

Annex 10: List of Technical Staff and Extension Workers

10-1: Song Da Watershed Management Board

Name	Male / Female	Age	Position	Communes	Level of Education
Hoang Van Cuong	M	39	General Technical Officer	Hien Luong	Forestry Engineer
Doan Tung Lam	M	35	Technical Officer	Tan Dan – Yen Hoa	Forestry Engineer
Phung Hung	M	31	Technical Officer	Dong Chum – Muong Chieng	Forestry Engineer
Nguyen Binh Minh	M	33	Technical Officer	Tien Phong	Forestry Engineer
Nguyen Tien Huu	M	39	Technical Officer	Dong Ruong + Lai Thuyen	
Nguyen Van Thanh	M	59	Technical Officer	Toan Son	Forestry Technical School
Xa Hong Yen	M	50	Technical Officer	Muong Tuong	10/10
Dinh Van Hoi	M	49	Technical Officer	Dong Nghe – Suoi Nanh	Machinery Technical School
Nguyen Huy Nhuan	M	31	Technical Officer	Phuc San + Ba Khan	Forestry University
Nguyen Ngoc Anh	M	30	Technical Officer	Tan Mai	12/12
Tran Van Minh	M	50	Technical Officer	Ngoi Hoa + Trung Hoa	Planning School

10-2: Song Da Forest Enterprise

Name	Male / Female	Age	Position	Communes	Level of Education
Nguyen Van Hung	M	30	Manager of Technical Div.		Forestry Engineer
Do Quy Manh	M	25	Technical Officer		Forestry Engineer
Nguyen Tien Ty	M	42	Forestry Officer	Thong Nhat + Dan Chu	Forestry Engineer
Bui Van Khanh	M	38	Forestry Officer	Thung Nai + Binh Thanh	Forestry Engineer
Vu Van Ngoc	M	38	Forestry Officer	Thai Binh	Forestry Engineer
Bui Van Tuong	M	33	Forestry Officer	Su Ngoi	Forestry Engineer
Do The Hieu	M	26	Forestry Officer	Group 3 – FE	Forestry Engineer
Luu Ton Hoa	M	30	Forestry Officer	Hoa Binh	Forestry Engineer
Nguyen Van Thien	M	45	Forestry Officer	Thai Thinh + Vay Nua	Technical Worker

10-3: Hoa Binh Province Agriculture and Forestry Extension Center

Name	Male/ Female	Age	Position	Level of Education
Nguyen Truong Giang	M	31	Deputy Manager of Planning Div.	Forestry Eng.
Nguyen Thi Hong Ly	F	26	Officer	Forestry Eng.
Nguyen Thi Thanh Chien	F	42	Technical Officer	Forestry Eng.
Dinh Thi Lam	F	39	Technical Officer	Forestry Eng.
Nguyen Thi Luong	F	46	Manager of Technical and Planning Div.	Agriculture Eng.
Nguyen Thi Dinh Giang	F	47	Officer	Agriculture Eng.
Nguyen Hong Tuan	M	31	Officer	Agriculture Eng.
Nguyen Thi Nguyet	F	33	Officer	Agriculture Junior College's Degree
Nguyen Huu Tinh	M	46	Manager of Information Div.	Agriculture Eng.
Tran An Dinh	M	30	Information Officer	Forestry Eng.
Nguyen Thu Ha	F	31	Information Officer	Forestry Eng.
Nguyen Bach Dang	M	37	Information Officer	Junior College for Television and Broadcast

10-4: District Agriculture and Forestry Extension Stations

(1) Da Bac District Extension Station

Name	Male/ Female	Age	Position	Communes	Level of Education
Vu Tien Dung	M	50	Chief of Station	Town	Agriculture Engineer
Dinh Thi Quyet	F	47	Deputy Chief of Station	Tien Phung town	Forestry Engineer
Xa Thi Quyet	F	39	Officer	Lien Phuong town	Forestry Engineer
Quach Thi Khieu	F	30	Officer	Town	Forestry Engineer
Nguyen Hong Khan	M	30	Officer	Tu ly town	Agriculture College
Dinh Van Ky	M	47	Officer	Town	Forestry Technical School

(2) Tan Lac District Extension Station

Name	Male / Female	Age	Position	Communes	Level of Education
Bui Van Mun	M	47	Chief of Station	Quang My	Plantation Engineer
Bui Ky Niem	M	53	Officer	Dinh Giao	Agriculture Economics Eng.
Bui Van Viet	M	53	Officer	Do Nhan	Forestry Engineer
Dinh Cong Tao	M	34	Officer	Dinh Giao	Forestry Engineer
Bui Van Nho	M	30	Officer	Do Nhan	Forestry Engineer
Bui Van Hai	M	47	Officer	Quy Hau	Agricultural Machinery Eng.
Vu Thi Thao	F	50	Officer	Quy Hau	Agriculture Engineer
Bui Thanh On	M	47	Accountant	Dinh Giao	Cooperative Management
Bui Thi Thai	F	55	Cashier	Town	Admin School
Nguyen Van Thai	M	26	Contracted Officer	Tu Ne	Fishery Engineer
Bui Van Coi	M	26	Contracted Officer	Dong Lai	Forestry Technical School
Bui Van Lu	M	24	Officer	Tuan Lo	Forestry Engineer

(3) Mai Chau District Extension Station

Name	Male / Female	Age	Position	Communes	Level of Education
Ha Ba Khiem	M	48	Chief of Station	Tong Dau	Plantation Technical School
Nguyen Duc Soat	M	43	Deputy Chief of Station	Mai Chau town	Silviculture Engineer
Vi Van Dung	M	42	Officer	Mai Chau town	Silviculture Engineer
Nguyen Thi Lan	F	42	Officer	Mai Chau town	Silviculture Engineer
Nguyen Thi Tuyet	F	44	Officer	Mai Chau town	Agriculture Engineer
Ha Tuan Hai	M	29	Officer	Mai Chau town	Agriculture Engineer
Nguyen Thi Hanh	F	29	Officer	Dong Bang	Agriculture Engineer

(4) Cao Phong District Extension Station

Name	Male / Female	Age	Position	Level of Education
Pham Hong Quan	M	41	Chief of Station	Agriculture Engineer
Bui Quang Huy	M	30	Expert	Silviculture Engineer
Dinh Thi Vinh	F	39	Expert	Silviculture Engineer
Le Thi Nga	F	44	Expert	Silviculture Engineer
Bui Van Thai	M	30	Contracted Staff	Livestock Engineer
Nguyen Thi Huong	F	23	Contracted Staff	High School's Degree on Plantation

(5) Hoa Binh Town Extension Station

Name	Male / Female	Age	Position	Level of Education
Phan Tuan Hung	M	45	Chief of Station	Agriculture University's Degree
Nguyen Huu Hoi	M	53	Technical Officer	Agriculture University's Degree
Do Duc Thinh	M	29	Accountant	Forestry University's Degree
Nguyen Thi Kien	F	32	Technical Officer	Agriculture Junior College's Degree
Hoang Huu Hai	M	32	Technical Officer	Economic Bachelor
Pham Thi Hang	F	30	Admin. Staff	10/10
Pham Van Giang	M	56	Technical Officer	Technical School

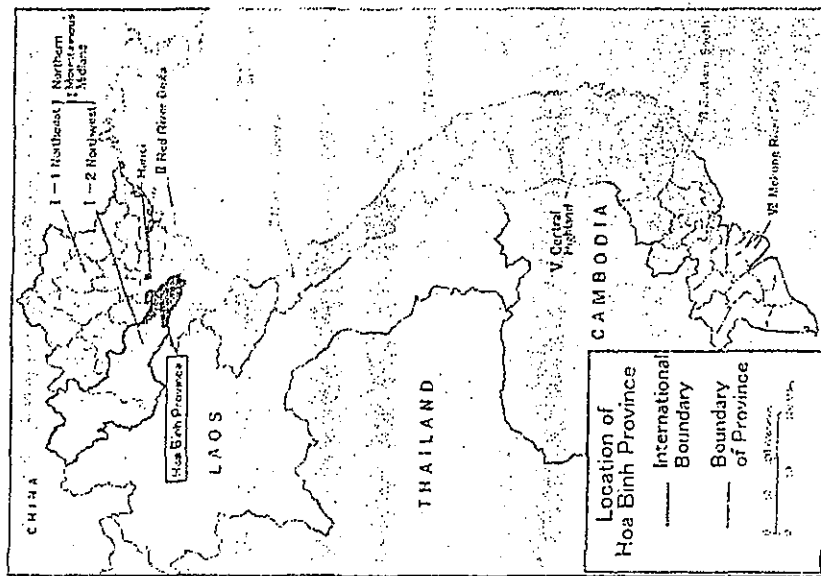
10-5: Commune Agriculture and Forestry Extension Workers*

Name	Male / Female	Age	District	Commune	Level of Education
Hà Văn Huân	M	N/A	Da Bac	Muong Chieng	N/A
Đặng Thị Quyết	F	N/A	Da Bac	Toan Son	Certificate of IPM
Bùi Văn Tâm	M	N/A	Tan Lac	Ngoi Hoa	135 training
Nguyễn Văn Hiệu	M	29	Cao Phong	Thung Nai	Certificate of IPM
Đinh Thị Hiến	F	19	Cao Phong	Binh Thanh	Agriculture High School's Degree
Đinh Xuân Duong	M	37	Hoa Binh Town	Hoa Binh	Certificate of IPM
Nguyen Thi Ninh	F	35	Hoa Binh Town	Thai Thinh	Certificate of IPM

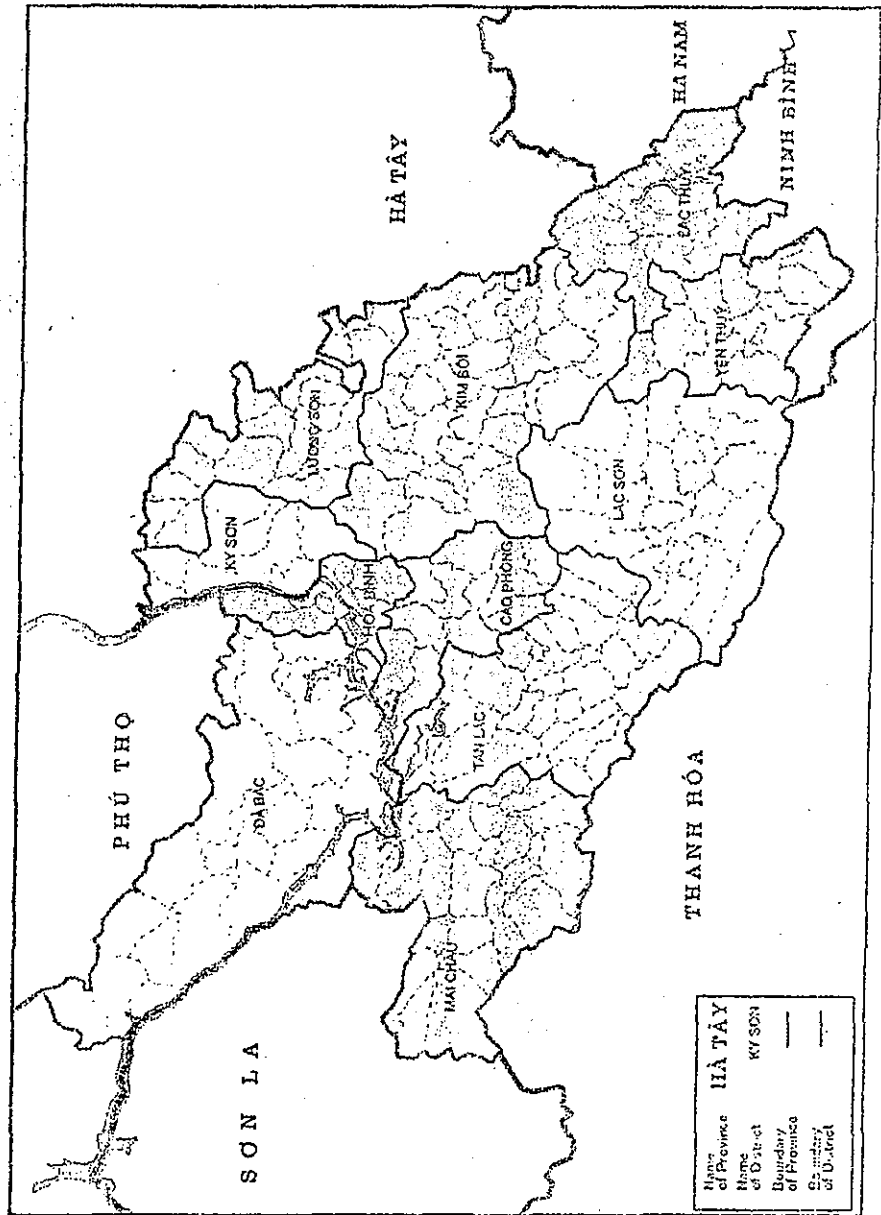
* The list covers the Commune Extension Workers stationed in the 20 communes within the watershed area of Hoa Binh Dam.

