

Survey of potential users of biogas in some districts of Vientiane Capital



Conducted by Technology Research Institute
Science Technology and Environment Agency (TRI/STEA)

and

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1. Background

The result of the First Fact-finding what was conducted in January 2003 and the Second Fact finding in July 2003 illustrated that the technical condition for biogas in Laos is feasible. The 2nd mission validated the data and information what found in the First mission. In addition, this mission studied all aspects related with utilization of Biogas during sites investigation such as demand side, technical factors, economic factors and institutional factors. From this fact finding it could emphasize that it is possible to develop biogas project in Lao PDR.

In other to evaluate the data and biogas program design from second fact finding, the report was appraised by external consultant. As a result, the appraisal concluded that the biogas program is not feasible in Lao PDR. This is a reason that TRI/STEA and SNV advisors have to review the data and information again and identify more specific areas where has potential for biogas.

In September 2005, the survey on potential user and data collection of potential Household of biogas was conducted in Vientiane Capital. Based on the statistic of number of households with livestock in Vientiane capital in 1999 as show in Annex 1, the survey was focused on four districts such as Nasaithong, Parkngum, Xaithany and Hatxaiphong. Where are heights potential livestock and potential user of biogas in Lao PDR and as the initial phase of biogas project it will be concentrated in these districts. Because the economic conditions in these semi-urban areas are encouraged the materializing of biogas project and it would be a successful example for the extension the project in the country.

Vientiane Capital is located in center of Lao PDR and has the area of 392,000 ha or 2% of total area of the country. Vientiane Cap. consists of 9 districts as follows: Chanthaboury, Sikottabong, Xaisettha, Sisattanak, Nasaithong ,Xaithany, Hatsaiphong, Sangthong and Parkngum. Its population is 616,000 people. About 48,589 of 96,955 household occupied in agricultural and livestock activities. The total agricultural production area covers 83,290 ha. In the statistic in 1999 there were 47,584 Cattle, 32,236 Buffaloes and 14,816 Pigs in Vientiane Capital.

2. Objective

The objectives of this survey are to identify the biogas user in semi-urban areas in Vientiane Capital. The livestock situation in these areas will be appraised and the utilization of energy sources will be surveyed. Finally, the availability of micro credit system in the villages will be identified.

3. Methodology

The methodology for this survey was the site investigation of the villages of 4 districts and observation of the livestock handling. The team interviewed the villagers who own livestock at home. Firstly, the survey team meets the district's officials of agriculture and forestry offices. Here the general information on livestock was collected from asking of officials of livestock sectors. After that, the survey team investigated 2 -3 villages of each district as Rapid Rural Appraisal (RRA).

4. Findings

4.1 Livestock practice

The survey team investigated 10 Villages as showing in Annex 2. The main activities of villagers in these districts are agriculture and livestock. Furthermore, the weaving and handicraft are also a good additional income for them. Approximate 919 Households of 2,985 Households raise animals such as Cattle, Buffaloes and Pigs. The total number of animals in 10 Villages is 5,003 heads. The average number of animals per household is 5.4 and the average minimum number of cattle is 2 and the maximum is 60.



About 90% of cattle and buffaloes are keeping at home in the night time while some farmers who raise cattle or buffaloes more than 50 head keep their animals in the special land where is a little far from the village because of sanitarily and limited place in the villages. Pigs are always kept in the stable near the house.

In Annex 5, 6, 7 and 8 it presented the statistic of livestock of the villages in Naxaithong, ParkNgum, Xaithany and Hatsaiphon

respectively. This information were informed by Agriculture and Forestry Offices of Districts.

Annex 9,10, 11 and 12 illustrated the list of farmer with the number of cattle, buffaloes and pigs in the investigated villages such as Ban Nakountai, Sendin, Phonthong in Nasaithong, Ban Markhiao, Naxon in Park Ngum, Ban Thasamor, Phonngam, Phonxai in Xaithany and Ban Sitantai and Nahai in Hatsaiphong. It shows also the potential of biogas user.

The stable is about 50 m far from house. It seems to be no any difficulty to take care the feeding materials for biogas.

4.2 Energy use

The main energy sources for cooking are fuel wood and charcoal. In average the charcoal consumption is 2 bags (about 40 – 50 kg) per month per household. One charcoal bag cost about 15 000 Kip, it means that they spent at least 30,000 kip per month for charcoal. The price charcoal seems to be raised stately because the round wood for charcoal marking is less every day. The problem of using fuel wood in semi-urban is scarcity of firewood in



natural source it growing distance and more time spending in searching, and some available in owner land.



Some households (e.g. Sitantai village) use LPG for cooking, it very clean and convenience, many villagers are impressed by the convenience of using gas in cooking but it is quite expensive, the cost of one cylinder of 15 Kg is about 120,000 kip (11 USD) using for two months, so we believe that the motivation of biogas using seems to be increased in near future.

Some households keep Charcoal in open air and during raining season charcoal contains high moisture and it causes for bad burnt of charcoal and fuel wood. Consequently, people do not like using charcoal or fuel wood in the raining season.

