## **CHAPTER 4**

#### GENERAL DESCRIPTION OF TAMBON MAKHUEA CHAE

#### 4.1 Geographic features

Tambon Makhuea Chae is under the administrative responsibility of Mueang Lamphun District Office. It extends over 106 square kilometers or 41,368 rai of land area and has established in the northeastern of Lamphun city. It is about 15 kilometers far from Lamphun city. The main portion of Tambon Makhuea Chae's area, 60 %, is mountainous land within National Forest Reserve Zone. Its eastern and western parts are lowland suitable for crop farming and livestock raising. The Guang River and Mae Teab stream are the major local water sources. There is also a Mae Teab reservoir with a water storage capacity of 10 million cubic meters (Makhuea Chae Municipality Office, 2010)

#### 4.2 Demographic structure

Tambon Makhuea Chae has 21 villages under its administration including Ban Makhuea Chae, Ban Sa Laeng, Ban Chaem, Ban San Kayom, Ban Mueang Guak, Ban Hong Gaw Muang, Ban San Pa Hiang, Ban Kiew Muen, Ban Pa Pao, Ban Nong Hoi, Ban Si Don Ton, Ban Lao, Ban San Pu Lei, Ban Pa Tueng, Ban Nong Hiang, Ban Kok Wua, Ban San Ton Pheung, Ban Mai Fai Hin, Ban Mai Mueang Guak, Ban Yi Kaw, and Ban Hong Gaw Muang Song. There are 4,070 registered households in the Tambon with a total 13,020 population comprising 6,392 males and 6,628 females as presented in Table 4.1 below.

**Table 4.1** Population in Tambon Makhuea Chae, 2012.

Village	Number of	Popu	lation	Total
Village	household	Male	Female	population
Moo 1 Ban Makhuea Chae	219	362	376	738
Moo 2 Ban Sa Laeng	188	283	305	588
Moo 3 Ban Chaem	277	437	503	940
Moo 4 Ban San Kayom	341	529	509	1,038
Moo 5 Ban Mueang Guak	271	451	480	931
Moo 6 Ban Hong Gaw Muang	420	537	555	1,092
Moo 7 Ban San Pa Hiang	416	685	690	1,375
Moo 8 Ban Kiew Muen	173	288	298	586
Moo 9 Ban Pa Pao	176	285	304	589
Moo 10 Ban Nong Hoi	109	131	139	270
Moo 11 Ban Si Don Ton	208	366	362	728
Moo 12 Ban Lao	152	227	224	451
Moo 13 Ban San Pu Lei	146	250	281	531
Moo 14 Ban Pa Tueng	121	214	214	428
Moo 15 Ban Nong Hiang	143	193	202	395
Moo 16 Ban Kok Wua	66	107	134	241
Moo 17 Ban San Ton Pheung	107	182	213	395
Moo 18 Ban Mai Fai Hin	117	190	195	385
Moo 19 Ban Mai Mueang	162	276	260	526
Guak	102	270	200	536
Moo 20 Ban Yi Kaw	71	107	122	229
Moo 21 Ban Hong Gaw	187	292	262	554
Muang Song	10/	272	202	JJ4
Total	4,070	6,392	6,628	13,020

From Table 4.1 showing the number of households, it is apparent that Moo 6 Ban Hong Gaw Muang has the largest number of 420 households followed by Moo 7 Ban Pa Hiang, Moo 4 Ban San Kayom, and Moo 3 Ban Chaem with 416, 341, and 277 households, respectively. However, in terms of population size as depicted in Figure 4.1, it can be seen that Moo 7 Ban San Pa Hiang has the most population of 1,375 people followed by Moo 6 Ban Hong Gaw Muang, Moo 4 Ban San Kayom, and Moo 3 Ban Chaem with 1,092, 1,038, and 950 population, respectively.