Source: Data provided by Sub-DFD, 2002.

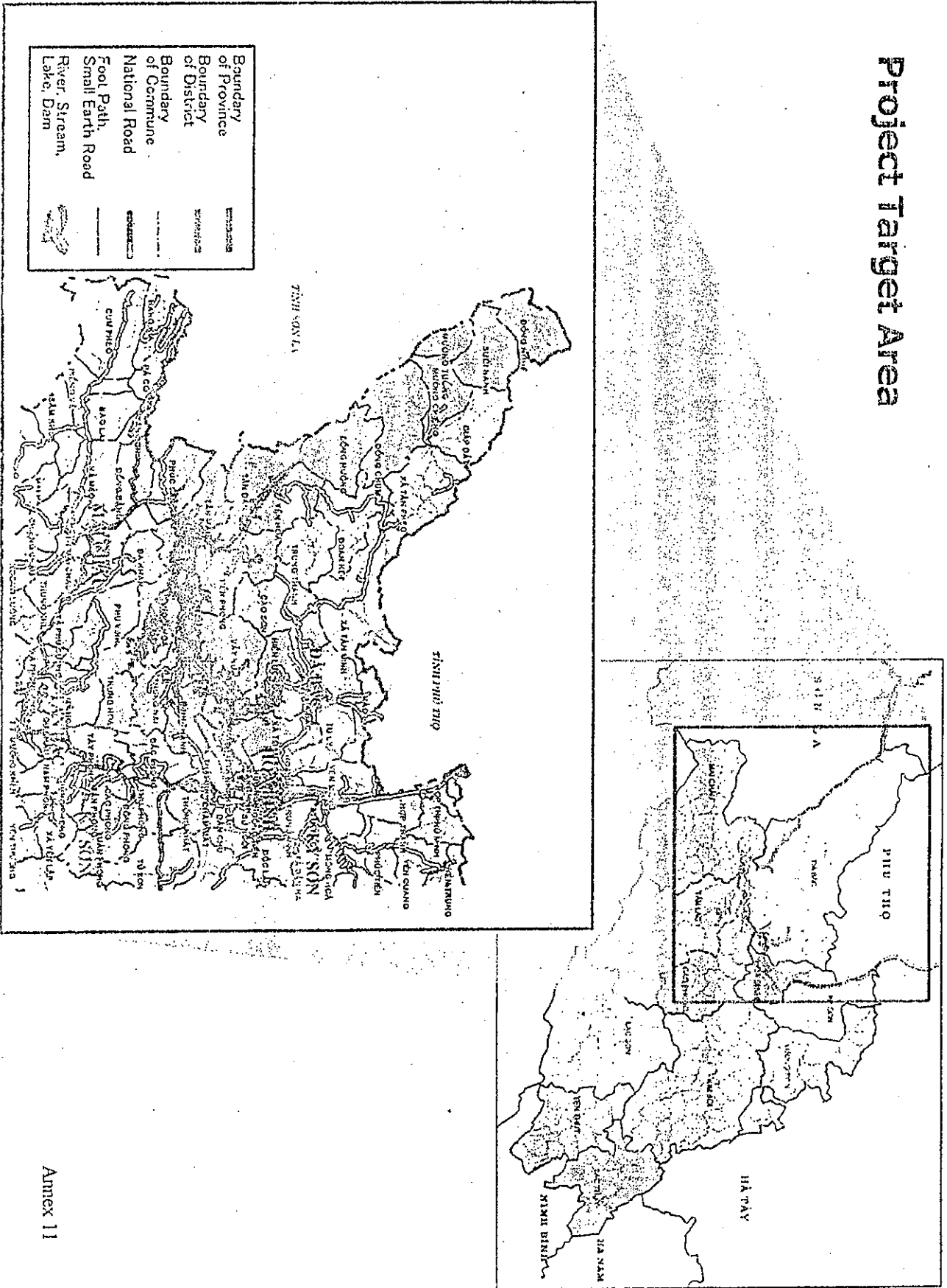
Annex 11: Project Area 11-1: Map of Hoa Binh Province and Target Area



Hoa Binh Province



Project Target Area



Annex 11

11-4: Key Socioeconomic Statistics of the Target Area

11-4-1: List of Districts, Communes and Hamlets in the Watershed Area of Hoa Binh Dam

No.	Code	Commune	No.	Code	Hamlet
I. Đà Bắc District					
1	1-1	Đông Nghé Commune	1	1-1-1	Lài Hamlet
			2	1-1-2	Đăm Hamlet
			3	1-1-3	Nghé Hamlet
			4	1-1-4	Am Hamlet
			5	1-1-5	Mọc Hamlet
2	1-2	Suối Nánh Commune	6	1-2-1	Cơi 1 Hamlet
			7	1-2-2	Cơi 2 Hamlet
			8	1-2-3	Cơi 3 Hamlet
			9	1-2-4	Ba Sen Hamlet
			10	1-2-5	Duốc Hamlet
3	1-3	Mòng Tuồng Commune	11	1-3-1	Mý Hamlet
			12	1-3-2	Đăm Hamlet
			13	1-3-3	Tuồng Bãi Hamlet
			14	1-3-4	Đăm Phế Hamlet
			15	1-3-5	Tuồng Đồi Hamlet
4	1-4	Mòng Chiềng Commune	16	1-4-1	Nà Ngươn Hamlet
			17	1-4-2	Bản hạ Hamlet
			18	1-4-3	Chum na Hamlet
			19	1-4-4	Nà Mùn Hamlet
			20	1-4-5	Nà Pang Hamlet
			21	1-4-6	Chiềng Cang Hamlet
			22	1-4-7	U quan Hamlet
			23	1-4-8	Kế Hamlet
			24	1-4-9	Nà Mời Hamlet
5	1-5	Đông Chum Commune	25	1-5-1	Mới 1 Hamlet
			26	1-5-2	Mới 2 Hamlet
			27	1-5-3	Pà Chê Hamlet
			28	1-5-4	Nà Lốc Hamlet
			29	1-5-5	Cò Phụng Hamlet
			30	1-5-6	Hà Hamlet
			31	1-5-7	Nhập 1 Hamlet
			32	1-5-8	Nhập 2 Hamlet

13: Land Use Statistics of the Target Area (03)

Name of Commune	Total Land Area	Forest Land Area	Forest Land										Non-Forest Land																
			Forest Project	Non-Forest Project	Forest Project	Non-Forest Project	Forest Project	Non-Forest Project	Forest Project	Non-Forest Project	Forest Project	Non-Forest Project	Forest Project	Non-Forest Project	Forest Project	Non-Forest Project													
1. Ban Borey District	47,868	37,866	22,408	47,784	538	3,138	5,119	2,434	2,528	3,729	15,254	752	244	1,081	0	1,928	0	678	4,961	2,504	14,658	11%	231	1,061	204	3,568	1%		
2. Ban Nhon Commune	3,972	2,311	1,377	33,436	151	151	151	151	151	151	151	151	151	151	151	151	151	151	151	151	151	151	151	151	151	151	151	151	151
3. Ban Nhon Commune	1,432	752	271	19,544	187	187	187	187	187	187	187	187	187	187	187	187	187	187	187	187	187	187	187	187	187	187	187	187	187
4. Ban Nhon Commune	3,538	2,028	1,038	40,834	1,344	1,344	1,344	1,344	1,344	1,344	1,344	1,344	1,344	1,344	1,344	1,344	1,344	1,344	1,344	1,344	1,344	1,344	1,344	1,344	1,344	1,344	1,344	1,344	1,344
5. Ban Nhon Commune	4,248	4,364	3,202	82,144	571	451	1,144	1,331	1,521	5,141	1,504	521	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81
6. Ban Nhon Commune	3,336	2,381	647	19,474	271	271	271	271	271	271	271	271	271	271	271	271	271	271	271	271	271	271	271	271	271	271	271	271	271
7. Ban Nhon Commune	4,386	2,949	1,347	30,774	1061	1061	1061	1061	1061	1061	1061	1061	1061	1061	1061	1061	1061	1061	1061	1061	1061	1061	1061	1061	1061	1061	1061	1061	1061
8. Ban Nhon Commune	6,331	4,001	1,931	31,074	394	394	394	394	394	394	394	394	394	394	394	394	394	394	394	394	394	394	394	394	394	394	394	394	394
9. Ban Nhon Commune	6,116	3,472	3,116	30,274	531	451	1,147	1,147	1,147	1,147	1,147	1,147	1,147	1,147	1,147	1,147	1,147	1,147	1,147	1,147	1,147	1,147	1,147	1,147	1,147	1,147	1,147	1,147	1,147
10. Ban Nhon Commune	4,028	3,208	1,872	47,374	666	666	666	666	666	666	666	666	666	666	666	666	666	666	666	666	666	666	666	666	666	666	666	666	666
11. Ban Nhon Commune	2,771	2,254	1,916	49,074	111	111	111	111	111	111	111	111	111	111	111	111	111	111	111	111	111	111	111	111	111	111	111	111	111
12. Ban Nhon Commune	6,246	6,677	5,633	64,374	991	991	991	991	991	991	991	991	991	991	991	991	991	991	991	991	991	991	991	991	991	991	991	991	991
13. Ban Nhon Commune	3,562	2,561	2,416	62,374	107	394	412	131	131	131	131	131	131	131	131	131	131	131	131	131	131	131	131	131	131	131	131	131	131
14. Ban Nhon Commune	3,315	2,533	2,302	58,474	4	193	578	578	578	578	578	578	578	578	578	578	578	578	578	578	578	578	578	578	578	578	578	578	578
15. Ban Nhon Commune	1,958	1,534	1,012	51,174																									
16. Ban Nhon Commune	2,352	4,310	3,501	32,374	0	17	404	44	256	2,493	3,252	542	136	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
17. Ban Nhon Commune	3,403	2,502	2,156	64,674	13	391	44	26	1,198	1,824	1,47	150	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
18. Ban Nhon Commune	3,996	2,308	1,702	42,774	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9
19. Ban Nhon Commune	5,892	4,131	3,418	58,974	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
20. Ban Nhon Commune	3,348	2,428	2,256	68,474	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24
21. Ban Nhon Commune	2,557	1,728	1,139	43,974	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36
22. Ban Nhon Commune	1,621	824	523	39,074	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	61,736	42,772	31,572	632	3,212	3,822	3,492	2,822	6,041	19,252	2,222	1,021	1,312	812	2,071	0	678	8,207	3,261	16,268	11%	412	0	1,242	242	4,571	1%		

661 Target Area of Forest Land Total + Forcing Capable Land

Source: Data provided by Sub-DSD, 2007.

