamnivikaipong, 2009) And the Royal Project Foundation is the world first project that can eliminate the opium growing areas in creative ways by the properly use of natural resources on the highland. It is the use of the research to promote and develop the hill-tribe to plant the winter vegetables instead of opium cultivation with perfectly

success. It is resulting in the completed opium growing disappeared from Thailand. (The Royal Project Foundation, 2010a) From the survey of the United Nation found that before 1979, there were more than 150,000 Rais of planting and 300 Tons of the product in Thailand. And the survey of the Office of The Narcotics Control Board (ONCB), in 1984-1985 there were only 54,853 Rais of planting area and expected product of 50 tons. And the years since 2003, the planting area found were only 1,500 Rais. It is shown that the opium cultivation area was reduced by the operations of the Royal Project as well as the sustainability opium cultivation problem solving. (Chiang Mai University, 2010)

### **2.2.3 Environmental**

#### **1) Natural resources on the highland (soil, water and forest)**

Since the Royal Project Foundation promoted and propagated the research in agricultural occupations, properly crops planting, it is resulting in the destruction of natural resources on the highland reduced due to the scope of the use of arable land to prevent adding intrusion into the forest. Moreover, there are promotions and creation of awareness to the highland citizen realized of the importance of natural resources which is the water source. From the mentioned operations, the highland citizen is integration to help conserve natural resources that can be seen during 2009-2010. Public participation in forest restoration and reforestation of watershed residents are result of total area of 941,423 trees for 6,431 Rais. It is including the preparation of the fire protection steak, reducing soil erosion by the vetiver planting in soil and water conservation system and pavement for 17,859,870 trees. The encouraging farmer to improve soil fertility is also included by the production of compost, liquid bio fertilizer and manure. ( The Royal Project Foundation, 2010b) It also has a joint promotion campaign to reduce pesticide use in capital projects to reduce the toxic residues in the soil and water source. The results of the laboratory analysis of soil and water in the Royal Project area in the year 2010 found that the percentage of monitoring soil quality through soil quality standards in accordance with the National Environment Board No. 25 (2004) for 14 items is 43.98%. And a percentage of the water quality monitoring through the surface water quality standards type 3 according to the National

Environmental Board No. 8 (2537) for 20 items is 73.03%. (Highland Research and Development Institute, 2011c)

#### **2.2.4 Award of success**

Noppakoonwong, (2007) reported success of royal project has well-known in many countries around the world regarding to peacefully narcotic crops elimination. This project, furthermore, created international understanding which caused the project many award as below;

- 1) Magsaysay Award in International understanding ,31<sup>st</sup> August , 2531 .  
By cooperative to peacefully stop narcotic planting which was creative project and promote international understanding.
- 2) The Colombo Plan Award in substitution crops, 21<sup>st</sup> December , 2547.
- 3) Tourism Award by Tourism Authority of Thailand in B.E. 2543 and 2547 (Ang-Kang Royal project).
- 4) Thai Expo Award 1988 (Best Thai exported product standard) in vegetable, fresh fruit and canned fruit under trademark “Doi-Kum.
- 5) Thai Best Quality Product Award 1990.
- 6) Thailand Organic product Standard certified by Department of Agriculture.
- 7) The Royal Project’s products were certified by Hazard Analysis and Critical Point (HACCP) which is warranted assessment, based on science, and hazard control in every procedure to ensure customer about product quality, safe and clean.
- 8) Award of Good Agriculture Practice (GAP) by Department of Agriculture, Ministry of Agriculture and Cooperatives.
- 9) Good Manufacturing Practice Standard (GMP) in packaging and product manufacturer. Certified by The Office of Agricultural product standard and international food, 19<sup>th</sup> November, 2547.

The above success and award of success of the Royal Project’s operation, it is shown the result of the past operations that can help the people in highland area for the better living in economy, social and environment, including admitted by other countries with the honors. In addition, there are the knowledge in research, the operations in

marketing and development, the expertise and learning center that can be used in other highland area development as the Extended Project brought the knowledge from the Royal Project to the Extended Project in operation to develop the quality of living for the highland people with balance living with environment.

## **2.3 Highland Development in the Country and Aboard**

### **2.3.1 Highland Development in the Country**

There were 15 highlands tribal (totally 1,203,149 persons), dwelled in 20 provinces in area of 67,220,000 rai. In 20 provinces, including Chiang Mai Province, Chiang Rai Province, Mae Hong Son Province, Phayao Province, Phrae Province, Nan Province, Lampang Province, Lamphun Province, Tak Province, Phetchabun Province. Sukhothai Province, Phitsanulok Province, Loei Province Kamphaeng Phet Province, Kanchanaburi Province, Uthai Thani Province, Suphanburi Province, Ratchaburi Province, Prachuap Khiri Khan Province, And Phetchaburi Province. Most area was watershed forest which facing deforestation, shifting cultivation, narcotic, poverty and transportation difficulties. (Highland Research and Development Institute, 2006)

The development of the Royal Projects make more assist to people on highland form the state government, such as the Royal Highland Agricultural Development Station, Highland Agricultural Development Station, Pang Tong Agricultural development and service centers, Agricultural Research and Development Center at Chiang Rai etc. They have different implementation process as the high agricultural development, such as Highland Agricultural Development Station has operations process as follows:

**Highland Agricultural Development Station** is the project from the royal initiative of Her Majesty the Queen. Currently, there are 15 places in the northern Thailand as following (1) the Highland Agricultural Development Station, the project under the Royal Initiative Hueyyokpaso (2) the Highland Agricultural Development Station, the project under the Royal Initiative Doibala (3) the Highland Agricultural Development Station, the project under the Royal Initiative Doiaompai (4) the Highland Agricultural Development Station, the project under the Royal Initiative Ban Thanthong (5) the Highland Agricultural Development Station, the project under the Royal Initiative Ban Pangkhon (6) the Highland Agricultural Development Station, the project



under the Royal Initiative Ban Paeksam ( 7 ) the Highland Agricultural Development Station, the project under the Royal Initiative Phuphayak (8) the Highland Agricultural Development Station, the project under the Royal Initiative Hueymaekeng ( 9 ) the Highland Agricultural Development Station, the project under the Royal Initiative Ban Doibo (10) the Highland Agricultural Development Station, the project under the Royal Initiative Ban Sajuk-Sakieng ( 1 1 ) the Highland Agricultural Development Station, the project under the Royal Initiative Bansaodang ( 1 2 ) the Highland Agricultural Development Station, the project under the Royal Initiative Ban Hueymueng-ngam (13) the Highland Agricultural Development Station, the project under the Royal Initiative Doimonlan (14) the Highland Agricultural Development Station, the project under the Royal Initiative Sobkhun and (15) the Highland Agricultural Development Station, the project under the Royal Initiative Banpaka . Areas are most threatened ecosystems upstream areas, lacking of abundance and risking areas vulnerable to the spread of drugs including the issues of security along the border between the countries. Operation which in each station is intended to operate in differentiation depends on the initiative of Her Majesty the Queen.