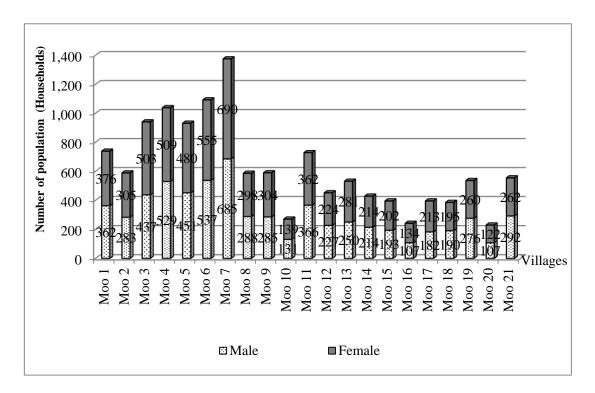
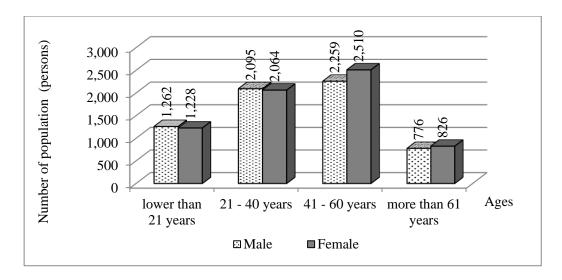


Figure 4.1 Population in Tambon Makhuea Chae, 2012.

By age structure, the largest population group in the Tambon is the 41 - 60 years old bracket including 2,259 males and 2,510 females. The next largest age group is 21 - 40 years old (Figure 4.2).



**Figure 4.2** Population in Tambon Makhuea Chae by age group, 2012.

### 4.3 Socio-economic conditions

### 1) Employment

About 48.9 % of the population of Tambon Makhuea Chae are employed as general wage labor. The second largest occupation group is student followed by trading, agriculture, and business company employee, accounting for 17.8, 10.0, 7.3, and 6.3 %, respectively (Figure 4.3).

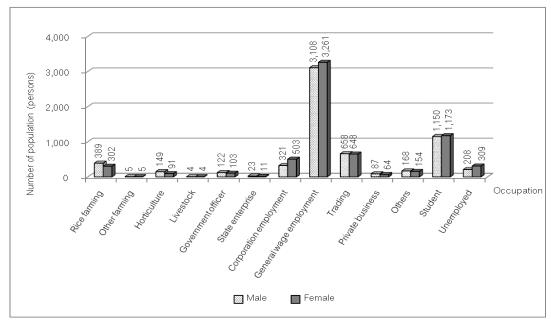


Figure 4.3 Population in Tambon Makhuea Chae by occupation group, 2012.

By breaking down occupation into primary and secondary groups, longan fruit tree farming is the main occupation of people in 11 villages while rice farming is so in 7 villages. Trading is the most prevalent secondary occupation in 15 villages and general wage employment is so in 4 villages (Table 4.2).

**Table 4.2** Primary and secondary occupations of population of Tambon Makhue Chae, 2102.

Village	Primary occupation	Secondary occupation
Moo 1 Ban Makhuea Chae	Longan fruit tree farming	General wage employment
Moo 2 Ban Sa Laeng	Longan fruit tree farming	General wage employment
Moo 3 Ban Chaem	Longan fruit tree farming	General wage employment
Moo 4 Ban San Kayom	Rice farming	General wage employment
Moo 5 Ban Mueang Guak	Rice farming	Longan fruit tree farming
Moo 6 Ban Hong Gaw Muang	Longan fruit tree farming	Trading
Moo 7 Ban San Pa Hiang	Rice farming	Trading
Moo 8 Ban Kiew Muen	Longan fruit tree farming	Trading
Moo 9 Ban Pa Pao	Longan fruit tree farming	Trading
Moo 10 Ban Nong Hoi	Longan fruit tree farming	Trading
Moo 11 Ban Si Don Ton	Longan fruit tree farming	Trading
Moo 12 Ban Lao	Longan fruit tree farming	Trading
Moo 13 Ban San Pu Lei	General wage employment	Trading
Moo 14 Ban Pa Tueng	Longan fruit tree farming	Trading
Moo 15 Ban Nong Hiang	Rice farming	Trading
Moo 16 Ban Kok Wua	Rice farming	Trading
Moo 17 Ban San Ton Pheung	Longan fruit tree farming	Trading
Moo 18 Ban Mai Fai Hin	Rice farming	Trading
Moo 19 Ban Mai Mueang Guak	Rice farming	Trading
Moo 20 Ban Yi Kaw	General wage employment	Trading
Moo 21 Ban Hong Gaw Muang Song	General wage employment	Rice farming

Source: Lamphun Provincial Agriculture Office, 2012.