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No.	Code	Commune	No.	Code	Hamlet
6	1-6	Đông Rượu Commune	33	1-5-9	Chanh Hamlet
			34	1-6-1	Hóm Hamlet
			35	1-6-2	Hạ Hamlet
			36	1-6-3	Thống Hamlet
			37	1-6-4	Hày Hamlet
			38	1-6-5	Nhập Hamlet
7	1-7	Yên Hoà Commune	39	1-7-1	Mân Hamlet
			40	1-7-2	Hoà Yên Hamlet
			41	1-7-3	Tà Tào Hamlet
			42	1-7-4	Tù Mù Hamlet
			43	1-7-5	Kìa Hamlet
			44	1-7-6	Hạt Hamlet
			45	1-7-7	Mên Hamlet
			46	1-7-8	Quyết Tiến Hamlet
			47	1-7-9	Yên Phong Hamlet
			48	1-7-10	Lang Hamlet
8	1-8	Tân Dân Commune	49	1-8-1	Bãi Cà Hamlet
			50	1-8-2	Đuá đỏ Hamlet
			51	1-8-3	Ban Hamlet
			52	1-8-4	Cù Hamlet
			53	1-8-5	Tôm Hamlet
			54	1-8-6	Chiêng Hamlet
			55	1-8-7	Bãi Kìa Hamlet
			56	1-8-8	Diêm trong Hamlet
9	1-9	Tiến Phong Commune	57	1-9-1	Mực Hamlet
			58	1-9-2	Tré Hamlet
			59	1-9-3	Mát Hamlet
			60	1-9-4	Oi Nọi Hamlet
			61	1-9-5	Điêng Hamlet
			62	1-9-6	Mó Hém Hamlet
			63	1-9-7	Bãi Hà Hamlet
			64	1-9-8	Phiếu Hamlet
			65	1-9-9	Cò Xa Hamlet
			66	1-9-10	Nà Luống Hamlet
			67	1-9-11	Túp Hamlet
			68	1-9-12	Lượng Hamlet
			69	1-9-13	Đá Bia Hamlet
10	1-10	Vầy Nua Commune	70	1-10-1	Lau Hamlet
			71	1-10-2	Thín Hamlet

No.	Code	Commune	No.	Code	Hamlet
			72	I-10-3	Than Hamlet
			73	I-10-4	Na Hamlet
			74	I-10-5	Ang Hamlet
			75	I-10-6	Vây Hamlet
			76	I-10-7	Dơng Hamlet
			77	I-10-8	Mó Nê Hamlet
			78	I-10-9	Săng Trạch Hamlet
			79	I-10-10	Thị Hoà Bình
11	I-11	Hiển Long Commune	80	I-11-1	Mái Hamlet
			81	I-11-2	Long phong Hamlet
			82	I-11-3	Ngũ Hamlet
			83	I-11-4	Ké Hamlet
			84	I-11-5	Đoi Hamlet
			85	I-11-6	Dng Hamlet
			86	I-11-7	Mỗ Hamlet
12	I-12	Toàn Sơn Commune	87	I-12-1	Rình Hamlet
			88	I-12-2	Tra Hamlet
			89	I-12-3	Trúc Sơn Hamlet
			90	I-12-4	Tân Sơn Hamlet
			91	I-12-5	Phủ Hamlet
			92	I-12-6	Đao Hamlet
II. Mai Châu District					
13	II-1	Ba Khan Commune	93	II-1-1	Khan Thợng Hamlet
			94	II-1-2	khan Hạ Hamlet
			95	II-1-3	Khan Hồ Hamlet
14	II-2	Tân Mai Commune	96	II-2-1	Thảm Nhân Hamlet
			97	II-2-2	Nánh Hamlet
			98	II-2-3	Quang Hamlet
			99	II-2-4	Suối Lớn Hamlet
			100	II-2-5	Nà Bó Hamlet
			101	II-2-6	Mó Rút Hamlet
			102	II-2-7	Đôi Hamlet
15	II-3	Phúc Sơn Commune	103	II-3-1	Nhúng Hamlet
			104	II-3-2	Sơ Lo Hamlet
			105	II-3-3	Sơn Hamlet
			106	II-3-4	Sộp Hamlet
			107	II-3-5	Phúc Hamlet
			108	II-3-6	Gò Lò Hamlet
			109	II-3-7	Lối Hamlet

No.	Code	Commune	No.	Code	Hamlet
			110	II-3-8	Gò Mu Hamlet
			111	II-3-9	Bãi Sang Hamlet
III. Tân Lạc District					
16	III-1	Trung Hoà Commune	112	III-1-1	Đáy Hamlet
			113	III-1-2	Thăm Hamlet
			114	III-1-3	Ong Hamlet
17	III-2	Ngòi Hoà Commune	115	III-2-1	Né Hamlet
			116	III-2-2	Ngòi Hamlet
IV. Cao Phong District					
18	IV-1	Thung Nai Commune	117	IV-1-1	Mới Hamlet
			118	IV-1-2	Nai Hamlet
			119	IV-1-3	Chiềng Hamlet
			120	IV-1-4	Tiện Hamlet
			121	IV-1-5	Mu Hamlet
			122	IV-1-6	Kinh tế mới Hamlet
19	IV-2	Bình Thanh Commune	123	IV-2-1	Mỗ 1 Hamlet
			124	IV-2-2	Mỗ 2 Hamlet
			125	IV-2-3	Giang Hamlet
			126	IV-2-4	Cát Hamlet
			127	IV-2-5	Mới Hamlet
			128	IV-2-6	Lòn Hamlet
			129	IV-2-7	Tráng Hamlet
V. Hoà Bình Town					
20	V-1	Thái Thịnh Commune	130	V-1-93	Bích Hamlet
			131	V-1-94	Trụ Hamlet
			132	V-1-95	Vôi Hamlet
			133	V-1-96	Thấu Hamlet
			134	V-1-97	Tiểu khu 10 Hamlet

Source: Data provided by Sub-DFD, 2002.

11-4-2: Population of Ethnic Groups in 20 communes of the Watershed Area of Hoa Binh Dam

NO	Communes		Population	Households	Labor	Poverty(%) [#]	Nhong	Kinh	Thai	Tay	Dao	H'Mong	Others
I	Đà Bắc District		22,109	4,571	10,931		42.7	7.3	0.5	35.7	13.6	0.0	0.1
	1	Đông Nghe Commune	1,412	291	710	49.1	47.0	1.3	0.0	24.3	27.4	0.0	0.0
	2	Suối Nánh Commune	1,098	211	547	54.1	82.3	0.7	0.1	0.2	16.7	0.0	0.0
	3	Mông Tường Commune	997	193	587	17.8	97.0	1.5	0.1	0.6	0.7	0.0	0.0
	4	Mông Chiềng Commune	2,252	462	1,214	35.4	14.6	2.4	0.0	82.7	0.3	0.0	0.0
	5	Đông Chum Commune	2,534	466	1,051	26.3	12.2	1.1	0.0	86.6	0.0	0.0	0.1
	6	Đông Rừng Commune	1,955	428	986	52.0	10.2	0.8	0.3	88.6	0.0	0.0	0.0
	7	Yên Hoà Commune	1,469	333	722	43.9	20.7	34.6	0.9	1.5	42.2	0.0	0.0
	8	Tân Dân Commune	2,096	417	824	45.5	10.6	20.3	0.0	65.9	3.2	0.0	0.0
	9	Tiền Phong Commune	2,079	437	1,035	64.4	67.9	2.1	0.0	29.9	0.1	0.0	0.0
II	10	Vây Na Commune	2,269	485	1,200	45.3	72.0	9.1	0.0	0.3	18.6	0.0	0.1
	11	Hiền Long Commune	1,661	367	915	34.1	91.8	3.3	4.1	0.3	0.0	0.0	0.4
	12	Toàn Sơn Commune	2,197	481	1,140	45.8	42.4	7.2	0.0	0.0	50.3	0.0	0.1
III	Mai Châu District		5,164	1,065			67.1	6.2	9.8	0.0	16.4	0.0	0.5
	1	Tân Mai Commune	1,598	341	758	77.7	97.6	1.7	0.5	0.0	0.1	0.0	0.1
	2	Phúc Sơn Commune	2,280	478	1,056	58.6	50.9	6.8	0.6	0.1	40.3	0.0	1.4
IV	Ba Khan Commune		1,286	246	645	41.1	62.3	8.2	21.4	0.0	8.0	0.0	0.0
	1	Trung Hoà Commune	2,067	375		49.1	98.8	1.1	0.0	0.0	0.0	0.0	0.0
	2	Ngôi Hoà Commune	1,234	243		67.5	98.4	1.5	0.0	0.0	0.1	0.0	0.0
V	Cao Phong District		4,149	892			83.4	10.9	0.6	0.1	5.0	0.0	0.1
	1	Trung Nại Commune	1,721	350	835	41.1	90.8	8.2	0.9	0.2	0.0	0.0	0.0
	2	Bình Thanh Commune	2,428	542	1,208	31.5	78.2	12.8	0.4	0.0	8.5	0.0	0.1
VI	Hoa Bình Town		928	229			58.3	41.5	0.0	0.0	0.2	0.0	0.0
	1	Thái Thịnh Commune	928	229	442	42.0	58.3	41.5	0.0	0.0	0.2	0.0	0.0
Total			35,561	7,375			56.3	7.9	1.8	22.4	11.5	0.0	0.1

Source: Data provided by Sub-DFD, 2002.

Note: Ratio by ethnicity is presented in percentage (%).

(*: Under 80,000VND/capita/month. Ratios calculated by author for communes in Mai Châu, Tân Lạc and Cao Phong Districts based on reported no. of HHs.)

11-2: List of the 20 communes located in the Watershed Area of Hoa Binh Dam

Name of District	Name of Commune	Management Jurisdiction	
		WMB	FE
Đà Bắc District	Đông Nghê Commune	X	
	Suối Nánh Commune	X	
	Mòng Tướng Commune	X	
	Mòng Chiêng Commune	X	
	Đông Chum Commune	X	
	Đông Ruộng Commune	X	
	Yên Hoà Commune	X	
	Tân Dân Commune	X	
	Tiền Phong Commune	X	
	Vây Nua Commune		X
	Hiển Long Commune	X	
	Toàn Sơn Commune	X	
Mai Châu District	Tân Mai Commune	X	
	Phúc Sơn Commune	X	
	Ba Khan Commune	X	
Tân Lạc District	Trung Hoà Commune	X	
	Ngòi Hoà Commune	X	
Cao Phong District	Thung Nai Commune		X
	Bình Thanh Commune		X
Hoa Binh Town	Thái Thịnh Commune		X
		16	4

NOTE

WMB: Song Da Watershed Management Board

FE: Song Da Forest Enterprise

Source: Based on JICA, 2002. *Draft Fact Finding Study Report*, P. 133.

Annex 12: Forest Management Regulations under the 651 Program

Protection and Rehabilitation Stage				Harvesting Stage		
Original Land Cover	Type	Operation	Fund	Right	Forest Type	Forest products which can be harvested
Bare Land	1A	Plantation 2.5 million Dong/ha	State	- Fuelwood - NTFP under canopy	-	- Subsidiary tree species up to 20% of trees (Crown cover > 0.5)
			Household	- Fuelwood - NTFP under canopy	All Agri & Forest Products	- 10% of planted area Clear cutting up to 2 ha in essential area Clear cutting up to 1 ha in very essential area
Bush and Grass	1B	Natural Regeneration 50,000 dong/ha	State	- Fuelwood - NTFP under canopy	-	- Dead trees - Trees affected by disease
			Household	- Thinning - Products - Fuelwood - NTFP under canopy	Forest products	- Old trees - Trees growing too close together up to 20% of total number of trees - NTFP - Bamboo stems up to 30% of stems
			State	- To grow subsidiary agri. crop under canopy	All Agri & Forest Products	
Protection Forest	1C	NR + Additional Planting 1 million Dong/ha	Household	- Fuelwood - NTFP under canopy	Natural protection Forest	
			State	- Fuelwood - NTFP under canopy		
Natural Forest		Protection 50,000 Dong/ha	Household	- Fuelwood - NTFP under canopy		
			State	- Fuelwood - NTFP under canopy		
		Protection +AP	Household			

Source: Prepared by JICA Study Team based on information provided by DFD, 2001.