Highland agricultural center was carried out through the Office of the Secretary-General and supervised by Department of National Parks, wildlife and plant conservation. The office of the Royal project Operational budget of the station has been supported by the Office of the Secretary-General and cooperated organization in the field. The major activity in each station consisted of field research and demonstrations, occupational promotion, improve potential skill of agriculture and animal, restore water resource, stop deforestation, revive ecosystem and being natural tourist attraction. After, the result would be reviewed by privy counselor and relevant chief officer. Each station was separately operated from the others and had operational chart as below; (Department of National Parks, wildlife and plant conservation, 2011)



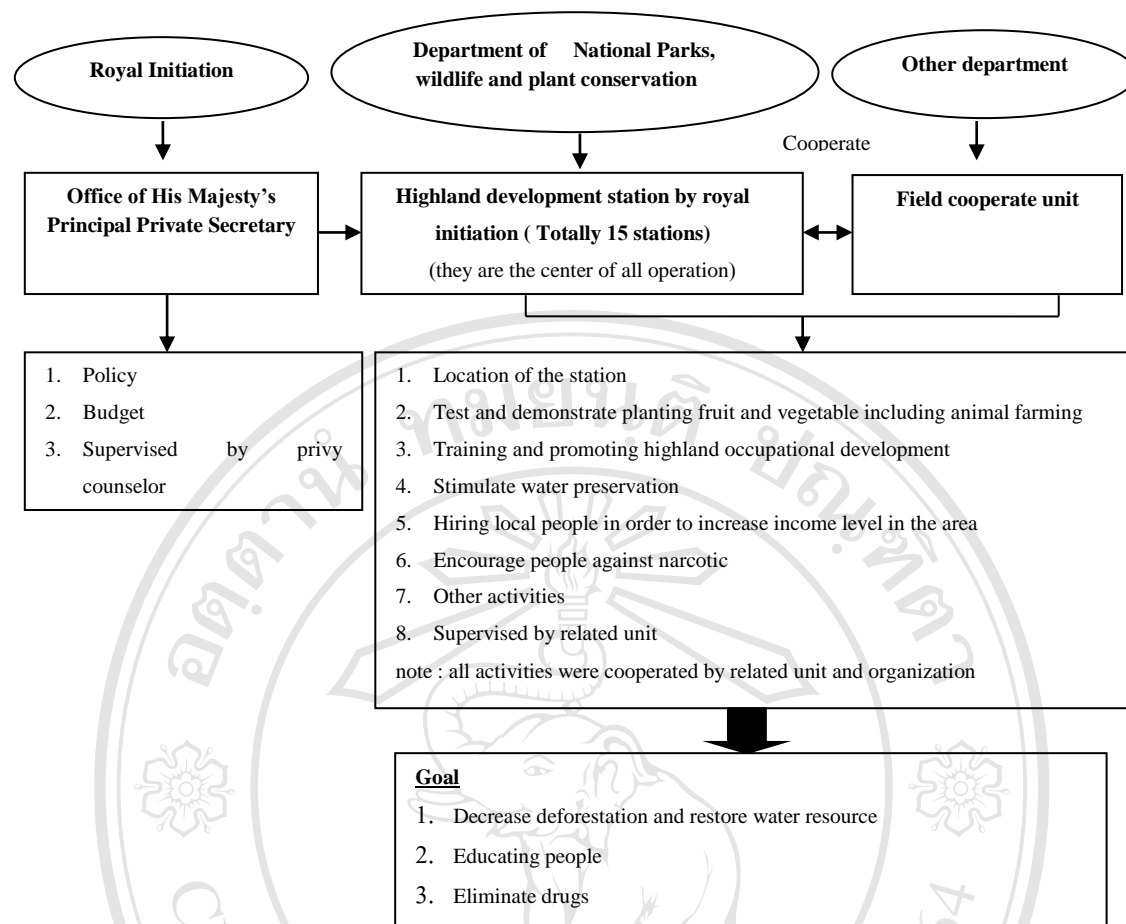


Figure 2.2 Chart indicated operation procedure of Highland Development Station

Source : Department of National Parks, wildlife and plant conservation, 2011

From the charts above, though each station has operated in different way (which depended on budget source, area of operation and process) but truly main point was they were all cooperated with government unit and closely supervised by his majesty the king that was the key to success of the project as follows:

- 1) Sources of the budget the Royal Projects is directly supported by the Budget Office through Office of the Royal Development Projects Boards, but the Highland Agricultural Development Station is supported by the Royal Secretariat and others agencies.
- 2) Area of operations, the Royal Project Foundation has a fairly large operation compared to the Highland Agricultural Development Station.

- 3) The operation concept, the Royal Project Foundation has operations covering all aspects including the soil and water survey, reforestation, research, leading to the promotion and marketing. But the Highland Agricultural Development Station has the operations in some aspects. The operations are depending on the purpose of each station establishment.
- 4) Operation process, Central office for the Royal Project Foundation has supported the operation of all 38 centers / stations. The Highland Agricultural Development Station work at each station following the objectives of without a central office.
- 5) The process of doing research and development, the Royal Project has qualified staffs from university, agencies and the private sectors including researchers with expertise of the Royal Project. The Highland Agricultural Development Station will be the demonstration inside the station which operates from government agencies such as the Office of the Conservation Area. Livestock Office. Irrigation projects, etc. (Department of National Park, Wildlife and Plant Conservation, 2011)

In 1972, when the first international development project was initiated, the US-funded Thai Agricultural Research Service project. The following year, the joint US- funded Thai - UN Crop Replacement and Community Development Project was launched in Chiang Mai and Chiang Rai province, And has joined the new project there were 168 agencies working with 31 government department, supported 49 international donors. The main counterpart government agencies were the Royal Forestry Department and the Department of Land Development, under of the Ministry of Agriculture and Cooperatives, and the Department of Public Works, under of the Ministry of Interior.

In addition to Royal projects, there are other highland developed Project , their international donor agencies and implementing agencies : (Highland Research and Development Institute,2007b)

- 1) In 1972, Thai/ UN Highland Area Marketing and Production Project (TUHAMPP)
- 2) In 1981, The Mae Cham Integrated Watershed Development Project (MCIWD)
- 3) In 1982, The Thai-German Highland Development Project (TGHDP)
- 4) In 1985, Doi Tung Highland Development Project
- 5) In 1986, The Thai-UN-Norwegian Church Aid Highland Development Project (TUN-HDP)
- 6) In 1986, The Thai-Australia Highland Agricultural and Social Development Project (TAHASDP)
- 7) In 1986, The Thai –UN Pae Por Highland Development Project (TU-PPHDP)

Each agencies has a pattern, Implementation process and operational objectives of different projects, such as Thai – German highland development project, has the operation system followed;

### **Thai – German Highland Development Project**

The Coordination Center for Solving Hilltribe Problems and Eliminating Narcotic Plantation, Army Region 3 referred in Direkwattana (1995) Thai – German Highland Development Project was initiated by an agreement of two countries (Thailand and German) in order to improve living condition of highland people in northern Thailand, meanwhile, maintain harmony between life and ecosystem. It started in 1981 and finished in 1998 (totally 3 operation sites).

- 1) Wawee sub district area, Maesuary district , Chiangrai province, start operation on 1981.
- 2) Lang basin area, Pangmapha district, Maehongson province.
- 3) Huaypooling sub district area, Muang district, Maehongson province.

The ultimate objective is to improve the quality of life of the target population in the same time of aiming to enable them to live in harmony and balance with the environment. And there are 6 items intended as following.

- 1) Promote and improve agricultural to enhance the livelihood of the people with higher performance.

- 2) Conservation of natural resources, the use of natural resources with useful and effectiveness.
- 3) Provide the social services in education and health thoroughly. Including improving necessary fundamentals to have better living conditions of population.
- 4) Promote national security by integrated rural development measures to resident the population, development of national security including opium cultivation reduction.
- 5) Support the integration for the target population to complete Thai citizenship. The awareness and practice that is required by law practical and regulations of the government.
- 6) Develop the capacity of organizations and institutions of government and public organizations to carry out the development work efficiently.

#### **Strategy in organization development.**

- 1) Principle of integrated development (RRD / IRD) is the main concept of Region Rural Development, customized to the strategic development of the project.
- 2) Focus to develop in the various activities significant harmony and associated impact on the activities in agricultural sector, the forestry sector, the health sector, education sector, fundamentals sector, community development sector.
- 3) Attempts to define the concept and measures appropriated to the area and target population.
- 4) Focus on planning and plan management continues to be stable and well defined the set of activities ongoing and flexible.

#### **Operation time** are divided into 4 stages

- 1) Preparation period (Orientation Phase) for approximately 2 years, major events are data surveying, preparing for the project management, defined and implement urgently activity, preparation of project documentation, coordination with various government agencies to carry out the development works, preparation of the target population, the master plan and action plans issue.