With respect to longan fruit tree farming, it was reported that at 2011 year end there was a total 5,167 rai of land under longan trees and 4,772 rai out of which

was the harvestable area giving a total output of 3,340,000 kilograms at the average yield of 700 kg /rai (Office of Agricultural Economics, 2010)

### 2) Income

In 2012, the average household income in the Tambon was 241,213 baht per year or 75,402 baht income per capita per year (Table 4.3). The latter figure is in close proximity to the northern region's 79,925 baht per capita income level but less than the national and Lamphun Province's averages of 164,512 and 140,575 baht, respectively.(NESDB, 2011)

By village comparison, it is evident that Moo 11 Ban Si Don Ton had the highest average household income at 420,602 baht per year followed by Moo 1 Ban Makhuea Chae and Moo 4 Ban San Kayom at 374,231 and 346,996 baht per year, respectively. In terms of per capita income villagers on average in Moo 11 Ban Si Don Ton appeared to be most well off with 120,172 baht income per person per year, compared to the next most prosperous 117,518 and 113,994 baht levels in Moo 6 Ban San Gaw Muang and Moo 4 Ban San Kayom, respectively.

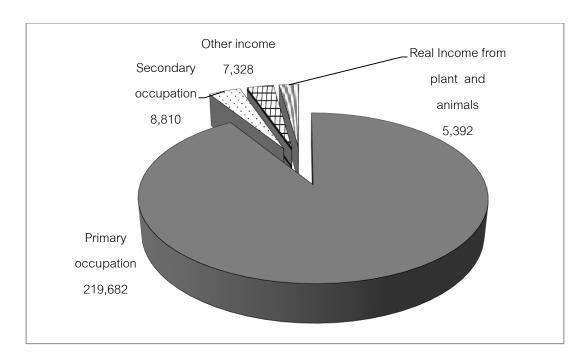
The statistics on income sources of households in Tambon Makhuea Chae revealed that the main source of household income in 2012 was earning from the primary occupation particularly longan farming at averagely 219,682 baht or 91.1 % of the total household income. The next most important source of household income in the same year was secondary occupation involving trading and labor employment, earning averagely 8,810 baht or 3.7% share in the total household income.

**Table 4.3** Average income of population in Tambon Makhuea Chae, 2012.

Village	Average household	Per capita income
Village	income (baht/year)	(baht/year)
Moo 1 Ban Makhuea Chae	374,231	111,052
Moo 2 Ban Sa Laeng	144,378	46,162
Moo 3 Ban Chaem	195,404	57,582
Moo 4 Ban San Kayom	346,996	113,994
Moo 5 Ban Mueang Guak	156,336	45,507
Moo 6 Ban Hong Gaw Muang	305,547	117,518
Moo 7 Ban San Pa Hiang	272,599	82,474
Moo 8 Ban Kiew Muen	147,774	43,626
Moo 9 Ban Pa Pao	233,068	69,643
Moo 10 Ban Nong Hoi	169,514	68,433
Moo 11 Ban Si Don Ton	420,602	120,172
Moo 12 Ban Lao	199,586	67,266
Moo 13 Ban San Pu Lei	178,549	49,093
Moo 14 Ban Pa Tueng	166,402	47,044
Moo 15 Ban Nong Hiang	170,377	61,681
Moo 16 Ban Kok Wua	212,955	58,320
Moo 17 Ban San Ton Pheung	186,589	50,544
Moo 18 Ban Mai Fai Hin	173,438	52,707
Moo 19 Ban Mai Mueang Guak	145,644	44,019
Moo 20 Ban Yi Kaw	160,823	49,862
Moo 21 Ban Hong Gaw Muang	285,077	96,226
Song	203,077	70,220
Tambon Makhuea Chae	241,213	75,402

Table 4.4 Average income sources of households in Tambon Makhuea Chae, 2012.