4.3 Credit facilities

It exist already small credit systems in all villages where were visited by survey team. There are Community Saving Fund and LWU Saving Fund separately. These funds provide loan with different amount for their member. For example in Nakoutai Village, the LWU Saving Fund has established for 4 years. The total money is 320 mill. Kip. They can provide loan of 10 mill. per member. The period of payment is 6 month in general. The interest is 5% per month. However, the LUW Saving Fund in Phonxai Village has established just for one year and the total money at the moment is 40 mill. Kip. The maximum loan is 2 mill. Kip per member with the interest of 5% for 6 month period.

Furthermore, the Agriculture Promotion Bank provide also loan to farmers with the interest 12% per year for agriculture and livestock and 15% for commercial. But the process for loan requests

5. Conclusion

From this survey it could conclude as following:

- Vientiane Capital is the most suitable for the initial of Biogas Project because the technical and financial conditions are available.
- It could reduce also the transportation cost for the running of project.
- The livestock practice in the visited villages is fulfilling the technical condition for domestic biogas. The feeding material is enough for biogas plant.
- About 30% of visited household interest for biogas, but some of them are not clear how much is the contribution part for them because the Biogas Project do not decide what kind of biogas digester is the best for the situation in Lao PDR.

- It exist already small credit system in the villages which can support for the loan for contribution to biogas plant.
- The mason skill in local area is available.

Though the investigation of 10 Villages in 4 districts it could clarify the doubt that there would be not enough dung for feeding the biogas plant due to poor of livestock management of people, so that could be cause for the faille of biogas as reported in the Fact-finding mission and the appraisal from the external consultants. In the reality as it indicated in 10 visited Villages, the livestock practice was organized in excellent condition for the biogas. Accept the livestock practice issue the other conditions were studied and clearly reported in the Fact-finding mission from SNV Nepal in 2003.

6. Recommendations

From the experience of this survey mission it could recommend as following:

- The Biogas Project should start in Vientiane Capital as Pilot Project due to the availability of necessary facilities such transportation of construction materials.
- The promotion and dissemination team should start to work as soon as possible before the project is implemented.
- The Biogas Project should present clear information on the biogas digester so that the farmer can view their commitment in the biogas plant.
- The Biogas Project should study the impact of existing biogas plant to the energy use and time consumption of villager in Ban Nongphouvien in other to be as a reference data during the promotion of biogas to others villages.
- The promotion and awareness for biogas among targeted households should start as soon as possible to increase demand in biogas.
- Funding for preparatory phase should be considered in order to support all preparatory activities.
- It is hoped that the setting up biogas office and the office staffing is under consideration between TRI and SNV advisers will be completed by the end of October 2005 while the MOU between TRI and SNV should be considered.

Annex 1: Number of Households with livestock in Vientiane Capital

Source: National Statistic Center, 1999

Item	Districts	Total Households	Total agriculture HH	Total HH with Livestock	Households with Livestock						
					Cattle	Buffaloes	Pigs	Coats	Chickens	Dugs	Others
1	Chanthaboury	10,624	1,123	699	105	32	64	-	490	186	
2	Sikottabong	13,742	3,403	2,682	293	344	148	59	2,324	1,428	121
3	Xaisetha	13,735	4,934	3,898	928	815	156	95	3,788	1,692	337
4	Sisattanak	9,880	2,785	1,364	193	61	101		1,209	743	99
5	Nasaithong	8,145	6,128	5,609	1,937	1,789	1,452	17	4,999	3,292	547
6	Xaithany	18,048	12,901	9,194	1,732	2,350	1,171	43	8,044	3,697	287
7	Hatsaiphong	12,647	8,018	5,336	1,186	807	265		4,283	2,810	73
8	Sangthong	3,595	3,313	2,630	826	1,336	718	42	2,045	1,087	237
9	Maiparkngum	6,539	5,976	4,746	2,044	1,386	706	19	3,186	1,866	219
	Total	96,955	48,581	36,158	9,244	8,920	4,781	275	30,368	16,801	1,920

Annex 2: Number of Livestock in Vientiane Capital, 1999

Source: National Statistic Center, 1999

Item	Districts	Number of Livestock							
		Cattle	Buffaloes	Pigs	Caots	Chickens	Dugs	Others	
1	Chanthaboury	518	96	765	-	18,884	3,221	-	
2	Sikottabong	1,474	1,133	787	939	121,879	16,369	663	
3	Xaisettha	3,557	2,573	1,240	272	244,024	43,364	1,363	
4	Sisattanak	1,193	194	565	-	59,818	12,762	331	
5	Nasaithong	9,583	6,511	3,450	68	107,492	37,578	3,524	
6	Xaithany	9,479	8,380	2,730	130	172,353	41,591	1,335	
7	Hatsaiphong	4,275	1,842	1,026	-	95,749	55,508	689	
8	Sangthong	4,615	5,612	1,333	94	45,438	7,635	1,691	
9	Parkngum	12,890	5,894	2,920	195	66,979	19,410	1,032	
	Total	47,584	32,235	14,816	1,698	932,616	237,438	10,628	