- 2) Operation period (Implementation Phase) for approximately 5 years. It is a range of fully development activities in the region as it is defined in the master plan and development plan and annual development plan. At the last of this phase it is a preparation of a master development plan for phase 3.
- 3) Follow up period (Follow up Phase) for approximately 3 years. The operation at this stage is focusing on the important issues that are still present as well as preparation for the continuity of development in the period of the project was withdrawn.
- 4) Activities after the project ends period (Post Project Activities) for approximately 4 years, focused on the job transferring.

The operation according to the development project by helping is the time limitation. When the time is over, the support and help of the project, it must be stopped. But the development is not terminable and must continue uninterrupted by various government agencies responsible to operate continuously.

**There were related government unit** which responded and continued the project such as Office of the Narcotic Control Board was the project coordinator which coordinated with 6 main government departments that were Ministry of Interior, Ministry of Agriculture and Cooperatives, Ministry of Public Health, Ministry of Education, Ministry of Commerce and Ministry of Labour.

- 1) Steering Committee is an organization of central adviser in the department level.
- 2) Thailand - German Development Committee at provincial level, with the Governor as Chairman and the head of the government agency concerned as members.
- 3) Thailand - German highland development working group at district level heading by the sheriff and the head of government sectors as working group.

**Budgets in the operation** were supported by German government, Office of the Narcotic Control Board and relevant organizations.

**These can be divided into 4 points** as below; (Phanommitr , 1997)

- 1) Land use planning and watershed management sub-community.
- 2) To prevent and solve drug problems. By community organizations.
- 3) The extension of non-agricultural occupations.
- 4) Rural financial management.

All the points were leaded by important rules which were p, human resource development, planning-follow up and evaluation, male and female roles consideration and working with disadvantaged people. Mechanism and implementation of the project was;

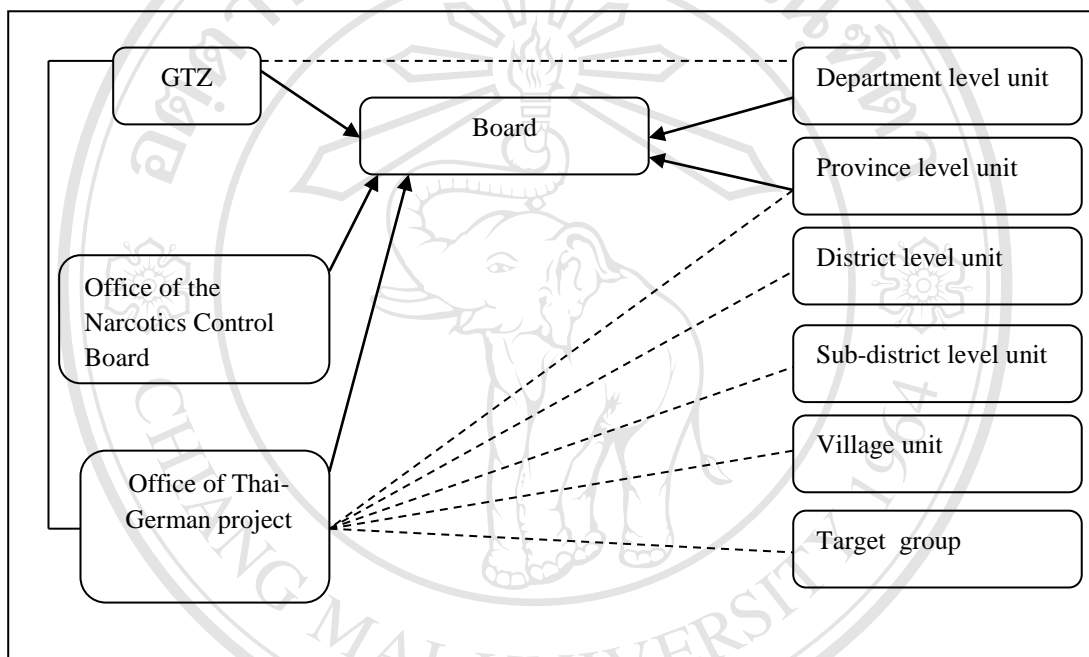


Figure 2.3 Chart showed implementation of Thai-German highland development project.

Even though, in comparison, the way to implement between the royal project and Thai-German highland development project was differentiated by project characteristic, range of area, operation period, budget and process. But the purpose of improve people's living condition and integrated working with the relevant authorities as well as remain harmony of living were similar.

- 1) Characteristic of the project is a project of international cooperation. It is an operation between the government of Thailand and Germany. But, the Royal Project Foundation is a project of the royal initiative.



- 2) The size of the project operation, the Royal Project Foundation has a large area of operations. Each area will have operations covering all dimensions. But, the Thailand - German highland development project has small area of operations focusing on the implementation of specific objectives in each area.
- 3) Duration of the operation, the Thailand - German highland development project will have to clearly schedule of operation for ending of the project.
- 4) Budget for operation, the Thailand - German highland development project is supported by the German Federal Republic Government, the Office of The Narcotics Control Board (ONCB) and the responsible agency. The Royal Project Foundation has received the budget from the government.
- 5) Operation process, the Thailand - German highland development project is not complexity operation and there are not many people use. Because there is less space operations. But the mechanism of joint operations with other agencies in the area.
- 6) Research and development in the area, the Thailand - German highland development project is geared to meet the specific research and development objectives. But, the Royal Project Foundation is the research and development in all dimensions.

### **2.3.2 Highland development aboard**

There were hill and highland development in many countries ,such as Nepal, Switzerland or Mexico, due to many concerns (for instant, natural resources and water, lost of biological varieties and including drug and national security). Therefore many organizations in many countries have participated to handle the issues, by being supportive both research and development, moreover neutral international organization such as United Nations Development Programme (UNDP), UN Office on Drugs and Crime (UNODC). Since 2003, FAO was assigned by UN in order to create new idea of highland development which was sustainable highland and water resource development and plantation planning.

From the highland area development in other countries, there are lots of developers and researchers in many different countries; most of the major anxiousness is environmental concerns. Barrow (2005) noted that about the development at Cameron Highlands Malaysia, the highland agricultural crops, flowers and fruit trees are caused the destruction of many forests, losing of biodiversity, soil erosion and pesticide pollution, which affect the safety of the water and the risk of flooding. So, before it is too late, it requires the development of sustainable agriculture and the development of tourism industry develop and improve the lives of local people.

Bajracharya (2010) has studied the use of new tools and methods for planning and management of protected areas on the mountain Sugamatha National Park and Buffer zone in Nepal. By studying as the pilot area using the geographic data in the survey, edit, analyze, and display processes in various forms of development by the modeling elements associated with the spatial and time. Mountain Research and Development (2011) has studied the professional development and a green economy for sustainable development of mountain areas. Most of the social systems are developed mountain ecosystems, but lacking of economic. In the next 20 years, there will be many issues arise; the renewable natural resources will decline continuously, climate change and pollution in the world. The population of 1/6 is under the poverty line, lacking of food security and the global financial crisis. Thus, extending of the ecosystem in the form of sustainable production and consumption patterns, the green economy is sustainable development, to alleviate poverty for the hill-tribes.

Council for Renewable Natural Resources Research of Bhutan (2010) evaluated plans for forest management in Bhutan by the management of the public sector in the national forest near the village. By planting a single tree selection system in 10 years, there was no impact on the various constituents and exploitation of the area of the village near the forest.

In addition, the use of various technologies for the development of highland is so that people have a better living. Huaiyu (2010) has explored the use of technology to improve connection rye and farmland to steep uplands spread in southern Yunnan. The rice yield was increase significantly and the income generated from the production of rice increased, reduce the problem of food shortage on the highland area, the farmers

increased rice cultivation without expanding the area under cultivation caused of sustainable development on high ground in Yunnan. And Mountain Research and Development (2001), noted that even there are numbers of agricultural technology in modern Mexico, but not implement in the mountains of rural life on the Magna Central Mexico caused the failure of the development area. The most of populations live on highland area with very high slope, lacking of soil quality, uncertainty rainfall, restrictions on farming. They are all problems causing poverty in rural areas. In 1915, the government has developed agriculture. The green revolution is to increase the capacity by using technologies from developed countries focusing on the production of major crops such as wheat, corn, beans, and rice. However, such agriculture sector has been done by the big business. It is not affect for more than 68% of the rural population, mostly living in the central and southern Mexico. So if it is developed to strengthen the rural economy, it has to develop sustainable agriculture farmers by a variety of plants, which reduce environmental risk in monoculture, including the conservation of cultural heritage, principle of participatory research in the country.