Areas	Primary occupation	Secondary occupation	Other income	Real income from plant and animals
Moo 1	296,208	36,066	28,046	13,911
Moo 2	136,756	2,889	4,280	452
Moo 3	177,427	7,661	4,194	6,123
Moo 4	299,507	9,135	25,659	12,695
Moo 5	152,457	390	3,438	52
Moo 6	289,056	11,959	4,472	60
Moo 7	272,467	0	132	0
Moo 8	126,089	3,431	4,222	14,032
Moo 9	233,068	0	0	0
Moo 10	147,023	2,661	2,761	17,069
Moo 11	397,316	18,260	4,935	91
Moo 12	173,743	4,112	3,546	18,184
Moo 13	153,333	13,243	8,903	3,071
Moo 14	124,859	17,249	10,105	14,190
Moo 15	157,393	5,930	3,616	3,438
Moo 16	212,955	0	0	0
Moo 17	181,075	2,168	0	3,346
Moo 18	140,523	9,726	4,009	19,179
Moo 19	132,400	9,485	2,130	1,630
Moo 20	157,668	1,913	1,242	0
Moo 21	244,693	20,493	19,053	838
Overall	219,682	8,810	7,328	5,392



**Figure 4.4** Source of income (baht) per household of Tambon Makhuea Chae in 2012.

### 3) Expenditure

Official statistics reported that in 2012 the household expenditure of population of Tambon Makhuea Chae was 176,978 baht on average with 55,322 baht per capita spending (Table 4.5).

By village comparison, Moo 1 Ban Makhuea Chae incurred the highest average household expenditure at 325,416 baht per year compared to Moo 4 Ban San Kayom and Moo 11 Ban Si Don Ton at 304,566 and 273,109 baht levels, respectively.

In terms of per capita spending, Moo 11 Ban San Kayom had the highest figure at 100,055 baht expenditure per person per year while Moo 1 Ban Makhuea Chae and Moo 6 Ban Hong Gaw Muang came behind at 96,566 and 87,127 baht levels, respectively.

Out of the total household expenditure, the largest proportion or 70.7 % was for necessary consumption goods at 125,119 baht per year followed by expenditure for unnecessary consumption, loan repayment, and production costs, at 24,780, 17,466, and 9,523 baht or 4.0, 9.9, and 5.4 %, respectively (Table 4.6 and Figure 4.6).

**Table 4.5** Average expenditure of population in Tambon Makhuea Chae, 2012.

Unit: bath

Village	Average household expenditure	Per capita expenditure
Moo 1 Ban Makhuea Chae	325,416	96,566
Moo 2 Ban Sa Laeng	114,377	36,569
Moo 3 Ban Chaem	128,000	37,719
Moo 4 Ban San Kayom	304,566	100,055
Moo 5 Ban Mueang Guak	88,232	25,683
Moo 6 Ban Hong Gaw Muang	226,529	87,127
Moo 7 Ban San Pa Hiang	195,590	59,175
Moo 8 Ban Kiew Muen	72,528	21,412
Moo 9 Ban Pa Pao	209,676	62,654
Moo 10 Ban Nong Hoi	121,415	49,016
Moo 11 Ban Si Don Ton	273,109	78,031
Moo 12 Ban Lao	157,466	53,071
Moo 13 Ban San Pu Lei	105,923	29,124
Moo 14 Ban Pa Tueng	146,059	41,293
Moo 15 Ban Nong Hiang	69,393	25,122
Moo 16 Ban Kok Wua	201,818	55,270
Moo 17 Ban San Ton Pheung	111,821	30,291
Moo 18 Ban Mai Fai Hin	122,010	37,078
Moo 19 Ban Mai Mueang Guak	81,940	24,765
Moo 20 Ban Yi Kaw	104,953	32,540

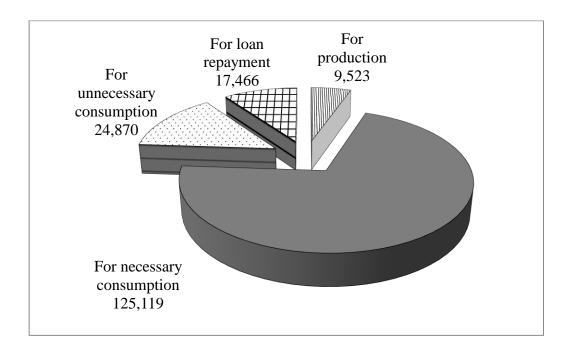
Village	Average household expenditure	Per capita expenditure
Moo 21 Ban Hong Gaw Muang Song	219,380	74,051
Tambon Makhuea Chae	176,978	55,322