Annex 3: List of visited villages

Item	District	Villages	Number of HH	Biogas user	Number of Animals
1	Nasaithong	Nakountai	213	87	738
		Sendin	235	47	705
		Phonthong	157	90	440
2	Park Ngum	Markhiao	256	200	NA
		Naxon	370	100	1200
3	Xaithany	Thasamor	143	95	570
		Phon Ngam	188	90	130
		Phonxai	510	90	812
4	Hatsaiphong	Sithantai	360	40	185
		Nahai	553	50	253
4	Total	10	2,985	919	5,033

Annex 4: List of Key informants

Item	Name	Position	Contact address
1	Mr. Kaison THAPKHAMHEUANG	Head of Agriculture and Forestry Office	Agriculture and Forestry Office, Naxaithong dist.
2		Head of Livestock Sector	Agriculture and Forestry Office, Naxaithong dist.
3	Ms. Soutsada Inthason	Technician	Agriculture and Forestry Office, Naxaithong dist. 020 2407682
4	Ms Nean Lanuansy	Technician	Agriculture and Forestry Office, Naxaithong dist. 020 5427147
5	Ms Viensai	Vice Head of Village	Nakountai Village, Naxaithong dist.
6	Mr Khamsuan	Vice Head of Village	Sendin Village, Naxaithong dist. 020 5900125
7	Mr Bounlien	Vice Head of Village	Phonthong Village, Naxaithong dist.
8	Mr. Soulykan ,	Head of Agriculture and Forestry Office	Agriculture and Forestry Office, Park Ngum dist.

9	Mr Totsakan,	Vice Head of Agriculture and Forestry Office	Agriculture and Forestry Office, Park Ngum dist.
10	Mr Phontep,	Head of Livestock Sector	Agriculture and Forestry Office, Park Ngum dist.
11	Mr. Somvang	Technician	Agriculture and Forestry Office, Park Ngum dist.
12	Mr Phoutisan	Technician	Agriculture and Forestry Office, Park Ngum dist.
13	Mr. Bounlap,	Head of Village	Markhiao Village, Park Ngum dist
14	Mr. Khamdy Keomany,	Head of Village	Naxon Village, Park Ngum dist.
15	Mr. Thongteam ,	Chief of Agriculture and Forestry Office	Agriculture and Forestry Office, Xaithany district
16	Mr. Khanthong		Agriculture and Forestry Office, Xaithany district
17	Mr Bounkeat Saiyavongsa	Head of Village	Ban Thasamor Xaithany dist. 020 7719246
18	Mr Buaphet,	Chief of village	Ban Phon Ngam , Xaithany dist. 020 2411692
19	Mr Kean Vorlasane	Head of Agriculture and Forestry Office	Agriculture and Forestry Office, Hatsaiphong dist.
20	Mr. Souliya	Technician	Agriculture and Forestry Office, Hatsaiphong dist.
21	Mr Phouvane Malaythong	Chief of Village	Sithatai Village, Hatsaiphong dist. 020 5777451
22	Mr Sonphet Tevi	Deputy Chief of Village	Sithatai Village, Hatsaiphong dist. 020 5930921
23		Chief of Village	Nahai Village Hatsaiphong dist.

Annex 5: Number of Livestock in Nasaithong District, 2002 - 2003

Source: National Statistic Center

Item	Name of Villages		Total HH	Houshold with Livestock	Number of Livestock				
					Buffaloes	Cattle	Pigs	Coats	Poultry
1	Saimounkoun	Äš'÷±£÷-			37	46	-	-	675
2	Sikeat	¡óÄ¡ð©			80	120	-	-	1,500
3	Phangheng	°¾±Ä¹É±			16	47	26	29	3,043
4	Nallean	-¾¼É¼			34	70	4	-	1,075
5	Nasian	-¾¼É¼,			46	58	35	-	2,193
6	Phonsavan	Ä²¹½¹ ñ-			60	69	-	-	1,200
7	Phonkeo	Ä²Ä¡É,			329	194	28	-	2,567
8	Donxiendi	©ð±§¼±©ó			105	124	45	-	4,448
9	Dongluang	©ð±¹ù, ±			45	84	60	-	2,506
10	Nasaitai	-¾¼§¾ÄªÉ			57	63	23	-	4,430
11	Nasaikang	-¾¼§¾¼¼¼			35	40	40	-	3,140
12	Nasaineu	-¾¼§¾¼¼Äîð°			121	103	39	-	1,879
13	Parkhead	¾¼¼Ä»©			29	318	226	50	6,641
14	Nakountai	-¾¼£ðÄªÉ	213	87	213	390	30	-	3,320
15	Nakounneu	-¾¼£ðÄîð°			70	256	35	35	15,928
16	Nongyang	î°±¾¼,			70	92	25	-	2,450
17	Dongbong	©ð±®°±			28	82	32	-	42,154
18	Huanxang	¹ð, §É¾±			60	109	35	6	2,934
19	Danxi	©¾¼§ó			8	382	9	-	3,741
20	Huakua	¹ð, øð,			-	-	-	-	1,470
21	Naxon	-¾¼§°-			6	104	28	23	1,480
22	Nayang	-¾¼¾¼±			123	464	17	17	4,105
23	Nongkankou	î°±£ñ£ð			38	159	21	21	1,500
24	Namkiangtai	-Ö¡É¼±ÄªÉ			80	199	16	16	1,864
25	Namkiangneu	-Ö¡É¼±Äîð°			72	250	18	18	1,875
26	Nasap	-¾¼§ñ©			84	296	22	22	1,970
27	Ilaitai	°óÄ¡ÄªÉ			55	93	21	-	5,200
28	Ilaineu	°óÄ¡Äîð°			18	29	12	-	2,300
29	Kangsen	¼¾±Ä¹-			10	41	-	15	1,200