From the mentioned of highland area in other countries, it is shown that the highly focus in highland area development especially the ecosystem and social conservation. There are numbers of the research of, the development process. If the knowledge and those methods are adapted with knowledge of the Royal Project to use in highland areas in Thailand, it would make the area a highly effective in economic, social and environmental. The people on the highland area can coexist balance with environmental.

## **2.4 An operation of the Extended Project**

### **2.4.1 Background of the Extended Project**

Due to population resided on the highland and related organizations aware of Royal project's success for applying knowledge to pass on to farmers to better their life and living, therefore, organization and communities has asked for help and support from Royal project. (Highland Research and Development Institute, 2008) The Government recognizes the importance, so, established a Highland Research and Development Institute (Public Organization) in 2005 under the Ministry of Agriculture. Its objective is to promote and support research and development projects, promotion

and collaboration with the Royal Project Foundation, government agencies, state enterprises, related institutions and the private sector, both domestic and foreign in research and development and transfer of appropriate technology on the highland to other communities. (Highland Research and Development Institute Ordinance, 2 005) According to carrying out of the Extended Project since 2006 until present, it has been carried out on 29 areas in 8 provinces and there 120,325 people. (Highland Research and Development Institute, 2010)

This project operate to expand Royal project success to highland communities to teach them career and keep environment balance and they can depend on themselves and remained communities' identity and culture and also included communities' strength through participation process for sustainable stability of highland people. This integration must be corporate by government organization, local organizations and other partnership and supported the group of communities to depend on themselves and reached knowledge and external capital source (Highland Research and Development Institute, 2009a)

**2.4.2 Guideline for operation of the Extended Project.** (Highland Research and Development Institute, 2008)

To strengthen communities to be able to depend on themselves and live appropriately and sustainably as follows;

- 1) Farmers had more income apart from their career based on knowledge from Royal project by integration of technology and folk wisdom.
- 2) Farmers have grouped to be self-dependence to strengthen local communities.
- 3) Set the boundary of reservation area and agriculture area and area management by participation of communities, reserve soil and water appropriately.

**2.4.3 Concept of project development of the Extended Project in the future.**

- 1) The variance of climatic may caused the impact to the growth of the plants on highland areas and losing of biodiversity including the percussion the communities' way of life on highland area.

- 2) Result of free trade has an impact on the production and product marketing in the highland area resulting in more competition.
- 3) Restrictions of production costs and transportation costs, they are due to the remote and rural communities that may impede economic activity.
- 4) The decline of the natural resources is resulting from the use of unbalance with the environment.
- 5) Restrictions of state law and policy are practice in determining the scope and control of land using including promoting reforestation and water source.
- 6) The development activities are difficulty especially the remote and rural communities where the population is less educated than the national average, including the cultural differences of the various tribes.
- 7) Economic Development for the highland is under climate change and free trade liberalization.
- 8) Strengthening promotion for the community and the cultural identity to support tourism to be self-reliant in the long term.
- 9) Development and maintenance of fundamentals in the Royal Project community and extension area.
- 10) Promote the participation of the community in the restoration and conservation of natural resources and environment
- 11) Adjust the level of service of station / Royal Project development center as a main learning center (Knowledge Center) by the extension of the Royal Projects in the existing community as a mechanism to extended the learning and participation process of the community in water source level.

The operation of the Extended Project is extension of the Royal Project's knowledge to of other highland area in the country development from the Royal Project's knowledge and local knowledge. This will affect to the food security, income and live a balanced with environmentally sustainable. It is integrated with the various departments. But it is in a starting of operations and operation area has a different in physical, tribal civilization, climate and travel to reach areas. So, an implementation of a lesson or knowledge from the Royal Project's success will have to be chosen properly to the conditions of each area. (Highland Research and Development Institute, 2011a)



## 2.5 Success and Learning

### 2.5.1 Success/Success measuring

The success of an organization depends on many factors including internal and external factors as Ketsakorn (1998) noted that mentioned about the source of organization's success that all organizations consist of Labour and Task. Labour referred to employee, staff or civil servant and Task referred to Mission or all tasks that are under responsibility of each organization. Personnel and tasks is a couple and undividable because personnel is originator of task and lead success to organization and controlled by superior called Administrators or Managers to trail objective of the project. Generally, we can see that the main responsibility of management is coordination between personnel in organization, control, maintain organization and lead success to the organization.

As Ketsakorn (1998) noted that, the sources of success are composed of person and work under a control by management. Thus, person is a key element of the organization because of the success of organization must have a person who has ability and confidence for operation. It is as saying of Seligman (1990) cited in Pipatanangkul (2003) noted that the success of the operation was the result of a combination between talent and the needing to succeed. Some of the works are supported by external factors to achieve success as saying by Suntivong (2006), Key Success Factor is the relationship between the variables can be controlled and critical factors that influence the organization's ability to compete in the market, analysis of the general environment and the industry environment with various tools. This will help to determine the factors that led to the corporate strategy and competitive strategy. The success factors include 7 key factors for success in the competition.

- 1) **Technology:** the expertise in scientific research, ability to make innovative products, expertise in the use of received technology, ability to use the internet to conduct business activities.
- 2) **Production:** production efficiency with low cost, manufacturing using high quality assets, low cost factory branch, high performance of the labor, low cost product design and flexibility to create a variety of products.



- 3) **Product distribution:** strong network of wholesalers and distributors, obtain the sale area in many retail stores, own the retailer is the organization itself, low cost distribution, fast delivery.
- 4) **Marketing:** technical assistance is fast and accurate, customer honored service, ship product to the order correctly, variety products to choose, skilled, attractive style, customer testimonials, smart advertising.
- 5) **Skill:** labor is the superior talent than Know-how in quality control, specializing in the design, expertise in specific technologies, can develop innovative products, can bring new products to market quickly.
- 6) **Organization:** information system rather than superiority, ability to respond faster to improve market conditions, ability to use the internet to do better business better, more experience in management.
- 7) **Others:** Buyer satisfaction in image / reputation, low cost in overall, available at convenience store, staff was very honored to customers, access to capital, patent protection.

The success of the organization consists of person and work under a control by management to operate according to the purpose. The personnel must possess the ability and the confidence to make the operations work out successfully. And the work must have the factors that promote success include technology, manufacturing, distribution, marketing, skills, organizational performance, and more.

Waterman, Peters and Philips (1980) cited in Namwongsa (2008) noted that measuring the success of the operation or performance of the operations of the organization may have several measurement criteria. In case of performance, it should consider the operating factors by using theory 7S of McKinsey (McKinsey 7S Framework) has introduced the concept of measuring the efficiency of the organization's operation by analyzing the relationship of the seven factors as following.

- 1) Structure is structure set up by the process or duties of a job by the staff to work together in parties to meet the objectives.
- 2) Strategy is guideline to help the organization, define and develop a competitive advantage and as a guide to individuals within the

organization that will use reasonable efforts to be successful in any direction.

- 3) System is the proper functioning of the system to assist in the implementation of the strategy to meet the objectives as defined success.
- 4) Style is pattern of behavior in the practical of management is one of the key elements of the environment within the organization.
- 5) Staff is human resource planning in the feature selection and placement of appropriate personnel that can help to drive the direction and strategy of organization to be defined.
- 6) Skill is skill in the practice of human resource which is divided into two mains. Professional skill (Occupational Skills) is a skill that will allow personnel to perform job duties, job duties and responsibilities. Based on the study or to receive additional training and special skills, aptitude or intelligence (Aptitudes and special talents), which gives employees the ability to stand out more than others resulting in better performance and faster progress in the work. The organization will be able to focus on both of two together.
- 7) Shared Value are values and norms that are shared by members of the organization take to become a cornerstone of the administration and practices of staff and management within organizations. It is also called activity group culture classified as a form of administration.