**Table 4.6** Average expenditure by type of households in Tambon Makhuea Chae, 2012.

Unit: baht/year

	Average expenditure by type					
Villages	For	For necessary	For unnecessary	For loan		
	production	consumption	consumption	repayment		
Moo 1	27,451	175,905	48,955	73,105		
Moo 2	1,974	89,160	23,243	0		
Moo 3	26,848	88,051	13,065	36		
Moo 4	5,657	164,746	70,185	63,978		
Moo 5	14,449	71,786	1,868	129		
Moo 6	3,474	149,548	45,152	28,355		
Moo 7	8,996	186,346	248	0		
Moo 8	7,353	53,217	11,454	504		
Moo 9	966	171,608	37,102	0		
Moo 10	3,897	99,275	13,894	4,349		
Moo 11	25,881	148,854	50,196	48,178		
Moo 12	4,796	121,059	11,476	20,135		
Moo 13	10,223	78,706	11,483	5,511		
Moo 14	6,237	124,417	8,256	7,149		
Moo 15	2,830	58,644	4,003	3,916		
Moo 16	0	157,106	44,712	0		
Moo 17	1,242	109,243	1,336	0		
Moo 18	2,436	103,591	2,692	13,291		

	Average expenditure by type				
Villages	For For necessary		For unnecessary	For loan	
	production	consumption	consumption	repayment	
Moo 19	6,116	74,444	1,275	105	
Moo 20	4,064	98,617	2,272	0	
Moo 21	8,361	138,126	52,246	20,647	
Overall	9,523	125,119	24,870	17,466	



**Figure 4.5** Overall average expenditure (baht) by type of population in Tambon Makhuea Chae, 2012.

### 4) Education

In 2012, the majority of Tambon Makhuea Chae population (42.8 %) both male and female completed primary education. The next most common educational attainments were high school and secondary school levels with 14 % of population in each category (Figure 4.6).

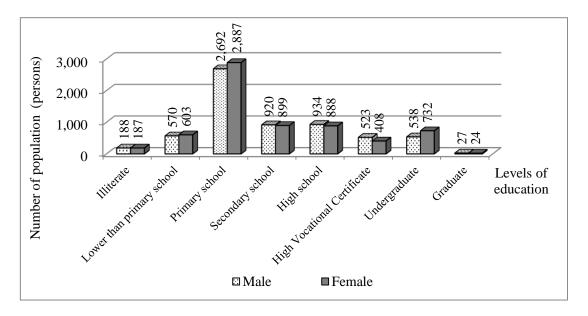


Figure 4.6 Education levels of population in Tambon Makhuea Chae, 2012.

# 5) Religion

In 2012, the majority of Tambon Makhuea Chae's population (99.8 %) had the beliefs in Buddhism and the remaining 0.2 % were Christians.

#### 6) Community organization

The number of members of farmer housewives' groups went down from 1,446 in 2010 to 1,343 in 2012 while those of youth groups and community enterprises became larger (Table 4.7).

### 7) Market and production in this area.

Tamboon Makhuea Chae had 5 fresh food markets, 2 market fairs, 10 rice mills, 536 small scaled longan drying oven operators, 80 teak lamp small producers and 21 furniture factories (Table 4.8). For GDL production it is shown that Moo 7 Ban San Pa Hiang had the most ovens followed by Moo 5 Ban Mueang Guak, Moo 19 Ban Mai Mueang Guak, Moo 8 Ban Kiew Muen, Moo 17 Ban San Ton Pheung and Moo 14 Ban Pa Tueng, respectively. Ban San Pa Hiang had the most ovens due to

the fact that it is the first village to produce GDL around 30 years ago. Furthermore teak lamp productions were produced in Moo 1 Ban Makhuea Chae and Moo 2 Ban Sa Laeng. But teak furniture factories were scattered in 9 villages namely Moo 11 Ban San Kayom, Moo 5 Ban Mueang Guak, Moo 7 Ban San Pa Hiang, Moo 1 Ban Makhuea Chae, Moo 6 Ban Hong Gaw Muang, Moo 17 Ban San Ton Pheung, Moo 2 Ban Sa Laeng, Moo 3 Ban Chaem and Moo 18 Ban Mai Fai Hin, respectively.