30	Cheansavang	ÀÏÉ¤½¹,É¾¤ ¤			10	65	109	-	2,000
31	Namyean	-ÖÄµñ-			19	81	30	12	6,100
32	Sisavan	¡ó¡½¹,¾©			-	20	5	15	560
33	Anghnamhuam	ºú¾¤Ö¹÷È´			-	52	-	38	2,300
34	Sonpeantai	¡ö¤À¯ö°ÄªÉ			27	62	12	-	3,400
35	Sonpeanneu	¡ö¤À¯ö°ÄÎö°			18	34	18	-	5,300
36	Namhuam	-Ö¹÷È´			35	114	87	-	10,100
37	Huambeng	¹÷´Á®È¤			8	125	120	-	2,010
38	Peak	À¯ó¡			55	213	80	-	8,900
39	Naton	-¾âÈ°-			43	116	30	-	1,996
40	Phokham	Â²£¿			11	21	32	-	2,300
41	Nanat	-¾â¾¾©			15	32	15	-	5,400
42	Nuana	¹ö,¾			41	90	29	-	569
43	Naka	-¾â®È¾			21	114	21	-	1,300
44	Phonmuang	Â²´È,¤			24	246	102	-	6,986
45	Honggna	»úº¤¤ö,			30	290	55	-	7,250
46	Sendin	Á¡-©ó	235	47	-	680	18	21	8,300
47	Sivilay	¡ó,òÄi			37	276	60	110	4,711
48	Phonsai	Â²Â§			-	31	22	5	2,300
49	Phonthong	Â²-êº¤	154	100	-	23	18	-	1,200
50	Phonsi	Â²-¡ó			54	187	99	8	1,604
51	Tam	«Ö			15	157	9	-	2,101
52	Naga	-¾â¤È¾			12	182	150	-	2,356
53	Boa	®ö,			25	250	65	-	1,565
54	Pattana	²ñ©ê½¾			16	106	48	29	1,895
55	Nongsa	Îº¤½¹			25	280	320	-	2,300
56	Nadi	-¾â©ó			18	174	19	19	2,292
56		¡,´êñ¤ö©	602	234	2,488	8,303	2,420	509	225,883

Annex 6 : Number of Livestock in Park Ngum District

Source: agriculture and forestry Park Ngum office, 29/09/2005

Item	Name of Villages		Total households	Household with livestock	Number of livestock				
					Buffalo/ £, ¾"	Cattle/ αö,	Pig/İø	Caot/ Á®É	Pauldry / İñ©-óı
1	Markhiao	İ¾ı»¼,	259	200	91	400	150	-	1,820
2	Donvanpho	©°- ĩαÁ²	207	207	89	357	128	-	1,790
3	Donsanphai	©°- -İÉ¾αÃ°É	296	266	31	121	59	-	795
4	Nongdong	İ°α©öα	79	61	38	130	25	-	655
5	Huanamyoun	ıü, "Ö"÷-	62	53	45	147	41	-	740
6	Naleat	-¾Äıó©	165	165	103	432	188	-	2,530
Total			1,068	952	397	1,587	591	-	8,330