Annex 13: Plan of the 661 Program in Hoa Binh Province

13-1: Adjusted Plan on 5 Million Ha Reforestation Program (Decision by Hoa Binh Province People's Committee)

No.	Items	Adjusted plan	
		Area (ha)	Capital (million VND)
	Total		9,530
1	Forest protection	66,483.0	3,305
2	Total of forest plantation	2,051.5	3,630
	a <i>Forest plantation with seedlings</i>	2,013.0	3,523
	b <i>Plantation of half-flooded forest</i>	20.0	44
	c <i>Forest plantation in botanical garden</i>	3.5	26
	d <i>Forest plantation (Ho Chi Minh high way)</i>	15.0	37
	e <i>Plantation of 2 lines of trees</i>		
	f <i>Plantation of supporting trees</i>		
	h <i>Landscape forest plantation</i>		
	i <i>Improvement of pine forest</i>		
3	Forest maintenance		1,030
	<i>Forest maintenance (2nd year)</i>	1,458.0	510
	<i>Forest maintenance (3rd year)</i>	1,299.0	520
4	Regeneration	7,636.0	471
	<i>High regeneration</i>	1,210.0	146
	<i>Low regeneration</i>	6,426.0	325
5	Boat fixing (FE+SD Management Board)		60
6	Fence + nursery		200
7	Ground preparation + timber fence		-
8	Ho Chi Minh high way project		13
9	Forest protection station		171
10	Guard's house and office		
11	Pond digging		
12	Project planning		15
13	Design expense		10
14	Spare budget		
15	Management expense		517
16	Management expense (Steering Committee+Provincial Management Board)		108

Source: Data provided by Sub-DFD, 2002.

13-2: Adjusted Plan on 5 Million Ha Reforestation Program:
Budget and area by Sub-projects

No.	Items	Adjusted plan		
		Area (ha)	Price/unit	Capital (million VND)
	Total			9,530
I	Project of Song Da protection forest			2,031
	Forest protection	29,442	0.05	1,472
	Forest plantation with seedlings	119	1.75	208
	Forest maintenance (year2)	51	0.35	18
	Forest maintenance (year3)	91	0.40	36
	High regeneration (year 3)	200	0.10	20
	Low regeneration (year 1)	517	0.05	29
	Low regeneration (year 3)	317	0.05	16
	Forest protection station			100
	Boat fixing			25
	Management expenses			108
II	Project of Song Da EE protection forest			1,958
	Forest protection	7,488	0.05	374
	Forest plantation with seedlings	678		1,187
	Plantation of protection forest	491	1.75	859
	Improvement of eucalyptus forest	124	1.44	179
	Plantation of forest in scientific research	43	2.50	108
	Plantation of half-flooded forest	20	2.10	42
	Forest maintenance (year2)	198		77
	Forest maintenance (year2)	118	0.35	41
	Forest maintenance (year2) (Cun slope)	80	0.45	36
	Forest maintenance (year3)	208	0.40	83
	High regeneration (year 3)	101	0.10	10
	Low regeneration (year 1)	338	0.05	17
	Low regeneration	461	0.05	23
	Boat fixing			35
	Management expenses			109
III	Ho Chi Minh statue forest garden			220
IV	Da Bac protection forest project			692
V	Mai Chau protection forest project			666
VI	Tan Lac protection forest project			374
VII	Lac Son protection forest project			936
VIII	Ky Son protection forest project			204
IX	Cao Phong protection forest project			228
X	Luong Son protection forest project			309
XI	Kim Boi protection forest project			431
XII	Lac Thuy protection forest project			377
XIII	Yen Thuy protection forest project			386
XIV	Thuong Tien protection forest project			424
XV	Hang Kia - Pa Co protection forest project			125
XVI	Thuong Tien protection forest project			71
XVII	Spare budget			0
XVIII	Management expense (Steering committee+provincial management board)			108

Source: Data provided by Sub-DFD, 2002.

Annex 14: Number of Households and the Area under Land Allocation and Contracts in the 20 Communes Located in the Watershed Area of Hoa Binh Dam

No	Commune	Number of Household	Households under Contract												Forest Land Total (ha)									
			Plantation			Regeneration			Additional Plantation			Protection			Total		ha	%	ha	%				
			Number	%	Number	Number	%	Number	%	Number	%	Number	%	Number	%									
I	Dù Bắc District	1,571	141	9.0	207	13.2	37	2.3	317	20.2	69.3	4.4	296	18.8	296	18.8	296	18.8	296	18.8	296	18.8		
1	Đông Nghè Commune	291																						
2	Suối Nánh Commune	211			30	14.2																		
3	Mường Tuông Commune	193	26	13.4	5	2.5																		
4	Mường Chiềng Commune	462																						
5	Đông Chum Commune	466																						
6	Đông Rừng Commune	428																						
7	Yên Hòa Commune	333																						
8	Tân Dân Commune	417																						
9	Tiền Phong Commune	437	17	3.8	60	13.7																		
10	Vây Nưa Commune	483	98		55																			
11	Hiên Lương Commune	367			24	6.5																		
12	Toàn Sơn Commune	481			33	6.8																		
13	Mai Châu District	1,063	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	
14	Tân Mai Commune	341																						
15	Phúc Sơn Commune	478																						
16	Ba Khan Commune	246																						
17	Tân Lạc District	618	1	0.16	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	
18	Trang Hòa Commune	375	1	0.27																				
19	Nội Hòa Commune	243																						
20	Cao Phong District	892	136	15.2	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	
21	Thung Nai Commune	350	136																					
22	Bình Thành Commune	542																						
23	Hòa Bình Town	229	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	
24	Thái Thịnh Commune	229																						
Total of 20 Communes		7,375	278	3.7	207	2.8	37	0.5	5,069	68.7	5,591	75.8	372	5.0	372	5.0	372	5.0	372	5.0	372	5.0	372	5.0

Source: Data provided by Sub-DPD, 2002.

Annex 15 : Summary of the Socioeconomic Survey Results (December 2002)

1. Purpose

The Purpose of the survey was to study the socioeconomic situation of the target area in order to provide input in the process of designing the Project. Following were the main points to be studied:

- Socioeconomic situation of the local people
- Situation of natural resource management and use by the local people
- Agriculture and forestry extension at the commune and hamlet level
- Existing groups, organizations and institutions at the hamlet level

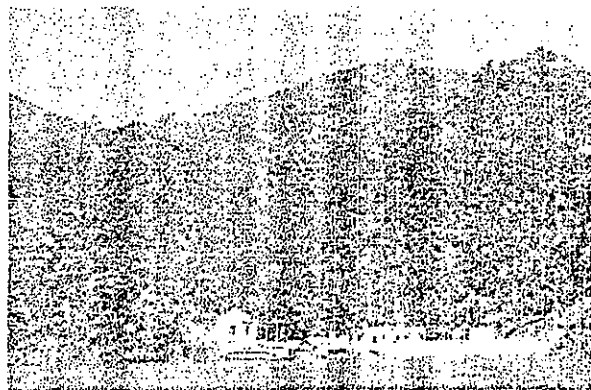
2. Schedule of the Survey

Six working days were allocated for the commune and hamlet survey. Given this time frame, it was decided that the survey should focus on 2 communes instead of trying to cover the whole area. The following criteria were used to select the 2 communes:

1. Characteristics on upland farming:
 - One commune where upland farming is practiced extensively.
 - One commune where upland farming has decreased.
2. Accessibility (for the survey team to commute from Hoa Binh Town).

In consultation with Sub-DFD Hoa Binh Province, Vai Nua Commune in Da Bac District and Thung Nai Commune of Cao Phong District were selected. Vai Nua Commune is a commune where upland farming is practiced extensively, and Thung Nai Commune is where upland farming has decreased. The locations of these 2 communes can be referred to in Annex 11-1 of the Project Document. Vai Nua Commune can be accessed by boat from Hoa Binh Dam or Hoa Binh Research Station. Thing Nai Commune can be accessed by car from Hoa Binh Town.

The schedule of the survey is summarized in Table 1. Due to the bad weather condition, the Survey Team was unable to visit Vai Nua Commune on one of the scheduled days for the hamlet survey. It was therefore decided to visit Trang Tru



Approaching Vai Nua Commune from the lake

Hamlet¹, Binh Thanh Commune, which was in close vicinity from the Hoa Binh Research Station. Hence, the total number of communes (and hamlets) visited by the Survey Team was three.

Table 1 Survey Schedule

Date	Place	Survey contents
5 Dec 2002	Vai Nua Commune People's Committee	<u>Group Interview of commune officers</u> <ul style="list-style-type: none"> • Commune profile • Identification of the hamlet for the hamlet survey
6 Dec 2002	Thung Nai Commune People's Committee	
8 Dec 2002	Trang Tru Hamlet, Binh Thanh Commune	<u>Hamlet Survey</u> <ul style="list-style-type: none"> • Crop calendar
9 Dec 2002 10 Dec 2002	Tra Ang Hamlet, Vai Nua Commune	<u>Hamlet Survey</u> <ul style="list-style-type: none"> • Hamlet profile • Hamlet map • Hamlet groups, organizations, and institutions • Transect walk • Agriculture (farm calendar, extension activities)
12 Dec 2002 13 Dec 2002 14 Dec 2002	Moi Hamlet, Thung Nai Commune	<u>Hamlet Survey</u> <ul style="list-style-type: none"> • Hamlet profile • Hamlet map • Hamlet groups, organizations, and institutions • Transect walk • Agriculture (farm calendar, extension activities) • Income and expenditure

3. Participants

The list of survey participants is presented in Attachment 1.

4. Summary Results

Summary of the findings from the commune and hamlet surveys are presented below. It must be reminded that this Survey covers 2 communes out of the 20 communes in the watershed area of Hoa Binh Dam, and as such, *the report does not represent the target area as a whole*. Nonetheless, the results provide an important insight in the process of designing the project document.

¹ In the project area, the word 'village' and 'hamlet' are used equivalently.

4.1 Commune Profiles

The profiles of Vai Nua Commune (Da Bac District) and Thung Nai Commune (Cao Phong District) are shown in Attachment 2. Population of the 2 communes is 2,326 (508 HHs) in Vai Nua Commune and 1,662 (356 HHs) in Thung Nai Commune respectively. Population density is 38 person/km² in Vai Nua and 50 person/km² in Thung Nai. In both communes, there are hamlets that were relocated at the time of dam construction. There were also some households that migrated to the central highlands under the national migration policy (e.g., 65 households in Thung Nai Commune). Aside from the above, the population has been relatively stable, without major inward or outward migration. Most of the residents live and work within the commune, except for few households that are engaged in trading. The main sources of income in both communes are agriculture and livestock. Some households are also engaged in fishing and aquaculture. Water transportation and trading is also main sources of income for several households.

In both communes, the area of lowland rice field is small due to the mountainous landscape. Maize is the most common crop cultivated in Vai Nua. Upland rice, cassava, and sugarcane are also grown in smaller areas. In Thung Nai, sugarcane has become popular in the recent years, increasing from 40ha in 2000 to 120ha in 2002, replacing maize, cassava and soybean that were grown in relatively flat land. Since farmers can receive higher income from sugarcane, they are now less reliant on upland farming. As a result, many farmers have converted their upland farms into bamboo plantations under the national programs (e.g., 747 Program and 661 Program).

Agricultural land has been allocated to households, although the statistics indicate that not all of the area has been issued with land use certificates. Natural forests are allocated or contracted to households, however in practice, the management mechanisms vary by commune. In the 2 communes the survey team visited, actual management (patrolling) is done by hamlet forest protection groups (sometimes called security group). The fee from the government for forest protection (50,000 VND/ha/year) is pooled and payments are made to the members of the forest protection group. The remaining fund is either divided among the households in the hamlet, and/or pooled at commune or hamlet levels. As for plantation under 661 Program and 747 Program, contracts are made with individual households. According to the government records, 356ha in Vai Nua and 138ha in Thung Nai are 'forestry capable land' that can be reforested, sharing 6% and 4% of total land area respectively.