In terms of measuring the success of the consequences may be measured by the results. Pitaksakulkasem (2006) noted that learning and innovation considered as success factors for the company's sustainable growth. It can measure the success of the innovative products of the company from the development of skills and the skills of the researcher, employee morale by income, satisfaction surveys and the number of complaints. The final is measure of the ability of employees from training, experience and performance measurement, is similarly with Child & Klimoski (1986) cited in Pipatanangkul (2003) has created the occupational success evaluation form called Self-rating. The questionnaires consisted of 12 questions. When find the relation to group, we will divide it into 3 groups which are; (1) Job Success (2) Personal Success (3) Career Success and Sa-Nguannam (2002) noted that the criteria to measure the success

of the organization which can be viewed in 2 ways; the success of the organization and practice behaviors that cause the satisfaction to their partners. In fact, an organization may be more successful than other organization. Therefore it is possible that more achieved structural design of it with better criteria. To judge the success of any organization, there are several forms; single criteria and total criteria as follows:

1) The single criteria used to measure the success of the organization.

1.1) The Profit Maximization, the high profit is a single criterion commonly used to judge the success of the organization, until now with the idea that investment that contributes to success is a reflection of the profits. It is generally accepted by economists. The method is to compare the income with cost of all revenue to find the difference of profit.

1.2) The Satisfaction, the organization theorists focus on the alternatives to evaluate the success of the organization. There is an argument against the idea of using a threshold to high profits. Simon cited in Sa-Nguannam (2002) given an idea of a measure of the success of the organizations whether big or small, they aim to earn profits in a steady rate which may not be to the highest profit. The profit from the market in stable condition although not high, but in unpleasant levels of organization, it is sufficient.

1.3) Other Single Criterion, there are many the other single criteria use to measures the organization's success as Campbell cited in Sa-Nguannam (2002) collected a total of 19 factors, but there are 5 commonly ways used to evaluate the success of the organization sorted by popularity.

(1) Overall Performance is measured and rated by an employee or consultant of the organization.

(2) Productivity is measured with the output (Output), which is caused by the actual performance data (Actual).

(3) Employee Satisfaction, obtained from the respondents of the co-workers.

(4) Profit or Rate of Return, it is based on data of accounting and finance.

(5) Withdrawal, this information can be obtained by applying, resignation as well as the absence of staff.

2) The total criteria used to measure the success of an organization is comprehensively index; productivity, flexibility and the stability. In fact, Administrators are set the several targets of organizations, so, often ranked among the organization's success by using the combination of single criteria to meet the goals of the organization such as organizational efficiency, high productivity, Profit maximization and organizational growth. They are all necessary and important criteria to measure the success of the organization.

So to conclude that operation performance measuring is to be measured by various factors, including structural, strategy, system, format, employee, skill and shared value. In term of measuring the success of the operation shall measure the result of operation and satisfaction of the co-workers or operators.

### **2.5.2 Knowledge/ Lesson creating / Learning**

#### **Knowledge**

Knowledge is built by behavior in everyday life. Everyone has own way to build up the knowledge. There are several of the definitions for knowledge such as Jaikhampan (2006) summarized the meaning of knowledge refers to information that has been analyzed and interpreted in order to determine the actual performance. A person has such a performance in differentiation. This knowledge, when applied, will never used up, but it is more productive. And knowledge that can be applied to the benefit actually becomes wise up to the user and can apply that knowledge in a different context. And with Petchphan (1989) has defined meaning of knowledge that it is psychological process of memory in data management which human has learned, searched and observed the fact. The fact has been collected and transferred in form of basic behavior. That is corresponded with Srisuphan (1990) has defined knowledge as perception of the fact and concept focusing on ability to remember and understand and finally familiar with it through reasonable psychology of memory in data reformation.

In addition Tovichar (2006) summarized the meaning of knowledge is as knowledge about the facts and a deep understanding of that fact. It is through a process of education, research; an observation of a person's experience is accumulated and transmitted continuously.

Thus, it is concluded that, knowledge is the fact that humans learn from experience and education to be processed in order to understand and bring out the benefits to heritage.

### **Principle of the ready lesson**

Creating a lessons have to follow procedures and take into account with various factors as saying by Wassana (2009) cited in Chaweesak (1988) noted that about the process of creating instant lesson. There are 4 steps to create the instant lesson is as follows.

- 1) **Planning Stage**, this stage will include the story, scope of the subject and level. The aims are include the general aim and aim-oriented behavior, content analysis, the test construction.
- 2) **Writing Stage**, consisting of sub units called a frame, with the set frame, practice frame, criterion frame arranged in a sequence.
- 3) **Try out Stage**, divided into 3 phases as following.  
Phase 1 trial individually and revised.  
Phase 2 trials as a group and revised.  
Phase 3 field trials or experiments with real classroom and improve user productivity.
- 4) **Implementation** is to take an effectively trial lesson through all the 3 phases apply to students in a typical classroom and widely use. The authors always follow up the using to improve even further.

Creating a learning package is required to take into account with various factors to the theory of Skinner (B.F. Skinner). (Taweewat K., 1985)

- 1) **Operant Conditioning**, the most human behavior consists of responses showing. This behavior is often happens depending on the response rate or the behavior rate of expression.



- 2) **Reinforcement**, it is a stimulus to the response rate changing in the way they want. Reinforcement in the classroom may be ready to give a compliment and / or the knowledge that the act was wrong or abrupt suddenly.
- 3) **Intermittent or Partial Reinforcement**, it is an occasional reinforcement when responding. This reinforcement makes a response more durable and long-lasting than the intermittent reinforcement. This rule is applied to a study made by the occasional compliment.
- 4) **Shaping**, it is to provide reinforcement for behavior change in small increments until behavior closed to the desired behavior. Skinner emphasized that the behavior can be shaped to be achieved by the use of reinforcement. In adopting this rule to the study by the sub-units sequence assembly and reinforced at every step from the first to the last step.
- 5) **Individual Differences**, each student is different, an emotional, social, intellectual. The lesson helps students to acquire the knowledge individually.

### **Learning**

Learning can be done throughout the life in particularly social learning. It is most likely due to imitation and adapting to own lives. As saying by Sukantha (2007) noted that a social learning is learning process that is important to our lives from birth to death. The learning model is not directly taught but learned by imitation, observations and experiments. That is corresponded with Bandura (1986) cited in Kiriya (2008), describes the learning as a behavior or action expression in response to any one of the observation. It can be divided into 2 types: external and internal behavior. Behavior is appropriate to the situation and need to learn. The behavior can be changed by the learning process. Pratueng (1997) cited in Kiriya (2008), there are 2 ways of behavior adjustment of human; learning from result of result and learning from imitation. Learning from the sum of result is learning from direct experience. Human will choose to act the behavior which positively received retribution. The lessons learned from the management of the observation model. The learning from imitation is learning by



observation of important models. Sam-Anggoon (1981) noted that the social learning can be categorized as follows.

- 1) Molding behavior is the instruction to build up a wanted behavior by the teacher using principles of reinforcement to help such as the consolation prize, admire.
- 2) Learning by coincidental that a society does not deliberately taught.
- 3) Imitation is the culture and values acceptant of the following reasons.
  - 3.1) From the intimacy, intimate, chance of giving warming love, physical needs which resulted in a satisfied and happy, imitation.
  - 3.2) One or more of a resemblance to a similar such as age, same province, some values are the same.
  - 3.3) Feeling like outgrowth, it is an impression with other one's action and satisfied when someone said is doing this very well.

Mouley cited in Phanmanee (1995), the sequence of the learning process in 7 steps is as following.

- 1) Motivation is demanding of organic conditions or in a state of imbalance will cause the drive or motivation to drive behavior to replace the prevailing circumstances or in equilibrium. The motivation is a primary to learn and is specified direction and intensity of the behavior to occur.
- 2) Target is the condition after motivated person. The person will also be targeted, this will cause of satisfaction. The target is to drive people to meet physiological behavior. However, it is possible that some people may be targeted to meet the needs of society.
- 3) Availability is the conditions of organic in physical, mental and organs in learning, including growth of the body, motivation, an interesting and previous experience which is a key element in learning. It allows the person to learn differently. Persons who are availability, they may learn better.