Annex 7: Number of Livestock in Hatsaiphong District

Source: Agriculture and Forestry Office of Hatsaiphong District, 2005

item	Villages	ᑭᑦᑲᑦᑲᑦ	Total Household	Household with livestock	Number of livestock				
					Buffalo / ᑭᑦᑲᑦᑲᑦ	Cattle / ᑭᑦᑲᑦᑲᑦ	Pig/ᑭᑦᑲᑦᑲᑦ	Caot/ ᑭᑦᑲᑦᑲᑦ	Pauldry / ᑭᑦᑲᑦᑲᑦ
1	Dondou	ᑭᑦᑲᑦᑲᑦ			-	30	13	15	3,500
2	Thana	ᑭᑦᑲᑦᑲᑦ			-	23	2	8	5,221
3	Bor Oh	ᑭᑦᑲᑦᑲᑦ			-	-	-	-	-
4	Phao	ᑭᑦᑲᑦᑲᑦ			-	7	45	-	4,500
5	Kang	ᑭᑦᑲᑦᑲᑦ			N/A	N/A	N/A	N/A	N/A
6	Somhong	ᑭᑦᑲᑦᑲᑦ			N/A	N/A	N/A	N/A	N/A
7	Keangyang	ᑭᑦᑲᑦᑲᑦ			9	28	6	8	1,018
8	Donkasai	ᑭᑦᑲᑦᑲᑦ			10	40	5	25	2,500
9	Keangpayang	ᑭᑦᑲᑦᑲᑦ			7	122	10	8	2,451
10	Natham	ᑭᑦᑲᑦᑲᑦ			43	54	-	15	2,314
11	Hatdonkeo	ᑭᑦᑲᑦᑲᑦ			25	53	50	80	2,300
12	Hatkansa	ᑭᑦᑲᑦᑲᑦ			55	68	6	8	1,680
13	Huaha	ᑭᑦᑲᑦᑲᑦ			35	40	30	50	2,000
14	Done	ᑭᑦᑲᑦᑲᑦ			18	110	10	25	1,100
15	Pho Ngeung	ᑭᑦᑲᑦᑲᑦ			N/A	N/A	N/A	N/A	N/A
16	Phosy	ᑭᑦᑲᑦᑲᑦ			N/A	N/A	N/A	N/A	N/A
17	Savang	ᑭᑦᑲᑦᑲᑦ			7	8	-	17	1,800
18	Paphang	ᑭᑦᑲᑦᑲᑦ			7	15	15	3	1,500
19	Chomthong	ᑭᑦᑲᑦᑲᑦ			5	79	-	20	2,400
20	Chiempang	ᑭᑦᑲᑦᑲᑦ			10	48	-	3	2,000
21	Hormtai	ᑭᑦᑲᑦᑲᑦ			13	43	-	9	1,250
22	Thinpiea	ᑭᑦᑲᑦᑲᑦ			17	106	-	-	3,600
23	Thakea	ᑭᑦᑲᑦᑲᑦ			1	76	13	35	1,200
24	Saiphonneu	ᑭᑦᑲᑦᑲᑦ			-	25	20	12	1,500
25	Saiphontai	ᑭᑦᑲᑦᑲᑦ			2	29	-	10	2,500
26	Khosai	ᑭᑦᑲᑦᑲᑦ			-	202	3	18	4,700
27	Sithantai	ᑭᑦᑲᑦᑲᑦ	360	40	4	142	50	14	3,800
28	Hatsaikao	ᑭᑦᑲᑦᑲᑦ			-	63	10	53	5,512

	Somvanneu	ໂຮ່'1, ຸ່ນຳໂຮ່			-	28	17	8	9,352
29	Somvantai	ໂຮ່'1, ຸ່ນຳໂຮ່			-	-	8	-	1,862
30	Nonghai	ໂຮ່'1, ຸ່ນຳໂຮ່			N/A	N/A	N/A	N/A	N/A
31	Somsanouk	ໂຮ່'1/2-ໂຮ່			4	95	8	36	1,571
32	Nongveang	ໂຮ່'1, ຸ່ນຳໂຮ່			-	-	30	40	3,500
33	Salakhamneu	ໂຮ່'1/4, ຸ່ນຳໂຮ່			5	50	31	25	765
34	Salakhamtai	ໂຮ່'1/4, ຸ່ນຳໂຮ່			10	50	50	80	1,500
35	Dongphonlao	ໂຮ່'1/2, ຸ່ນຳໂຮ່			3	40	63	93	1,654
36	Donphai	ໂຮ່'1/2, ຸ່ນຳໂຮ່			12	80	-	50	300
37	Donkhamxang	ໂຮ່'1/2, ຸ່ນຳໂຮ່			10	334	12	25	4,000
38	Nahai	ໂຮ່'1/4, ຸ່ນຳໂຮ່	553	50	71	167	15	12	220
39	Nahai	ໂຮ່'1/4, ຸ່ນຳໂຮ່			33	175	12	33	3,478
40	Nonghea	ໂຮ່'1/4, ຸ່ນຳໂຮ່			6	142	50	200	1,500
41	Dongphonsi	ໂຮ່'1/2, ຸ່ນຳໂຮ່			6	142	50	200	1,500
42	Thanalian	ໂຮ່'1/4, ຸ່ນຳໂຮ່			-	35	-	30	1,500
43	Donphohie	ໂຮ່'1/2, ຸ່ນຳໂຮ່			22	150	-	250	500
44	Thamoang	ໂຮ່'1/4, ຸ່ນຳໂຮ່			-	235	-	49	2,500
45	Phavah	ໂຮ່'1/4, ຸ່ນຳໂຮ່			1	57	40	8	3,266
46	Thadua	ໂຮ່'1/4, ຸ່ນຳໂຮ່			5	196	50	96	595
47	Thintom	ໂຮ່'1/4, ຸ່ນຳໂຮ່			38	185	45	65	2,500
48	Khamchaluean	ໂຮ່'1/2, ຸ່ນຳໂຮ່			-	88	3	450	850
49	Nongpheanneu	ໂຮ່'1/4, ຸ່ນຳໂຮ່			-	320	6	15	500
50	Nongpheantai	ໂຮ່'1/4, ຸ່ນຳໂຮ່			-	250	-	30	1,000
51	Xienkuan	ໂຮ່'1/4, ຸ່ນຳໂຮ່			112	284	31	13	2,710
52	Thapa	ໂຮ່'1/4, ຸ່ນຳໂຮ່			12	234	53	67	4,560
53	Parkpeang	ໂຮ່'1/4, ຸ່ນຳໂຮ່			5	50	20	-	1,300
54	Nongpong	ໂຮ່'1/2, ຸ່ນຳໂຮ່			93	415	317	-	6,178
55	Thintean	ໂຮ່'1/4, ຸ່ນຳໂຮ່			26	358	47	252	1,620
56	Kuadeang	ໂຮ່'1/4, ຸ່ນຳໂຮ່			9	261	152	17	1,100
57	Simanoneu	ໂຮ່'1/2, ຸ່ນຳໂຮ່			N/A	N/A	N/A	N/A	N/A
58	Simanoutai	ໂຮ່'1/2, ຸ່ນຳໂຮ່			N/A	N/A	N/A	N/A	N/A
59	Nalong	ໂຮ່'1/4, ຸ່ນຳໂຮ່			100	380	130	25	3,500
	Total		913	90	851	6,212	1,528	2,605	125,727