National electricity grid has reached almost all hamlets in the 2 communes, and the remaining hamlets are also planned to receive electricity in the coming years. The main source of

household energy is fuelwood. Dead or damaged branches are collected from forests and the lake. Observations reveal that some households are engaged in fuelwood collection and sales during the months of high expenditure, in order to support their livelihoods².

All of the hamlets in the 2 communes have either the rural clean water pipeline and tank system provided by national programs (e.g., 135 Program) or wells. In terms of health, 3 assistant doctors and 1 nurse are stationed in both communes. In addition, one hamlet nurse is stationed in each hamlet. There is a primary school (Class 1-5) and a lower secondary school (Class 6-9) at the commune level, in addition to one primary school in each hamlet offering classes 1 to 3 (in some cases, up to class 5). While most of the people residing in the 2 communes are ethnic minorities, most people read and write Kinh language.

Both communes are covered by the national reforestation programs and the Song Da Watershed Resettlement Program (747 Program), and the Program on the Socioeconomic Development in Mountainous, Deep-lying and Remote Communes, with Special Difficulties (135 Program). There have also been some donor-funded projects implemented in the communes, focusing on plantation of fruit trees and bamboo trees, livestock, and beekeeping (OXFAM Belgium and UNDP). However, these donor-funded projects have not covered all the hamlets, and have all been completed.

4.2 Hamlet Profiles

Overview

The profiles of Tra Ang Hamlet (Vai Nua Commune) and Moi Hamlet (Thung Nai Commune) are shown in Attachment 3. Tra Ang Hamlet is approximately 1-hour from the Hoa Binh Research Station by engine boat. It is located 15km away from Da Bac District center (accessed by boat and then on road). Moi Hamlet can be accessed by car from Hoa Binh Town in less than 1 hour. The distance from the hamlet to the District center of Cao Phong is about 24km.

Population of Tra Ang Hamlet is 335 (72 HHs), and 291 (62 HHs) in Moi Hamlet. Average size of a household is 4.7 person/HH. In both hamlets, agriculture and livestock are the main sources of income. In Tra Ang hamlet, the main crop is maize, followed by upland rice. In Moi hamlet, sugarcane is more widely cultivated by the farmers compared to Tra Ang. Out of total 62 households, 40 households are engaged in maize cultivation, and 30 households are engaged in sugarcane production.

² Fuelwood collection and sales from natural forest is prohibited by law.

In terms of forest activities, 68 households (94%) participate in plantation activities in Tra Ang Hamlet. The total area of plantation is 70ha (approximately 1ha per household), and there remains 50ha, or 9% of the total hamlet area, that fall under 'forestry capable land,' which can be reforested. In Moi Hamlet, 5 to 7 households (8-11%) have plantations, totaling 13ha (around 2ha per household). For natural forest protection, both hamlets have a group (Security Group or Forest Protection Group), who are selected by the hamlet to patrol and protect the forest. The government subsidy, which is 50,000 VND/ha/year, is pooled to pay the members of the group.

The average income level of the 2 hamlets is 2.2million VND/person/year (Tra Ang) and 2.5million VND/person/year (Moi) respectively. The level is lower than the provincial average, which is 4.04 million (2001 figure). The ratio of most disadvantaged and poor households is 33% in Tra Ang and 59% in Moi. In Moi Hamlet, 50 out of 62 households have members who work as porters for several months during the year, indicating that the income from agriculture is not sufficient to support their lives.

Agriculture and land use

The Crop Calendar of Tra Ang and Moi hamlet is shown in Attachment 4. Maize is grown twice a year, from December/January to April/June (Spring-Winter Crop), and May/July – September/October (Autumn-Summer Crop). Lowland rice can also be grown twice a year, although the area is very limited in these two hamlets. Other main crops, such as sugarcane, cassava, and upland rice are all harvested once a year.

While this Study is not able to provide a comprehensive picture of land use pattern in the target area, farming patterns on sloping land were investigated during the survey (Box 1).

Box 1 Patterns of agricultural land use

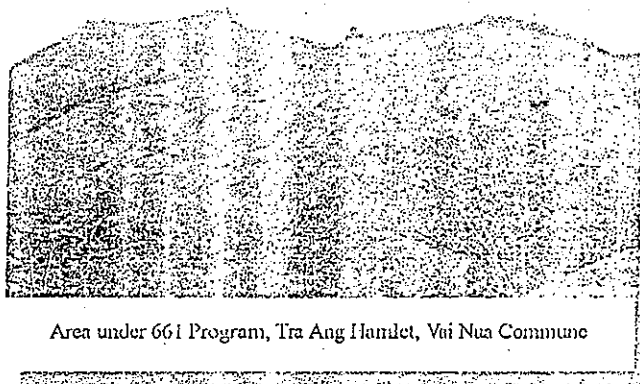
Interview results of Sub-DFD, Forest Enterprise, and commune officers indicate that slash and burn shifting cultivation by means of opening new forestland is not commonly practiced in the 20 communes. However, the current practice of 'upland farming' pauses pressure on forestry capable land. Farmers often have a number of agricultural plots on sloping land. Some of the plots are left in fallow for several years, after which the area is burned for cultivation. This practice hinders the area to 'naturally regenerate' to become secondary forest. Following are some farming patterns practiced in the hamlets surveyed.

- Sugarcane (3-5 years) ⇒ Taro, cassava or maize ⇒ Sugarcane
- Cassava (4 years) ⇒ Maize (2 years) ⇒ Cassava
- Maize (2 – 3 years) ⇒ Fallow (2 –3 years) ⇒ Maize

Farmers leave land in fallow for various reasons. In some cases they leave the land in fallow so that the soil fertility would recover. In other cases, the land is left in fallow because the household lacks labor force. For example, there was a poor household interviewed during the survey that have left its farm plot in fallow for 2 years to recover soil fertility. During the fallow period, the head of the household, who is a widow, supported her three children by working as a porter.

The people who lived in the valley prior to the Dam construction were engaged in lowland rice cultivation. When they were resettled in the uplands, they needed to adjust the farming practices in order to survive, as there is very limited land area suitable for lowland rice. In this context, upland farming, or slash-and-burn cultivation, is not a strong cultural practice, but more of an economic measure to support their livelihoods.

Observations in the field, as well as the interviews of technical officers of Song Da Forest Enterprise, indicate that the 661 Program in the target area has been focusing on the land currently cultivated by the local people as upland farms (including fallow land), as the sites for plantation. In the 2 hamlets the survey team visited, many households were engaged in bamboo plantation, either under the 661 Program or the 747 Program. The government's

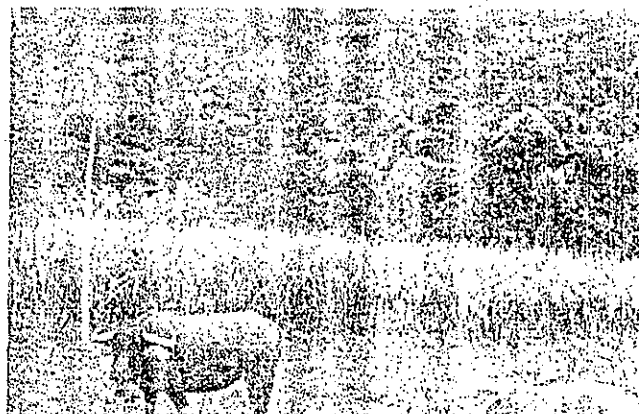


subsidy of 2.5million VND per hectare during the initial 3 years appears to be attracting farmers to join the program. While the survey team observed cases in which farmers had established bamboo plantation with their own investment (i.e., not under government programs), such cases appeared to be in small areas.

Relatively rich households who have sufficient income from other sources such as sugarcane production have converted much of their upland farm areas where they used to cultivate maize, upland rice, etc. For example in Tra Ang hamlet, the 5 households interviewed by the survey team had converted on average 1ha of their farmland into bamboo plantation. While it was a group of relatively better-off households with an average gross income from agricultural activities at around 2.4million VND/person/year, it is worth noting that they have converted approximately half of their farmland into bamboo plantation.

Likewise in Moi hamlet, there were fair and moderate households who have converted over 50% of their farmland into bamboo plantation. Poor households, on the other hand, often have limited labor force and smaller plots of land for cultivation. As such, they appear to have converted smaller area of land for bamboo plantation, if any.

Sugarcane field and bamboo plantation, Moi Hamlet.



Income and expenditures

As explained earlier, the average income level per household is 2.2million VND/person/year (Tra Ang) and 2.5million VND/person/year (Moi) respectively. Results of the survey indicate that there is a disparity among the residents in terms of wealth. For example, the net income from agricultural activities in Moi hamlet ranged from 130,000-150,000 VND/person/year in poor households, to 450,000-750,000 VND/person/year in moderate households, and over 3million VND/person/year in fair households³. The minimum income requirement to sustain one's livelihood in this area is at around 2million VND/person/year, according to the local residents. As such, poor and medium households must supplement their income through other sources, which is mainly through labor (as porter), fishing, and in some cases sales of fuelwood. Reliance on maize cultivation is high among the poor households, reaching around 80% of the net agricultural income. In contrast, fair households earn significant proportion of their income from sugarcane.

The Income and Expenditure Calendar of Moi Hamlet is shown in Attachment 5. For the farmers who grow sugarcane, the highest income is earned in November and December during the harvesting period. Income from selling maize is around June – August, and in December. During the months before harvest, households must supplement their income by working as porters, by fishing, and in some cases by selling fuelwood. While bamboo can be harvested at any time of the year, it is sold the most during September – December when the need for cash income is high to cover expenses on education, house construction, etc.

A simple financial analysis was conducted in order to understand the economic feasibility of bamboo plantation from the farmer's point of view (Box 2). Results indicate that the net

³ The figures do not have statistical significance due to the limited sample size.

income per hectare of bamboo plantation is higher in the 1st year, when the farmers receive 1.7million VND per hectare from the government, and are also allowed to grow agricultural crops in between the trees. However when the net income per hectare is calculated for over a 10-year period, return from maize cultivation appears to be higher even when assuming a 2-year fallow period after 3 years of cultivation.

Box 2 Financial Simulation of Bamboo Plantation

Assumptions:

- Net income from maize cultivation: 2.17million/ha/year
(based on survey results in Moi hamlet)
- Maize cultivation cycle: 3 years cultivation ⇒ 2 years fallow
- Bamboo: Harvest begins from 6th year @ 100 stems/ha.
- Bamboo shoots: Harvest begins from 4th year @ 100kg/ha,
then increase up to 200kg/ha.
- Intercrop of maize with bamboo is allowed for the initial 2 years (until the canopy closes).
- Prices of maize, bamboo, and bamboo shoot are based on the information obtained through the survey.
- Productivity of maize and bamboo are kept constant.
- Price is kept constant.

Results:

Net return (VND/ha)	Maize	Bamboo Plantation	Difference
1 st year	2.17million	3.87million	-1.7million
2 nd year	2.17million	1.43million	0.74million
3 rd year	2.17million	0.45million	1.72million
Total over 10 years	13.01million	11.15million	1.86million

As farmers make rational decisions regarding the use of their land, there must be factors that make bamboo plantation preferred above maize. One possibility, which is likely to be the case, is that productivity of land declines over time even when they are left in fallow for several years. In this case the return from maize cultivation would become lower than the simulation result, and it indicates that farmers are making decisions in view of the long-term benefit they can obtain from bamboo plantation. Another factor is the opportunity cost of labor. While it is not investigated in this survey, it can be assumed that requirement of labor input is higher for maize cultivation than for maintaining bamboo plantation. Hence, farmers can invest their labor in other income-earning opportunities when they convert their upland farm into bamboo plantation.