- 4) Trouble is facing to the barrier or interception among the behavior and target, cannot achieve the goal, people are stressed. Then try to find a way to reduce stress or finding a solution. This behavior makes learning possible.
- 5) Respond is the behavioral response to the motivation, target, availability or trouble which may begin by selecting the appropriate response or solution to be the best response to the target.
- 6) Reinforcement is when a person's behavior is response and get back in a good result. It may be a reward or reinforcement in such compliments, satisfaction, success, progress achieved or others. It may often organic behavior act and the persistence of desire. And that such behavior occurs frequently and durable.
- 7) The same conclusion is after student achieved to the target. He can be arbitrary or the learning experienced applied in new situations or experiences. It is the extension of learning scope widely.

So to conclude, the social learning is resulting from the imitation process and trying to adapt it to their lives. This can be learnt throughout the life, both from internal and external behavior. It is corresponding to Kamchad (2006) concluded that the learning process happens to human life. It is a process which has its root in the local culture which does not distinguish between learning and life. It happens with several methods; teaching, observation, reading, listening, asking, emulation, imitation and exchange, etc. Key features of the learning process of the community are a group process, learning from doing, earning from actual life problems and learning and working together as a network.

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### The changed form of knowledge status

Nonaka and Takeuchi (1995) cited in Jaikhampan (2006) mentioned about the status changing of knowledge derived from interaction between Tacit Knowledge and Explicit Knowledge and become four forms of knowledge's status changing process called Seci Circle (SECI).

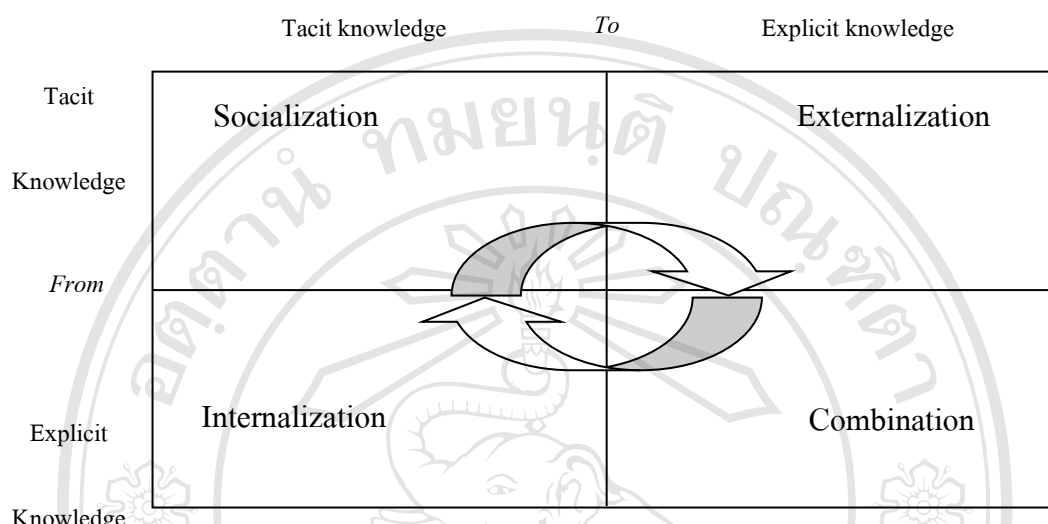


Figure 2.4 SECI Circle

Note : adapted from Nonaka and Takeuchi (1995) cited in Jaikhampan (2006)

**From figure 2.4, this can be explained as below;**

- 1) Learning exchange (Socialization: From Tacit to Tacit) is the process provided interaction between human in different forms. This may cause Tacit Knowledge and Explicit Knowledge among them.
- 2) Externalization: From Tacit to Explicit is the process transferred experiences from working into word or letter. This changed Tacit to Explicit knowledge. It is knowledge that can share to each other easily through information technology tool and communication. This step is the most important for creating knowledge in Seci circle.
- 3) Combination: From Explicit to Explicit is the process combined explicit knowledge together to wider it and has more detail about it. The example of knowledge creating process in this step concludes studying and training in school or institutes.

- 4) Growing knowledge (Internalization: From Explicit to Tacit) is the change of knowledge status from Explicit to Tacit knowledge. Knowledge gained in this stage will become the property of organization in the future.

From the format of changing in knowledge in first 3 operations, it must be exchanged the opinions by the staffs in organization. The format 4, is must be learning by doing. In addition, the SECI circle, it must be endless turning, it is continuous learning.

The practice of the presence of such knowledge in the first three will be devoted to discussion of various views of the personnel in the organization. Part 4 is in a form that requires learning by action. In addition, the circuit Seki Must be continuously circulated endlessly. Create knowledge continuously over time.

Therefore, to make the completed lesson must consider its content and objective, activities and learning process, supporting factors, different physical and social characteristic. Then, lead it to use and evaluate to improve it. To learn from social environment to improve human behavior will be to study from sum and how to learn. There were many factors driven people want to learn. Therefore, learning from the lesson of royal project must aware of succeed forms and factors so that extended area of royal project can be adaptable to use with country, weather and culture and tradition of such areas appropriately.

## **2.6 Related Research**

According to the success of the last royal project, Research and Development of Highland of Northern Thailand (2009) cited in Wittawatchutikul (2009) has investigated the model of royal project to use for setting proportion of activities that will be use for manage water source according with life style of such community. Activities and budget of development center selected to be representative was analyzed to create model of royal project which has different three objectives including increase income of population, strengthen community and natural reservation. User can search for royal project model and activities. Therefore, yearly rain data and country topography score was set for three models as below;

1) Income Model (ICM)

$$\text{ICM} = 0.4550 \text{ Plant} + 0.1235 \text{ Anim} + 0.0715 \text{ Occu} + 0.1334 \text{ Educ} + 0.0713 \text{ Mind} + 0.0253 \text{ GrAc} + 0.0768 \text{ Eros} + 0.0324 \text{ DeCh} + 0.0108 \text{ Affo}$$

2) Community Empowerment Model (CEM)

$$\text{CEM} = 0.3640 \text{ Plant} + 0.0988 \text{ Anim} + 0.0572 \text{ Occu} + 0.0870 \text{ Educ} + 0.0465 \text{ Mind} + 0.0165 \text{ GrAc} + 0.2112 \text{ Eros} + 0.0891 \text{ DeCh} + 0.0297 \text{ Affo}$$

3) Natural Resources Conservation Model (NRCM)

$$\text{NRCM} = 0.0630 \text{ Plant} + 0.0171 \text{ Anim} + 0.0099 \text{ Occu} + 0.1856 \text{ Educ} + 0.0992 \text{ Mind} + 0.0352 \text{ GrAc} + 0.3776 \text{ Eros} + 0.1593 \text{ DeCh} + 0.0531 \text{ Affo}$$

Plant	Activity to promote planting
Anim	Activity to promote husbandry
Occu	Activity to promote occupation
Educ	Activity to promote education
Mind	Activity to implant consciousness of the population
GrAc	Activity to promote social participation
Eros	Activity to decrease soil corrosion
DeCh	Activity to reduce chemical use in watershed area
Affo	Activity to promote reforestation

Moreover Noppakoonwong (2007) has studied the project of knowledge accumulation in condition of success and then mentioned the cause factor of operation pattern of royal project in integrate highland development as below;

1) His majesty the king

2) clear and constant policy

- (1) With a comprehensive service and integration with other units.
- (2) Establish the Royal Project in promoting are.
- (3) Follow the operation concept of the Royal Project.