Annex 8: Number of livestock in Xaithany district

Data not yet tabulated

Annex 9: Number of Livestock in Ban Nakoutai, Nasaithong Dist.

Date:29/09/2005

Item	Name of Farmer		Pig	Cattle	Buffaloe	Other
1	Ror	ê 1ùÒ		-	7	
2	Boalien	ê ®ö,1¼-		-	1	
3	Vongsi	ê ,öæ ó		7	-	
4	Pouk	ê ¯÷j		-	2	
5	Keorong	ê ÁjÉ,1öæ		-	4	
6	Khammai	ê £ç'¾"		-	4	
7	Veau	Á,É-		-	6	
8	Pane	ê ²ñ-		8	-	
9	Bountom	ê ®+-«ö'		2	-	
10	Thong	ê ê°æ (°øÉ¹öæ)		5	3	
11	Boaketh	ê ®ö,Áj©		-	2	
12	Suankham	ê ,-£ç		5	5	
13	Sidum	ê ó©ç		15	-	
14	Van	ê ,¾-		-	2	
15	Vathana	ê ,ñ©ê½-¾		6	2	
16	Xuai	ê §É, "		-	3	
17	Somphon	ê ö'²º-		-	3	
18	Kong	j°æ		5	2	
19	Ngum	ê ææ'		4	-	
20	Chandeang	ê ¥¾-Á©æ		4	-	
21	Khampien	ê £ç²¼-		14	-	
22	Peangsa	ê À²ñæ ¾		-	4	
23	Inpan	ê °ó¯ñ-		5	-	
24	Pong	ê ¯öæ		17	-	
25	Noumai	ê ÎøÉÃÏÉ		5	-	
26	Bountan	ê ®+-«ñ-		-	5	

27	Thitsom	ê êò© ö´		14	-	
28	Keankham	ê ÁjÈ-£¿		7	-	
29	Thong	ê ê°¤ (®÷Â»´)		2	2	
30	Khamfai	ê £¿±³⁄₄		3	-	
31	Keanta	ÁjÈ-ª³⁄₄		4	3	
32	Phout	ê ²÷©		5	2	
33	Kom	ê jö´		17	15	
34	Boapha	ê ®ö, ²³⁄₄		12	7	
35	Mane	ê j̄-		2	-	
36	Duang	ê ©, -		17	5	
37	Chandone	ê ¥³⁄₄-©°-		-	4	
38	Peang	ê Á²ñ¤ (²Òª+É´´)		-	3	
39	Kongkham	ê jö¤£¿		5	-	
40	Viensai	ê , ¼¤Ã§		16	-	
41	Khamseang	ê £¿Áj¤		-	3	
42	Sone	j°-		2	-	
43	Thavone	ê «³⁄₄, °		-	5	
44	Lom	ê iÉ°´		9	-	
45	Kua	ê j÷É´´		-	3	
46	Boutsadi	®÷© ½©ó		9	-	
47	Sak	ê ñj		2	-	
48	Bouali	ê ®ö, jó		6	5	
49	Toui	ê ª+É´´		-	5	
50	Boun	ê ®÷-		2	-	
51	Poun	¯÷É-		5	-	
52	Khampui	£¿°÷´´		14	-	
53	Deang	ê Á©¤		2	-	
54	Keo	ê ÁjÉ,		-	3	
55	Seangthavi	ê Áj¤ê½, ó		-	3	
56	Thitboun	ê êò©®÷-		-	23	
57	Sa	ê j³⁄₄		-	-	
58	Khampouk	ê £¿²÷j		7	-	
59	Gah	ê ¹Éª³⁄₄		-	2	