**Table 4.7** Community organizations in Tambon Makhuea Chae, 2010 – 2012

Group/organization		Number		
		2010	2011	2012
Farmers' group	Group	1	1	1
	Membership	502	502	502
Farmer housewives'	Group	21	21	21
group	Membership	1,446	1,343	1,343
Agricultural	Cooperative	-	-	-
cooperative	Membership	499	499	499
DAAC all and annun	Group	128	128	128
	Membership	1,495	1,495	1,495
BAAC client group	Major Membership	12	12	14
Farm youth group	Group	1	1	2
Tami youdi gioup	Membership	7	7	27
Community enterprise	Group	47	47	50
Community enterprise	Membership	356	356	427

Source: Lamphun Provincial Agriculture Office, 2010-2012.

Table 4.8 Market and production establishments in Tambon Makhuea Chae.

Village	Fresh food market	Market Fair	Rice mills	Small scaled longan drying oven operator	Teak lamp production	Furniture factory
Moo 1	1	-	2	-	60	2
Moo 2	-	-	1	-	20	1
Moo 3	1	-	1	-		1
Moo 4	-	1	1	-		4
Moo 5	-	-	1	115		4
Moo 6	-	1	1	-		2
Moo 7	-	-	1	275		4
Moo 8	-	-	-	60		
Moo 9	1	-	1	-		
Moo 10	-	-	-	-		
Moo 11	-	-	-	-		
Moo 12	-	-	-	-		
Moo 13	1	-	-	-		
Moo 14	-	-	-	2		
Moo 15	1	-	-	-		
Moo 16	-	-	-	-		
Moo 17	-	-	-	12		2
Moo 18	-	-	1	-		1
Moo 19	-	-	-	72		
Moo 20	-	-	-	-		
Moo 21	-	-	-	-		
Overall	5	2	10	536	80	21

Source: Lamphun Provincial Agriculture Office and Lamphun Provincial Industry
Office, 2012.

# 8) Golden brown dried longan processing

# 8.1) Production process

Producers purchase from longan growers or middlemen of fresh longan fruits graded as AA with fruit diameter greater than 28 mm. (Office of Agricultural

Promotion and Development Region 6, Chiang Mai Province, 2011) or the A grade with 27 - 28 mm. fruit diameter or fruits in both grades for drying depending on the dried fruit size desired by the processors. After that manual peeling and pitting process was done by paid laborers at the payment rate of 6.00 baht per kilogram longan flesh under the supervision of a foreman who is paid 0.50 baht per kilogram longan flesh. Wage labors lay the peeled and pitted longan flesh on bamboo-wicker trays lined with wire-net to prevent the dried longan from sticking to the drying trays, then place the trays in various shelves in the drying oven. The longan drying oven is generally built according to local folk technique to be a 2.5 x 4.0 x 3.0 meter galvanized iron chamber containing 12 – 13 shelves and each shelf can accommodate 28 – 29 drying trays. Dried longan tree fuel wood is used for external burning to generate heat for transmission through a connective tube to the drying chamber or oven which is installed with 6-8 fans for internal hot air circulation. Longan flesh is dried for 9 - 10 hours to get an even color of golden brown with a constant switching of the drying trays in alternation. About 1,000 kilograms of longan fruit flesh are used to produce no less than 100 kilograms of golden brown dried longan, more or less however depending on the size of fresh fruits and the skill of processor.

### 8.2) Production potentials of GDL community enterprises

Moo 7 San Pa Hiang village was the center and the first village to produce GDL. It has high potential due to skillful processors with long experience. From situation analysis conducted among 33 representative members, one each, from 33 GDL processing groups on March 2011, 18 at Tambon Makhuea Chae Municipality Office, the conclusions on GDL situations are as shown below:

#### Strengths

- 1. Most processors have long experiences and skills in producing golden brown dried longan and thus can turn out good quality products.
- 2. This economic sub-sector has generated substantial labor employment and income for both local villagers and outside people.
- 3. A cold storage facility is servicing in the local area which is convenient for the dried longan processors to transport their products for cold storage there.
- 4. Financial institution and government agencies are willing and ready to extend loans as working capital at low interest rates to the GDL community enterprises.