3) good management

- (1) Transmission the policy objectives to target audience effectively.
  - (2) A short chain of command.
  - (3) Clearly structure of responsibilities.
  - (4) Regulatory flexibility, versatility than bureaucracy.
  - (5) Administrative decentralization, unblock the idea that staff and volunteers fully work.
  - (6) Put the right man to the right job
  - (7) Continuous monitoring system
- 4) staffs ,have good knowledge and ability, devoted themselves in working until earn farmer's acceptance and participation

Highland Research and Development Institute (2007b) note that key factors in the success of the Royal Project, The leadership of His Majesty the King has made the success of the Royal Project possible. The Royal Project is its long-term view. The long-term approach allowed the Royal Project to spend around eight years focusing on research. The Royal Project made a number of choices about how to conduct highland development that, in retrospect, seem like the right ones. The last factor to be mentioned is that there were fundamentally sound market conditions for the crops grown by Royal Project farmers for almost the entire life of the project until now.

Fuengthong (2002) studied the factors affecting to the performance of the operating staff of the Royal Project. The research found that operating staff of the Royal Project Foundation is focus on the motivation factors. And important factors that influence the motivation to work in the medium. The details are as follows.

Factors of mental health that staffs are focus on high levels is the private life, relationships with colleagues, stability in performance, policy and position management, relationships with supervisors, command and relationships with people in other departments. And priority levels are working conditions and compensation.

Incentive of an incentive to work, employees is focus on high levels is the completion of work, the nature of the work and responsibility of the work. And the significance level in the field accepts praise and admiration from others, progress in the work and growth opportunities in the work.

As the research above, it shown that the royal project has 3 models divided by purpose which are (1) increase population income, (2) strengthen community and (3) environment reservation depend on which area is needed to emphasize in which way and then applied with the proper model. The key factor to success in operation of the royal project is depended on 4 factors that is (1) His majesty the king, (2) constant policy, (3) good management and (4) staff devotion. Therefore if we would like to apply knowledge of the royal project to target area, we had to appropriately choose the operation pattern which properly suits the target area besides we had to have more supportive factors promoting to success. Picture below is the summary of the royal project models.

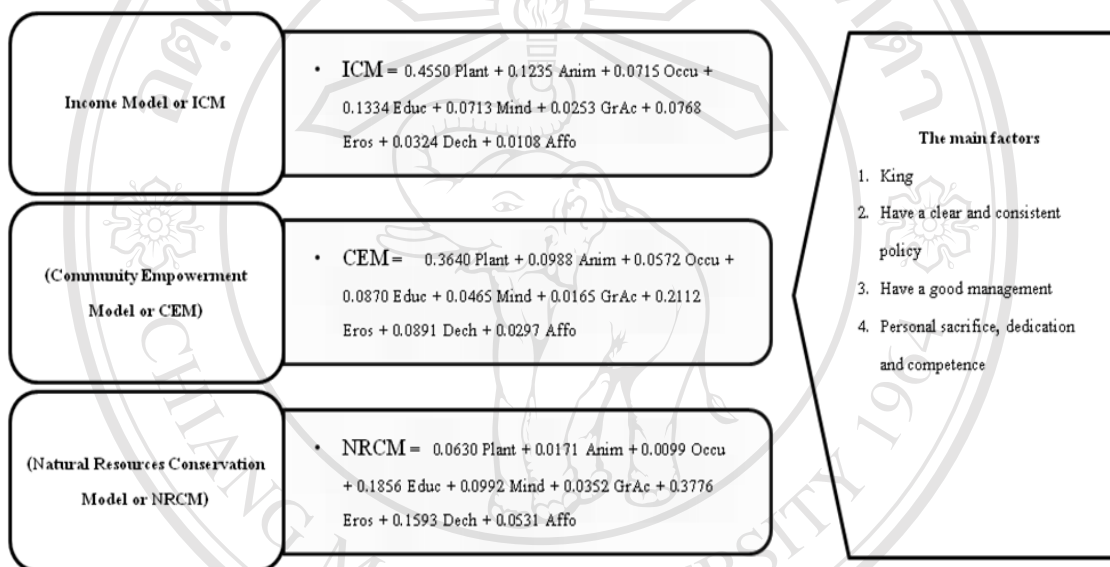


Figure 2.5 The Royal Project Model described activities

To do research about product quality and market of product from royal project from royal development from the past until present has been developed in term of research and marketing. Meenak (2007) has investigated the mixture factor influenced on consumer in making decision to purchase the product of Doikum in Muang district, Chiangmai province. It was found that the reason why consumers decided to buy Doikum products was because of their reliability in its quality and mixture factors consisted of (1) clean and quality product (2) Price – the price is suitable for its quality (3) Distribution system (4) Marketing promote. In term of research, Isvilanonda (2004) has investigated research operation in the highland, she

found that royal project foundation has created the important role to support doing research, development and applied technology to use with agriculture in the highland and also include doing research for life quality improvement and tribe community by corporate with other government organization to better life quality of farmer and they will have more stable occupation. Also, it may help developing management process for land and forest reservation in highland which leads to sustainable development. In the period of 2000 - 2003, the Royal Project Foundation invested in doing research for 62.17 million baht. This research focused on researches about flowerer and garden tree, fruit, vegetable and included plant protection. The research done within 4 years has included 356 projects and there are researchers from royal project foundation, various universities and related government organizations joined in the research project not less than 1,218 persons. This caused knowledge development in various areas which is related to career development and natural resource development on highland area and also promote or higher living of farmers residing on the highland, create new product and service which is beneficial for economic of the country.

Implementation of the Royal Project has been integrated with the various agencies involved under the Master Plan of the Royal Project development center which is currently in Phase 4 (2012-2016). The plan is to lead the philosophy of sufficiency economy as the development led to the creation of learning to achieve whole life learning and to strengthen the targeted community and community organizations. The major goal of the Royal Project' Master Plan in Phase 4 is to focus on the direction of the progress of development work in the area of responsibility by the Royal Project in order to model the exchange of learning between the community area. The Royal Project Coordinator serves as a source of learning. The results will lead to sustainable development, conservation of natural resources and the environment associated with the concept of self-reliance and sufficiency economy. The promotion of the Royal Project development center in learning becomes the model for the highland development integration of new knowledge with the wisdom of local communities. The contexts in which to consider are the potential for community networks, community organizations and sufficiency economy. (Highland Research and Development Institute, 2011b)

The promoting and educating farmers on the highland area of the Royal Project Foundation made the lives the people better. Pasowang (2002) studied the

changes in the economy, social of Hmong farmers in the Inthanon Royal Project development center, Chiang Mai province, found that school-aged children have the increased opportunity to study in school, the rate of birth decreased, increasing an income and well-being in the past 5 years. In addition, Boonkaew (1998) studied the changes in the economy and society of farmers that have been promoted by Huayleuek Royal Project development center, Chiang Dao, Chiang Mai province, found that farmer's income has increased from 6,172 Baht/ year to 29,932 Baht per year per household.

Office of Permanent Secretary for Ministry of Agriculture and Cooperatives (2006) published, the report of the seminar the highland sustainable development: From the Royal Project's lesson to the international stage. The study results for the agricultural development of the Royal Project for the sustainable living conditions of highland farmers, found that in economics, the income of farmers in the village under the instigation of the Royal Project are higher than farmers outside the promotion. It also provides high stability of income on a variety of income sources. In terms of accessing and the accumulation of physical factors are shown by physical index. One important factor is the welfare of the farmers in the village is under the instigation of the Royal Project. Besides being a member of the Royal Project is also affect to the social stability.

According to research mentioned above, it shows the operation of Royal Project which has been developing its marketing, product quality for reliability of "Doi kum" brand. Moreover, Royal Project did not stop doing any research in order to improve productivity of product value and high quality of production process. All process is integrated operation between related organizations both in private and government sector.

Several areas of highland populations want to get help from the Royal Project to having better lives. Samuenjai (1998) studied the expectations of the farmers from the agricultural promotion of the Royal Project development Center Huayluek, Chiang Dao District, Chiang Mai. He found a need for success on the job, supporting processing resource and promote agricultural to the staff.

In order to develop highland area to be sustainable forever in the future, Highland Research and Development Institute development strategy project and natural resource reservation on highland area has set four strategies for highland development which consist of 18 development guideline and 54 work plan as following. (Office of national economic and social development, 2010)

Strategy 1 Promote self-efficiency and strengthen community according to philosophy of sufficient economic which consist of 4 development plan and 14 working plan.