60	Pat	ê ²ñ©		9	-	
61	Mane	ê Íñ-		-	5	
62	Thip	ê èò®		7	5	
63	Pha	ê °¾		-	4	
64	Somboun	ê ò'®ø-		12	8	
65	Nom	ê î°'		-	6	
66	Choi	ê ¥É°'		-	7	
67	Oum	ê °+É'		-	1	
68	Boakham	ê ®ö,£¿		16	-	
69	Vetsouvan	ê À,© , ñ-		-	15	
70	Bounyong	®±''°¤		-	7	
71	Bouly	ê ®ö, ió		2	-	
72	Liean	ê '1¼'		15	18	
73	Sithon	ê óêö		-	4	
74	Noukham	ê Íø£¿		16	-	
75	Tha	ê ê¾ (²Òøö¤)		7	-	
76	Kong	ê °¤		54	-	
77	Phon	ê ²ö-		-	5	
78	So	ê Â (³øÉ³ó)		-	4	
79	Kethsadi	ê À,ñ© ½©ó		9	-	
80	Nantha	ê -ñ-ê¾		37	-	
81	Phomma	ê ²ö''¾		3	-	
82	Bounyuan	ê ®±''ö-		3	-	
83	Khamchan	ê £¿¥ñ-		-	3	
84	Bountha	ê ®+ê½,ó		19	-	
85	Thitpai	ê èò©Ä²		7	-	
86	Vat	ê ,ñ©		-	3	
87	Hou	ê »øÉ		15	-	
87	Total			495	243	

Annex 10: Number of Livestock in Ban Sendin, Nasaithong Dist.

Date:29/09/2005

Item	Name of Farmers		Pig	Cattle	Buffaloe	Other
1	Ki	ê jò	-	3	-	
2	Sai	ê Ä!	-	8	-	
3	Chouk	ê ¥÷j	-	12	-	
4	Teuang	ê Ä«óα	-	6	-	
5	Phuang	ê Ä³δ°-	-	28	-	
6	Thongchan	ê ê°α¥ñ-	-	14	-	
7	Peang	ê Ä²ñα	-	12	-	
8	Khammoutdi	ê £¿'÷-©ó	-	30	-	
9	Beang	ê Á@α	-	7	-	
10	Tom	ê «ö´	-	17	-	
11	Vien	¼α	-	27	-	
12	Chanmy	ê ¥¾-´ó	-	8	-	
13	Xiengsy	ê §¼α ó	-	20	-	
14	Tom	ê «ö´ (£ø)	-	23	-	
15	Okhame	Ä°£¿	-	5	-	
16	Chanpeang	ê ¥¾-- Ä²ñα	-	16	-	
17	Aep	ê Ä°®	-	5	-	
18	Somdy	ê ö´©ó	-	17	-	
19	Bouchai	ê ®÷-Ä¥	-	18	-	
20	Thiton	ê êò©°È°-	-	37	-	
21	Xeingmy	ê §¼α´ó	-	17	-	
22	Khambong	ê £¿®óα	-	31	-	
23	Peang	ê Ä²ñα	-	26	-	
24	Xiengtome	ê §¼α«ö´	-	24	-	
25	Vandi	ê ,ñ-©ó	-	21	-	
26	Khamsuan	ê £¿!,-	-	30	-	
27	Phane	ê ²ñ-	-	15	-	
28	Amka	ê °¿£¾	-	10	-	
29	Oukham	ê °ø£¿	-	6	-	
30	Vandi	,ñ-©ó	-	3	-	

31	Dea	ê À©ó-	-	8	-	
32	Yot	°©	-	5	-	
33	Sothon	ê óêö-	-	5	-	
34	Vath	ê 1, 3/4©	-	12	-	
35	Kankham	çñ-£¿	-	13	-	
36	Bang	ê ®¾α	-	10	-	
37	Tau	ê Àªö¾	-	11	-	
38	Samlua	ê ¿ , °	-	8	-	
39	Samlan	ê ¿ ¾	-	28	-	
40	Thong	ê ê°α	-	18	-	
41	Rua	ê À¹ùõ°	-	8	-	
42	Peayai	ê À°ó°Ã¹°È	-	15	-	
43	Peanoi	ê À°ó°É°°	-	16	-	
44	Seang	ê Á α	-	14	-	
45	Lat	ê ìñ©	-	16	-	
46	Aet	ê Á°©	-	17	-	
47	Phorng	ê °°α	-	4	1	
47	Total		0	704	1	

Annex 11: Number of Livestock in Ban Sithantai, Hatsaiphong Dist.