Agriculture and forestry extension at the hamlet level

The main actors on agriculture and forestry extension are the government extension organizations (Provincial Extension Center, District Extension Station, and the commune extension workers), Forest Enterprise (FE), and Watershed Management Board (WMB). FE and WMB both have technical officers who have communes assigned under their responsibility. This is not always the case for government extension organizations. For example in Da Bac District, extension officers do not have portfolio of specific communes. Commune extension workers (CEW) have not been assigned in all communes in the target area. Vai Nua does not have a CEW, whereas Thung Nai Commune has a CEW.

Since the main interaction between hamlets and WMB or FE is regarding the implementation of the 661 Program, the role of these organizations in terms of extension is limited to advice and guidance related to the 661 Program. According to the FE technical officer, they visit the communes under their responsibility and spends 1 week to 10 days every months. One to two days are spent working with officers of the Commune People's Committee, and the remaining days are spent in the hamlets that have large areas of forestland. The work includes selection of land for plantation, instructions on planting procedures, processing of contracts, site inspection, and payments. Technical instructions are normally given in hamlet meetings, and occasionally in the field.

The main activities conducted by the government extension organizations are establishment of demonstration models and training. According to the report of Da Bac District, demonstration models are not established in all communes, but are established in selected communes every year⁴. Training activities are conducted mainly at commune and district levels.

Training courses at the commune level are conducted 3 times a year in Vai Nua Commune, according to the survey results. In Thung Nai Commune, there were 1 course each during 2000 and 2001, but no course was held in 2002. One course is from 1 day to one week. Training courses are often attended by the chief and deputy chief of the hamlet, as well as the selected members of Farmers Association, Women's Union, and other union members. The training covers a wide range of subjects related to production activities, including crops, fruit trees, industrial trees and livestock. Participants of the training course share the new information and skills with the local people at hamlet meetings.

⁴ Da Bac District PC, 2000. *Implementation Result of Agriculture and Forestry Extension Works in 2002, and Direction of Works to be done in 2003.*

Aside from the training courses held at the commune level, there are training courses at the district level. For example in case of Cao Phong District, there was 1 training course each in year 2000 and 2001. Training opportunities at the hamlet level appears to be limited. There has been no such training in Moi hamlet. In Tra Ang hamlet, there was a 2-day workshop held in the hamlet in 2001, attended by a district extension officer. While such training has not been held in 2002, the local people appreciated the opportunity in which all households could learn new information and skills directly from the extension officer.

In addition to the activities conducted by government extension organizations, there are also other national programs such as 747 Program and 135 Program that provide assistance in the field of agriculture and forestry. For example in 2001, 57 households in Moi Hamlet received seedlings of Buddha's Hand under the 135 Program. Also in 2001, 12-13 households in Moi hamlet were provided with litchi seedlings, and received technical training under the 747 Program. Seedlings were distributed to households that have sufficient land area, who are also capable of maintaining the trees. As a result, it appears that medium and fair households have been the main recipients.

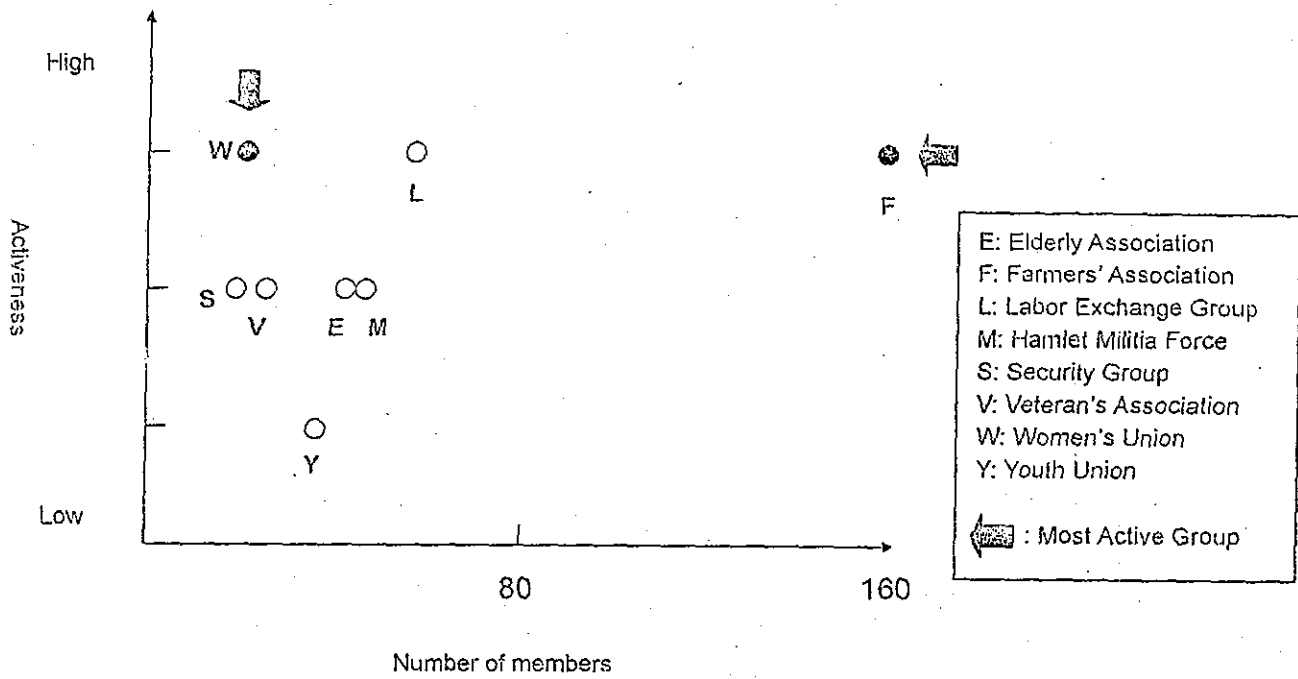
Hamlet organizations

Results of the group interviews are summarized in Attachment 6. As commonly observed in the rural areas of Vietnam, most of the organizations and groups that exist in the hamlets are the local branches of unions and associations. There are also some organizations/groups established at the commune and hamlet levels, such as the Militia Force and Forest Protection Groups. There are few additional organizations established only at the hamlet level, such as the Labor Exchange Group (for production activities), and the Disputes Settlement Group.

Many of the hamlet organizations have some affiliations with forestry activities. However, there are only few organizations that have *direct* responsibilities and/or activities related to forests. The main organization responsible for forest protection is the Hamlet Forest Protection Group and the Security Group. They are a selected group of members who patrol the forest on behalf of the households of the hamlet. In the two hamlets, several organizations, including Farmers Association, Veteran's Association, and Women's Union assign their members to attend training courses at district and/or commune levels for agriculture and forestry production activities. Participants of these training courses are responsible for sharing the information and techniques they have learned with other members at the hamlet meetings.

In both hamlets, the local people assessed that the Farmers' Association is the most active organization in the hamlet, which also has the largest membership (Figure 1). In Tra Ang Hamlet, local people commented that almost all households are members of the Association.

(1) Tra Ang Hamlet, Vai Nua Commune



(2) Moi Hamlet, Thung Nai Commune

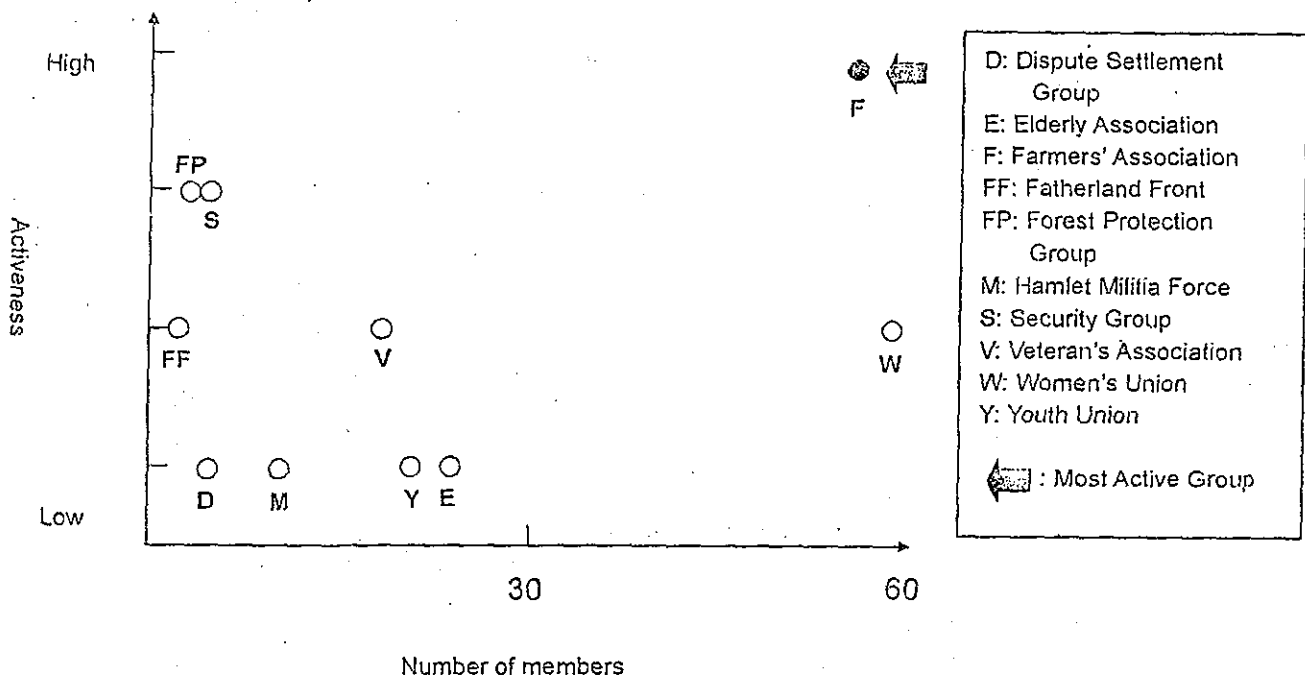


Figure 1 Hamlet Organizations in Tra Ang Hamlet and Moi Hamlet

4.3 Recommendations

As mentioned under Section 1, the purpose of the survey was to study the socioeconomic situation of the target area in order to provide input in the process of designing the Project. While this survey was able to obtain information from the commune and hamlets to suffice this purpose, it must be reminded that the survey was conducted within a short time period, and only covers 2 communes. The accuracy of the data compiled during this survey, as well as the 2 previous surveys conducted in November 2001 and July 2002, should be crosschecked by the baseline survey, to enable the Project to design detailed activities that suit the local context.

Four main recommendations are made for the project design, in view of the findings from the socioeconomic survey.

① Means to reduce upland farming

Observations indicate that upland farming is not a strong cultural practice, but rather, one of the limited opportunities local people have in order to sustain their livelihoods. As such, when farmers become involved in more profitable activities, reliance on upland farming becomes less. For example, relatively well-off households in the 2 communes that obtain sufficient income from sugarcane cultivation have converted a significant portion of their upland farm area into bamboo plantation. Even among moderate and poor households, some have converted part of their upland farm into bamboo plantation. Interview results and the financial simulation indicate that the farmers are making a decision based on the long-term economic benefit they can receive from the land. It is also likely that they are comparing the labor intensity of upland farming versus bamboo plantation.

These observation lead to the recommendation that the Project should aim at developing technology for natural forest rehabilitation that are not only technically appropriate, but also economically affordable. For the farmers to actively participate in the activities, the cost of introducing the technology (both in terms of labor intensiveness and in terms of financial investment), as well as the benefit, would be critical factors.

② Activities at the commune and hamlet levels

Observations reveal that the capacity of the government extension organizations is limited, due to limited human and financial resources and the technical capability of extension workers particularly at the commune level. Limited capacity of the commune extension workers is a concern, because the extension officers at the district level cannot visit the communes and hamlets frequently to provide direct technical guidance. The role of WMB and FEs in providing technical guidance to the local people also appeared to be limited. As the effective

outreach of the new knowledge and techniques through the Project, both during the implementation period and beyond the project duration, would highly depend on the capacity of these organizations, the Project and the GOV should place high efforts in strengthening these organizations, who act as extension agents and also as 'end-users' of the newly developed technology.