Strategy 2 Promote economic stability based on knowledge and resource base focusing on worthiness of resource mixed with innovation of sufficient economic philosophy consisting of 5 important development guideline and 18 working plan.

Strategy 3 Create balance for natural resource and environment, depend on each other between human and forest. This consists of 4 development guideline and 11 working plan.

Strategy 4 Promote the good management and has integration based on participation process consisting of development guidelines and 14 working plan.

According to such plan, it showed that population development on the highland in the future will focus on development under the principle of sufficient economy. That is to reinforce the individual efficiency, strengthen community, economic stability and resource base and also reinforce balance among natural resource and environment.

In addition, the success is measured in term of the happiness index, Tansuchart and Kamkaew (2008) studied the measurement of happiness and well-being of community members in the Royal Project Foundation. It is pointed out that the index of happiness and well-being consists of 6 categories consisted of economic, family, social and cultural, environment and social and governance principles. It is found that the samples weighted for most economic indicators. But when considering the different tribes, found that Karen and Hmong are weighted in most families. It is different from Lahu and Lisu tribes that focused on the most economic. An average happiness that



measured from index and self-assessment is moderate. In addition, an analysis of the determinants of happiness in each level by modeling sequential bit profiles found that families, society and culture and environmental indexes are statistical significant.

A study by the Chiang Mai University (2010) regarding the evaluation of the Extended Project implementation for sustainable development is found.

1) Development demands of the households which include the need for the authorities or agencies related to development in areas, 27% of needing to improve the road for communication within the village, 26% are looking to develop or improve the water supply in the village. The household also needs to promote new professional development in the agricultural sector and other sector (15% and 14%, respectively), including the need to improve road communication to communicate with the outside (13%).

2) Development situation of the farmers, the index of development in economic, social and environmental resources of farmers are 90.13%, 83.46% and 70.89%, respectively. It is shown that farmers in the Extended Project mostly developed in an economic. And social development is very close to the level of economic development. But, the development of resources and the environment is lower than the other 2 matters a lot. Although the development of resources and environment index is in high level, but, a state of resources and environmental is degradation due to the deforestation in many areas. And in many other areas, the state of resources and the environment is degraded heavily.

3) Suggestions on development issues

3.1) Situation of forest in the Extended Project areas are under levels of decline dramatically and need an intrusion protection, conservation and restoration rapidly where the conditions of soil fertility and the water is still a problem needing to solve. Continue deterioration of soil fertility and water resources are tended to be serious and the project and activity in protection, restoration and conservation of soil, water and forests projects shall be done. Conducted of the

protection, conservation and restoration of soil, water and forests systematically of the Extended Project is urgent to help mitigate and resolve the problem.

3.2) Campaign for practice birth control of the household in some groups of the population with high birth rate is high such as Akha, Mon and Palaung tribes.

3.3) Rice Bank virtually no role as a source of loans for rice cultivation to rice farmers household that not enough rice product. Most farmers solve not enough rice cultivation by buying rice from the market. So if there is operating of the rice bank to solve the problem by modifications of the rice bank to "Rice Fund or Rice Bank Fund" so that farmers can borrow money from a fund to use in buying rice. It is beneficial to poverty household and lack of money to buy rice for consumption and to adjust according to changing of circumstances.

3.4) Agricultural household having incomes below the poverty line about 32% and 24% having incomes below the food poverty line. These household deserves the care and development of the revenue or the production of plants and animals for sustenance to be able to escape from poverty and poor food.

3.5) Planning for development must set a clearly framework form practical plan to an integrated action plan for the year. And prepare an integrated action plan in accordance with the set plans. If it is necessary to have a set of activities and budgets to defense budget cuts, it shall set the priority activities and projects prominently.

3.6) Operational planning should focus on the main frame to balance the development of household economic, social / community and the environment are obvious and tangible to put into action to create an agriculture household / society / community is strengthened. The agriculture household / social / community are self-sustainability. And the resources are taken care and restore.

- 3.7) In the first phase, the Extended Project's action plan needs to focus on prevention and suppression of invasion, destruction of forests and rehabilitation of environmental urgency.
- 3.8) Should accelerate the development and expansion of the community market to cover the working area of Extended Project. The areas those are close together should cooperate in the development "Joint Community Market" which will make the market bigger and more variety of products. This will help to attract customers outside to buy products from the farmers in the project easier. It could save a total budget and staff together with a few operations which makes the development community with much more success.
- 3.9) Should accelerate the development, improve and create a database from an existing system to make a current database with standard, accurate and complete and can be linked together to use for management and monitoring and evaluation.
- 3.10) Should accelerate the experience of project's staff in the development and operation with farmers to less experienced staff by recognized the outstanding performance of the year.

From the pass operations of the Extended Project, there were the most development in the economic, social and environmental, respectively. Environment is still extremely problematic. There are important suggestions as the conservation of natural resources, family planning, the rice bank, income earning activities promotion, framework to improve information systems, community marketing development and personal development in the area.

From the past to present, there are many people learning the succeeded lesson and finally succeed, for example, new theory of agriculture, life style according to sufficient economic, applied any technology as following.

Rawee (2006) has tried out new agriculture development project at Wat Mongkol Chaipattana, Muang district, Saraburi province which has been proved that land development according to new agriculture theory made sufficient water for the

whole year and increase productivity. Due to this theory, farmers have sufficient rice and food for consumption. As Leojaingkum (2008) has studied tree growing plan for build the house of farmers in Northeastern according to new theory of agriculture which is the network of villager philosopher in Buriram province. Farmers have shared the area for growing the big plant and small plant to be material for house building which is bigger according to the growth of trees. According to the study, it was found that hour's material preparation for building their house is one option that helps farmers depending on themselves, reducing cost of construction and remaining enough area for living according to new theory of agriculture and promotes philosophy of sufficient economy focusing on applied guideline.

In additional, Isarangkun Na Ayuthaya and Phutrakool (2011) study “Sustainability development under the Sufficiency Economy philosophy” by studying the philosophy of sufficiency economy, which could be applied in the 3 levels.

- 1) Level of survival and / or growth sustainable under the influence of globalization.
- 2) Level of the strategy for sustainable development of Thailand.
- 3) Synthesis level action plan for the development at the local level appropriate of resources.

It is corresponded to Rotepanich (2002) has investigated the concept of sufficient economy and welfare, it was found that the concept of sufficient economic can be applied to use with all gender, generation and all level of education. However, it was found that there are some limitations of method of use. As Sripadtha ( 2006) has studied on “Applying business management principle according to royal sufficient economic and local state enterprise” It was found that the possibility in applying sufficient economy and local state enterprise was very high and its practice guideline can be possible and should be used as well. Conditions and practice guideline according to royal sufficient economic can be used with various business, not differently. Importantly, a suggestion is that the learner must understand the principle and follow its principle as well. that mean they must have knowledge, morality and has reason and also protect themselves and self – dependent. In conclusion, sufficient economic principle can be used with all state enterprise.

In terms of implementation of technology and method, Prasomsuay (1999) studied the applications of ISO 9002 system in the service of the loan at Siam Commercial Bank (Public Company), Tapae branch. He found the quality of loan after apply the ISO 9002 for loan system, the loan credit quality is improved. The proportion of debt with loans equal to 46.2% while the existing is 56.9%, especially doubtful debts has decreased substantially and continuously. And Sugansil (2001) studied the application of Quick Books program in funds account work, the Faculty of Social Sciences, Chiang Mai University, found that the appropriate accounting data is fast and accurate, time saving, reducing the work process and can be monitored.

To apply theory, program, research result or success lesson to use in working process or living will be mostly successful. If it is appropriately used and applied to use with suitable condition and theory, program, research result or success lesson has been proved that it works.

The seal of Chiang Mai University is a large, faint watermark in the background. It is circular, featuring an elephant in the center, flanked by two stylized floral motifs. The text "CHIANG MAI UNIVERSITY 1964" is written around the bottom half of the circle.

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