Date:29/09/2005

Item	Name of Farmer		Pig	Cattle	Buffaloe	Other
1	Mr. Somphan	ê ö²ñ-	3	1		
2	Da	ê ©¾		5		
3	Nguan	ê ¹α, -		4		
4	Khua	ê É, °		4		
5	Dao	ê ©¾, °		7		
6	Teva	ê Àê, ¾		6		
7	Kavai	ê ¾Ä, °		2		
8	Ms Duan	©, -		3		
9	Muang	É, -		4		
10	Mr Done	ê ©°-		2		
11	Ouang	ê °, -		5		

12	Khon	ê £°-		5		
13	Xiang	ê §¼α		4		
14	Sisavai	ê ò ½Ä¹,		2		
15	Choi	ê ¥È°°		2		
16	Tea	ê ÀªÉ-		2		
17	Dom	ê ©ö´	5	2		
18	Done	ê ©È°-		7		
19	Done	ê ©°-		3		
20	Phonsavat	ê ²öα ½¹,ñ-		4		
21	Pomma	ê ²ö´´¾		3		
22	Vong	ê ,öα		3		
23	Peang'	ê À²ñα		5		
24	Dao	ê ©¾,	3	2		
25	Mai	ê Ä´		3		
26	Dao	ê ©¾,(´-)		3		
27	Siane	ê §¼-	4	2		
28	So	ê Ä		3		
29	Noun	ê Íø		6		
30	Deung	ê À©ø°		8		
31	Van	ê ,ñ-	6	1		
32	Morm	ï°-	4	1		
33	ChanHuang	ê ¥¾-»+Èα	8	1		
34	La	ê ¾α		5		
35	Bat	ê ©ñ©		6		
36	Chanmeang	ê ¥¾-Ä´òα		7		
37	Ket	ê Ä ©	10			
38	Kong	ê öα		2		
39	Viensai	ê ,¾αÄ§		2		
40	Nguan	ê ´´š´		5		
	Total		43	142		

Annex 12: Number of Livestock in Ban Nahai, Hatsuiphong Dist.

Date:29/09/2005

Item	Name of Farmer		Pig	Cattle	Buffaloes	Other
1	Ms Porn	ᄡᄢᄣᄤ		4		
2	Keola	ᄡᄢᄣᄤᄥᄧ	5	-		
3	Pea	ᄡᄢ		2	3	
4	Chantachon	ᄡᄢᄣᄤᄥᄧᄨ		4		
5	Chanpean	ᄡᄢᄣᄤᄥᄧᄨ		8		
6	Pat	ᄡᄢᄣᄤᄥ		3		
7	Kong	ᄡᄢᄣᄤ		6		
8	Pout	ᄡᄢᄣᄤᄥ		-	3	
9	Tang	ᄡᄢᄣᄤ		11		
10	Seang	ᄡᄢᄣᄤ	10	5		
11	Mr Nom	ᄡᄢᄣᄤᄥ		2		
12	Lieang	ᄡᄢᄣᄤᄥᄧ		2		
13	Peat	ᄡᄢᄣᄤᄥᄧ		7		
14	Kou	ᄡᄢᄣᄤᄥ		-	4	
15	Ming	ᄡᄢᄣᄤᄥ		-	4	
16	Bounsuan	ᄡᄢᄣᄤᄥᄧᄨ		2		
17	Ms Toui	ᄡᄢᄣᄤᄥ		2		
18	Mr Tatthongsi	ᄡᄢᄣᄤᄥᄧᄨᄩᄪ		3	8	
19	Sithandon	ᄡᄢᄣᄤᄥᄧᄨᄩᄪ		3	8	
20	Chantaem	ᄡᄢᄣᄤᄥᄧᄨᄩᄪ		12	9	
21	Vong	ᄡᄢᄣᄤᄥᄧᄨ		3		
22	Chanvansi	ᄡᄢᄣᄤᄥᄧᄨᄩᄪ		12		
23	Kone	ᄡᄢᄣᄤᄥᄧᄨ		2		
24	Lan	ᄡᄢᄣᄤᄥᄧᄨ		2	2	
25	Vath	ᄡᄢᄣᄤᄥᄧᄨᄩᄪ		4		
26	Khampha	ᄡᄢᄣᄤᄥᄧᄨᄩᄪ		3		
27	Kay	ᄡᄢᄣᄤᄥᄧᄨᄩᄪ		2		
28	Seng	ᄡᄢᄣᄤᄥᄧᄨᄩᄪ		2	3	
29	Phan	ᄡᄢᄣᄤᄥᄧᄨᄩᄪ		2		
30	Aeth	ᄡᄢᄣᄤᄥᄧᄨᄩᄪ		6		

31	Ms Tha	ê¾		3		
32	Boa	®ð,		2	3	
33	Mr. Kai	ê ÄjË		-	3	
34	Ms Deang	Á©ª		4	4	
35	Sai	Ã		3		
36	Phea	Á²		3		
37	Tha	ê¾		3		
38	Mr. Don	ê ©°-		7		
39	Ms Chon	¥°'		2		
40	Phaoi	°°°		4		
41	Souk	÷j		3	2	
42	Mr Koun	ê £ø		3	4	
43	Ms Bang	®¾¼ª		4	2	
44	Ms Not	-°©		4		
45	Mr Thikhamta	ê êð©£;ª¾		-	3	
46	Kom	ê jð'		-	2	
47	Thit	ê êð©Á ⁻		-	4	
48	Ms Phan	²ñ-		3		
49	Ms Net	Á-©		3		
50	That	ªñ©		2		
	Total		15	167	71	