Another important observation is that the training courses currently offered by the government extension organizations are mainly at the commune level, in which representatives of the hamlets participate. While the new knowledge the participants obtain is shared with the local people at the hamlet meetings, there are very few opportunities for the farmers to receive technical guidance directly from extension workers in the field. Hence, it is recommended that the Project should make an effort to design field-oriented activities, so that farmers can work together with extension workers, researchers, and technical officers from FE or WMB in the field.

③ Collaboration with hamlet organizations

The Project should make the best use of existing groups and organizations in the hamlets in the process of selecting farmers who will participate in the on-farm trial activities. Close coordination with these organizations would support the project's effort to disseminate new technical knowledge to local farmers through existing channels. Survey results indicate that one of the organizations that might be suitable for such coordination is the farmers' association, which is an active organization with many members. It is recommended that the baseline survey of the Project should examine institutional capabilities of hamlet organizations and groups, since the situation may differ from hamlet to hamlet. Suitable organization(s) to become the focal point of the Project should be identified by examining the role of the organization, its activeness, and its involvement in forest management and/or agriculture.

④ Importance of the baseline survey

There have been 3 socioeconomic surveys conducted prior to the inception of the Project (in November 2001, July 2002, and this survey). These surveys have been designed with a broad perspective, in order to understand the holistic picture of the target area. It is recommended that the Project should conduct a baseline survey as one of its first activities, in order to obtain more in-depth information. The baseline survey would be critical in order to have a good understanding of the local situation (natural and socioeconomic conditions), and for identifying the needs of forest management practitioners (including local farmers). The results of the survey should be used for the following purposes:

- To identify priority subjects for research and on-farm trial activities, in the fields of native species seedling production, and silvicultural measures for natural forest rehabilitation.
- To identify the target communes of on-farm trial activities.
- To determine the level of input for on-farm trial activities.
- To provide input on the procedure and criteria for selecting specific sites and participating farmers for the on-farm trial activities.
- To identify the key variables that should be considered for the economic analysis.

5. Attachments

Attachment 1: List of Participants of the Commune and Hamlet Surveys

Attachment 2: Commune Profile (Vai Nua and Thung Nai Commune)

Attachment 3: Hamlet Profile (Tra Ang Hamlet, Vai Nua Commune, and Moi Hamlet, Thung Nai Commune)

Attachment 4: Crop Calendar

Attachment 5: Income and Expenditure Calendar

Attachment 6: Hamlet organizations

Attachment 1: List of Participants of the Commune and Hamlet Surveys

Vai Nua Commune

Name	Position
Dinh Van Lanh	Secretary of Commune Communist Party
Dinh Van Rau	Chairman of Commune PC
Ban Thanh Tai	Vice Chairman of Commune PC
Ban Thanh Son	Chief of Finance Section
Tru Hong Sinh	Forestry Officer
Bui Van Cau	Cadastral Officer
Xa Van Thai	Chief of Tham Hamlet
Ban Van Son	Chief of Tra Ang Hamlet
Ban Van Thu	Forestry Officer
Dinh Cong Lam	Chief of Health Care Station

Tra Ang Hamlet, Vai Nua Commune

Name	M/F	Position
Ban Van Son	M	Chief of Hamlet
Ban Thanh Son	M	Deputy Chief of Hamlet / Chief of Hamlet Patrol Group
Dinh Thi Man	F	Chief of Commune Women's Union
Trieu Hong Sinh	M	Chief of Commune Forestry Section
Ban Thi Lieu	F	Chief of Hamlet Women's Union
Ban Van Thang	M	Deputy Secretary of Hamlet Youth Union
Dang Van Hung	M	Member of Youth Union
Ly Van Thanh	M	Member of Hamlet Management Board
Sa Van Son	M	Member of the Elderly Association
Ban Thi Sinh	F	Farmer
Ban Thi Hai	F	Farmer / Teacher of Hamlet Kindergarten
Sa Thi Lien	F	Farmer
Sa Thi Kieu	F	Farmer
Sa Qay Binh	M	Farmer
Sa Van Minh	M	Farmer
Dinh Van Manh	M	Farmer

Thung Nai Commune

Name	Position
Bui Van Thanh	Chairman of Commune PC
Bui Van Nhan	Vice Chairman of Commune PC
Bui Thanh Trong	Chairman of Fatherland Front
Bui Van Chinh	Chief of Forestry Section
Bui Van Quyen	Cadastral Officer
Nguyen Van Hieu	Communication Worker
Bui Minh Tham	Chief of Health Care Station

Moi Hamlet, Thung Nai Commune

Name	M/F	Position	
Bui Van Tien	M	Chief of Hamlet	
Bui Manh Hung	M	Vice Chairman of Hamlet Farmers Association	
Nguyen Van Than	M	Chairman of Hamlet Elderly Association	
Bui Thi Trieu	F	Chief of Hamlet Women's Union	
Bui Van Ke	M	Secretary of Hamlet Youth Union	
Nguyen Thi Danh	M	Farmer	
Nguyen Thi Hai	M	Farmer	
Bui Thi Canh	M	Farmer	
Bui Van Hanh	M	Fair Farmer	HIES
Bui Van Thanh	M	Fair Farmer	HIES
Bui Van Hung	M	Medium Farmer	HIES
Bui Ngoc Khanh	M	Medium Farmer	HIES
Dinh Van Man	M	Poor Farmer	HIES
Bui Thi Luc	F	Poor Farmer	HIES

* HIES: Individual interviews (quick household income and expenditure survey)

Trang Tru Hamlet, Binh Thanh Commune

Name	M/F	Position
Le Van Thang	M	Chief of Hamlet
Dinh Van Tho	M	Policeman of the Hamlet
Dinh Truong Thanh	M	Farmer

Attachment 2: Commune Profile

Name of Commune		Vinh		Thuy		
Socioeconomic Information						
No. of Hamlets	10			6		
Population and Households	2,326 (508 HHs)			1,662 (356HHs)		
Average Size of HH	4.6 pers/HH			4.7 pers/HH		
Population by Ethnic Group	Muong 46%, Dao 38%, Kinh 16%			Muong 95%, Kinh 5%		
Labor Force	Throughout the year: 70% Seasonal: 30%			N/A		
Migration (inward)	None in past 12 months			<ul style="list-style-type: none"> Only seasonal workers from nearby districts. 		
Migration (outward)	None in past 12 months			<ul style="list-style-type: none"> 1-2 households living in town (traders) 65HHs moved to the South under the national migration policy (10 HHs have returned). 		
Main Livelihood Activities	<u>Agriculture:</u> Lowland and upland rice, maize, cassava, sweet potato, taro. <u>Livestock:</u> Buffalo, cow, pig, chicken <u>Water transport:</u> Average 7million VND/year.			<u>Agriculture:</u> Sugarcane, maize, lowland rice, upland rice, beans, nut. <u>Porter:</u> 30 professional porters <u>Forest Products:</u> Bamboo		
Land Use						
Overall Land Use (ha: Statistics from Annex 11-3)	Agricultural Land	383	6%	Agricultural Land	376	11%
	Forestland	3,116	51%	Forestland	2,290	68%
	Natural Forest	2,342	38%	Natural Forest	1,181	35%
	Plantation Forest	515	8%	Plantation Forest	400	12%
	Mountains with Bush	260	4%	Mountains with Bush	710	21%
	Forestry Capable Land	356	6%	Forestry Capable Land	138	4%
	Other Types of Land	2,264	37%	Other Types of Land	968	29%
	TOTAL	6,119	100%	TOTAL***	3,348	
Agricultural Land Use (ha: 2002) Note: Figures do not add up to the total agricultural land, because some crops are inter-cropped in the same land.	Paddy	24		Paddy	6.8	
	One Crop	18		One Crop	4.6	
	Two Crops	6		Two Crops	2.2	
	Maize	169		Maize	100	
	Sugarcane	4		Sugarcane	120	
	Upland Rice	150		Upland Rice (w/ bamboo)	30	
	Cassava	150		Nut	17	
	Taro	23		Beans	7	
	Sweet Potato	Small				
Land Tenure Certificates	Agricultural Land: 206 HHs (16.5ha) Forestry Land: 404HHs (4,099ha)			Agricultural land: 1000m ³ per person. Forestry land: No certificates		

Name of Commune		Village		Hamlet	
Livestock					
No. of Livestock	Buffalo: 646 Pig: 2,000 Fishponds: 30HH (2.5ha)	Cow: 28 Chicken: Many	Buffalo: 156 Pig: 925 Fishing with gabion: 8 HH Fishing in lake: 20HH	Cow: 197 Chicken: 1,820	
Welfare					
Average Income* (2002)	2.2million VND/person/year		2.5million VND/person/year		
Poverty**	Most disadvantaged and Poor:45.3%		Most disadvantaged and Poor:41.1%		
Loans	HHs receiving loans from the Bank for the Poor: 119HHs		N/A		
Assets	TV	60%	TV	60%	
	Radio	95%	Radio	50%	
	Motorbike	27 bikes	Motorbike	150 bikes	
	Boats with engine	47 boats	Boat (5-7t)	7HH	
			Boat (50t)	1HH	
			Small boats	Many	
			Minibus	1HH	
Energy Source					
Electricity	National electricity grid: 6 hamlets (Remaining will get access soon)		National electricity grid: all hamlets (17HH w/o supply. Planned for 2003)		
Main Sources of Household Energy	Fuelwood (collection of dead or damaged branches from forest & lake)		Fuelwood (collection of dead or damaged branches from forest & lake)		
Water and Sanitation					
Water Source	Rural water pipeline & tank: 7 hamlets Dug well: 1 hamlet Artiseal well: 2 hamlets		Rural water pipeline & tank: 5 hamlets Well: 1 hamlet		
Health Workers	Assistant doctor: 3 in commune Nurse: 1 in commune Hamlet nurse: 1 in each hamlet		Assistant doctor: 3 in commune Nurse: 1 in commune Hamlet nurse: 1 in each hamlet		
Common Diseases	Malaria (few) Malnutrition (20 children)		Cases of malaria and diarrhea have decreased compared to the past.		
Education					
Schools	<u>Commune:</u> 1 Primary (Class 1-5) 1 Lower Secondary (Class 6-9) <u>Hamlet (in each hamlet):</u> 1 Kindergarten 1 Primary (Class 1-3, some cases up to Class 5)		<u>Commune:</u> 1 Kindergarten 1 Primary (Class 1-5) 1 Lower Secondary (Class 6-9) <u>Hamlet (in each hamlet):</u> 1 Primary (Class 1-3, some cases up to Class 5)		
Teachers	Commune: 30 Hamlet: 1-3 teachers per school		Commune: 30		
Students	240 students (Class 1-5)		261 students (Class 1-5)		
Literacy Rate	100%		100%		
Accessibility					
Nearest District Ctr.	Da Bac (17km: 2 hrs by boat & road)		Cao Phong (32km by road)		
Nearest Agricultural Market	<u>Small market:</u> 1km from commune center <u>Official market:</u> 7km from commune center		N/A		

Development Projects implemented in the Commune		
National Programs	<ul style="list-style-type: none"> • 747 Program (1995-2006) • 327 Program (1991-1997) • 661 Program (1998-2010) • 135 Program (1998-2004) 	<ul style="list-style-type: none"> • 747 Program • 327 Program • 661 Program • 135 Program
Other	<ul style="list-style-type: none"> • OXFAM Belgium (1995-1999) Fruit tree, livestock, bamboo tree, and beekeeping. Provisions of training and small-scale loans. 	<ul style="list-style-type: none"> • PROFOR (UNDP, 1998 – 2001) 2 hamlets (60HHs) participated. 20ha of bamboo tree plantation. Provisions of seedlings and training.

* Provincial average was 4.04million VND/person/year in 2001.