#### Weaknesses

- 1. There exists no efficient technology or machine to replace manual labor for peeling and pitting processes which have to be done only by skilled workers that are quite scarce and employed at high labor payment, thus causing a high processing cost.
- 2. Use of fuel wood as heating energy causes the problem of smoke from burning.
- 3. Fuel wood is becoming scarce and in short supply thus getting more expensive.

#### Opportunities

1. China's demand for dried longan is growing due to the country's economic expansion and higher purchasing power of the Chinese people. From 2000-

2009 the Chinese import statistics of dried longan increased from 55,904 to 144,154 tons (Table 1.3)

2. The Thailand – China Free Trade Agreement on Vegetables and Fruits effective from 1 October 2003 onward has also entitled Thai exports of dried longan to China to be exempted from import tariff.

Threats (problems and obstacles)

- 1. Dried longan buying prices are set by overseas importers at rather low level making the domestic prices quite low accordingly.
- 2. Foreign matters are found in dried longan for example fragments of rotten wire-screen used for lining the bamboo trays that stick on the dried longan flesh.
- 3. High labor cost for skilled peeling and pitting labors and the drying oven attendant.

The above information shows that the GDL sector has generated high employment and high income effects in local area and among outside people. It thus becomes imperative to examine the impacts of GDL processing community enterprises' operations on local employment and income, as well as the backward and forward linkages, Furthermore it is desirable to study the impacts of improved technology in terms of drying oven modification on the efficiency of golden brown dried longan processing to save fuel wood, saving of labor and electricity expenditure which will be presented in detail in the next chapter. The empirical findings are expected to help policy authorities make decision to support the GDL in the future.

#### 4.4 Other community and geographic potentials and advantages

Tambon Makhuea Chae is a mountainous area within a Natural Forest Reserve zone where there is a sacred place called Doi Kha Maw which is regarded as one of the seven sacred water sources in Thailand. The sacred water from here has been used for ritual performance in various momentous ceremonies in the province as well as elsewhere in Thailand. Meanwhile, the Mae Teab reservoir also serves as a local tourism attraction in addition to its function as a source of farm irrigation. The renowned products of this Tambon are teak wood handicrafts and golden brown dried longan flesh. Furthermore, a northern industrial estate is established in Tambon Makhuea Chae Municipality area and this has drawn a substantial number of labors from elsewhere to take employment and reside in the area. Therefore, the local community becomes that of semi-rural or sub-urban type with the considerable growth in the extent of housing/dormitory construction and rental business and food shops as well. The population and active business expansion are indeed positive for the economic health of the Tambon. It is also anticipated that various manufacturers and industrial firms will increasingly establish their production bases in or transfer to Tambon Makhuea Chae and therefore further local economic prosperity is foreseeable.

# 4.5 Summary

Tambon Makhuea Chae is topographically mountainous as it is located in a National Forest Reserve zone but it also has lowland areas in the eastern and western parts allowing and favorable for farming and human settlements. There are 21 villages under the Tambon local government with a total population of 13,020 people in

altogether 4,070 households. The largest village in terms of number of households is Moo 6 Ban Hong Gaw Muang while the largest in terms of population is Moo 7 Ban San Pa Hiang. Demographically, males and females in 41 – 60 years old cohort constitute the largest population group. The main occupation of the Tambon's population is longan fruit tree farming while the most prevalent secondary occupations are trading and general labor employment. Consistent to the main occupation, the main source of household income in Tambon Makhuea Chae is from selling longan fruits. The longan growing area is totally 5,167 rai, and 4,772 rai out of which is harvestable according to 2011 year end statistics. On the average, in 2011, a household earned 219,682 baht income per year and spent 176,978 baht per year. The majority of population in the Tambon completed primary education, and virtually all population hold Buddhism as their religious belief. With respect to the present research interest, the production and marketing statistics available from Lamphun Provincial Agriculture Office and Lamphun Provincial Industry office reported there were 536 longan drying ovens located in this Tambon indicating the prime significance of longan production and dried longan processing locally.