** <80,000 VND/person/month (Data from Annex 11-4 of the Project Document).

*** Original data does not add up.

Attachment 3: Hamlet Profile

Name of Hamlet		Tep Anh Hamlet, Van Ninh Commune		Moung Hamlet, Kinh Nang Commune		
Socioeconomic Information						
Population and Households	335 (72 HHs)			291 (62HHs)		
Average Size of HH	4.7 pers/HH			4.7 pers/HH		
No. of HHs by Ethnic Group	Muong 56%, Dao 44%			Muong 95%, Kinh 5%		
Labor Force	Throughout the year: 100%			Throughout the year: 60% Seasonal: 40%		
Main Livelihood Activities	<u>Agriculture:</u> Maize, upland rice, lowland rice, sugarcane, soybean, peanut, cassava. <u>Livestock:</u> Pig, buffalo, cow, chicken.			<u>Agriculture:</u> Maize, cassava, sugarcane, soybean, peanut. <u>Livestock:</u> Cow, buffalo, pig <u>Porter</u>		
Land Use						
Overall Land Use	Agricultural Land	150.0	27%	Agricultural Land**	18.0	N/A
	Natural Forest	100.0	18%	Natural Forest	287.0	N/A
	Plantation Forest	70.0	13%	Plantation Forest	13.0	N/A
	Forestry Capable Land	50.0	9%	Forestry Capable Land	N/A	N/A
	Agriculture Capable Land	36.5	7%	Agriculture Capable Land	N/A	N/A
	Residential Area	2.9	1%	Residential Area	2.5	N/A
	Land in Special Use	150.0	27%	Land in Special Use	N/A	N/A
	TOTAL	559.4	100%	TOTAL	N/A	N/A
Agricultural Land Use (2002)	Paddy		2.7	Paddy		0
Note: Figures do not add up to the total agricultural land, because some crops are inter-cropped in the same land.	One Crop		0	One Crop		0
	Two Crops		2.7	Two Crops		0
	Maize		150	Maize		50
	Sugarcane		2.5	Sugarcane		20
	Upland Rice (w/bamboo)		17.5	Cassava		12
	Cassava	0.4ha/HH		Soybean/Peanut		3-5
	Land Tenure Certificates	<u>Certificates:</u> Agricultural Land: 68 HHs (2.7ha) Forestry Land: 68HHs			<u>Certificates:</u> Agricultural Land: 57 HHs Forestry Land: 57HHs	
Forest Protection	Participating HHs: 100% Area: 100ha Payment per HH: 30,000 VND/year Payment per Protection Team Member: 50,000 VND/person/year			Forest Protection Team Member: 4HHs Payment per Protection Team Member: 1.2million VND/person/year		
Afforestation	Participating HHs: 70 Area: 70ha			Participating HHs: 5 - 7 Area: 13ha		
Livestock						
No. of Livestock	Buffalo: 38	Cow: 63		Buffalo: 16	Cow: 118	
	Pig: 200	Chicken: Many		Pig: 62	Chicken: Many	
	Fishponds: 12HH			Fishponds: 8 HH		
	Fishing with gabion 1HH					

Welfare		Welfare		
Average Income (2002)	2.2million VND/person/year	2.5million VND/person/year		
Poverty	Most disadvantaged: 18% Poor: 15%	Most disadvantaged: 11% Poor: 48%		
Loans	HHs receiving loans from the Bank for the Poor: 18HHs HHs receiving loans from Bank for Agric. & Rural Dev't: 26HHs	HHs receiving loans from the Bank for the Poor: 46HHs HHs receiving loans from Bank for Agric. & Rural Dev't: 13HHs		
Assets	TV	20HH (28%)	TV	70%
	Radio	90%	Radio	50%
	Motorbike	1HH	Motorbike	9-10HH
	Boat (Big)	1HH	Engine boat	10HH
	Maize thresher	1HH	Car	1HH
	Husking machine	4HH	Small boats	Many
Energy Source:				
Electricity	100% access.	100% access.		
Main Sources of Household Energy	Fuelwood (collection of dead or damaged branches from forest & lake)	Fuelwood (collection of dead or damaged branches from forest & lake)		
Water and Sanitation				
Water Source	Dug well: 11 (shared by all HHs)	Rural water pipeline & tank		
Education				
Schools	1 Primary (Class 1-3)	1 Primary		
Accessibility				
Nearest District Ctr.	Da Bac (15km: by boat & road)	Cao Phong (24km by road)		
Nearest Agricultural Market	<u>Small market:</u> 3km (30min by walk and row boat) <u>Official market:</u> 1.5hr by engine boat	<u>Small market:</u> Within the hamlet.		
Development Projects implemented in the Hamlet				
National Programs	<ul style="list-style-type: none"> • 747 Program • 327 Program • 661 Program • 135 Program (hamlet school, water culvert) 	<ul style="list-style-type: none"> • 747 Program • 135 Program 		
Natural Disasters				
Major Disasters	<ul style="list-style-type: none"> • Storm (1994) • Drought (1998) 	<ul style="list-style-type: none"> • No major disasters 		
Other	<ul style="list-style-type: none"> • Pests on maize, soy bean, and fruit trees commonly experienced. 			

* At the time of dam construction, 98 households moved from the valley to the upland area, and 2 hamlets merged to form a new hamlet. Among them, 68 households moved to the central highlands under the national migration policy.

** This hamlet has some additional agriculture land allocated within another hamlet. This figure only includes the agricultural land within the hamlet boundary. (The statistics on agricultural land use includes the land in the other hamlet).

Attachment 4: Crop Calendar

4-1: Tra Ang Hamlet, Vai Nua Commune (Under Vietnamese Lunar Calendar)

10 December 2002

	January	February	March	April	May	June	July	August	September	October	November	December
Maize	Earth preparation. In lowland: - Weeding, burning, raising and plough. In upland: - Weeding, burning	Planting	Weeding, applying manure in lowland field	Weeding, earth up tree's root	Harvesting	Earth preparation In lowland: - Weeding, raking and plough. In upland: - Weeding, burning	Planting	Weeding, applying manure in lowland field	Weeding, earth up tree's root	Harvesting	Weeding. Continue harvesting of Autumn- Summer crop	Weeding. Continue harvesting of Autumn- Summer crop
Lowland rice	Earth preparation. Sowing. Planting.	Planting. Tending (weeding, applying manure 1 st time)	Weeding, manure applying 2 nd time. Weeding, manure applying 3 rd time	Harvesting	Earth preparation. Sowing. Planting.	Weeding, manure applying 1 st time. Weeding, manure applying 2 nd time.	Weeding, manure applying 3 rd time.	Harvesting (End of month)	Harvesting (Early of month)	----- Keeping fallow -----	----- Keeping fallow -----	----- Keeping fallow -----
Cassava	Earthwork preparation. Weeding. Burning.	Planting	Planting	Weeding	Weeding	Weeding, Earth up tree's root.	Weeding, Earth up tree's root.	Weeding, Earth up tree's root.	Leaves falling down to tree's root. No work.	Leaves falling down to tree's root. No work.	Harvesting	Harvesting
Taro	Planting		Weeding	Weeding	Weeding, Earth up tree's root.	Weeding, Earth up tree's root.		Harvesting	Harvesting	Keeping fallow	Keeping fallow	Earthwork preparation. Weeding. Burning.
Upland rice		Earthwork preparation. Weeding.	Earthwork preparation. Burning.	Planting	Weeding	Weeding	Weeding	Weeding at the boundary of upland farms.	Harvesting	Harvesting	Keeping fallow	Keeping fallow
Sugarcane	Planting	Planting	Weeding	Weeding, Earth up tree's root.	Weeding, Earth up tree's root.	Removing leaves. Applying muck additionally.	Removing leaves. Weeding	Removing leaves. Weeding	Start harvesting	Harvesting	Harvesting	Earthwork preparation. Weeding. Burning. Ditch digging. Applying muck.

Attachment 4: Crop Calendar 4-2: Moi Hamlet, Thung Nai commune (Under Solar Calendar)

14 December 2002

	January	February	March	April	May	June	July	August	September	October	November	December
Maize Upland:	Earth preparation, weeding.	Burning and cleaning up the ground.	Planting	Weeding 1 st time, earth up tree's root	Weeding 2 nd time, earth up tree's root	Harvesting	Earth preparation, weeding	Planting	Weeding 1 st time, earth up tree's root	Harvesting	Land has been left as fallow	Land has been left as fallow
	Spring Crop											
Cassava	Earth preparation.	Burning and cleaning up the ground.	Planting (by cutting method- "HONAF")	Planting	Weeding 1 st time, earth up tree's root	Weeding 2 nd time, earth up tree's root	Weeding 3 rd time.		No works		Harvesting	Harvesting
Purple Sugarcane	1 st year Weeding. Earthwork preparation. Clean up the ground.	Make ditches. Applying muck.	Planting (by cutting method)	Planting (by cutting method)	Weeding 1 st time.	Weeding 2 nd time, earth up tree's root. (Several HH apply nitrogenous fertilizer and muck). Removing leaves.	Removing leaves.	Removing leaves. Applying pesticide.	Weeding 3 rd time. Removing leaves.	Removing leaves.	Starting harvesting	Harvesting (Several HH keep sugarcane for selling in March and April.)
	2 nd and 3 rd years											
	Dip up the soil around the root, apply muck, earth up											
White Sugarcane	1 st year Weeding. Earthwork preparation. Clean up the ground.	Make ditches. Applying chemical fertilizer.	Planting (by cutting method)	Planting (by cutting method)	Weeding 1 st time	Weeding 2 nd time, earth up tree's root. Apply chemical fertilizer	Removing leaves. (Several HH grow autumn-summer crop and harvest in next June)	Removing leaves. Applying pesticide.	Removing leaves.	Removing leaves.	Starting harvesting	Harvesting.
	2 nd - 3 rd years onward. Finish harvesting.											
	Dip up the soil around the root; apply chemical fertilizer, earth up.											

	January	February	March	April	May	June	July	August	September	October	November	December
Bamboo tree	1 st year: Weeding. Earthwork preparation. * * 2 nd year: Weeding. Earth up tree's root. Some RH still mix- cultivate maize * * 3 rd year: ←	Burning and cleaning up the ground. * * Weeding for bamboo trees. Tending of maize. * * ←	Cultivation of maize (mix- cultivation). * * ← As in the 1 st year * * ←	Weeding, 1 st time, earth up tree's root * * ←	Weeding, 2 nd time, earth up tree's root * * ←	Harvesting * * Harvesting of maize * * ←	Dig up for plantation of bamboo. * * * * * ←	Dig up for plantation of bamboo. * * * * * ←	Weeding. Earth up tree's root * * ← Weeding for bamboo trees. * * ←	Weeding. * * ←	Weeding. * * ←	Weeding. * * ←
	4 th , 5 th years: ←	Weeding and tending bamboo trees * * ←	Weeding and tending bamboo trees * * ←	Weeding and tending bamboo trees * * ←	Weeding and tending bamboo trees * * ←	Weeding and tending bamboo trees * * ←	Weeding and tending bamboo trees * * ←	Weeding and tending bamboo trees * * ←	Weeding and tending bamboo trees * * ←	Weeding and tending bamboo trees * * ←	Weeding and tending bamboo trees * * ←	Weeding and tending bamboo trees * * ←
	6 th , 7 th years onward: ←	Harvesting of bamboo tree at any time during the year * * ←	Harvesting of bamboo tree at any time during the year * * ←	Harvesting of bamboo tree at any time during the year * * ←	Harvesting of bamboo tree at any time during the year * * ←	Harvesting of bamboo tree at any time during the year * * ←	Harvesting of bamboo tree at any time during the year * * ←	Harvesting of bamboo tree at any time during the year * * ←	Harvesting of bamboo tree at any time during the year * * ←	Harvesting of bamboo tree at any time during the year * * ←	Harvesting of bamboo tree at any time during the year * * ←	Harvesting of bamboo tree at any time during the year * * ←
Labor intensity	+	+	+ + +	+ + +	+ + +	+ + + +	+ + +	+ + +	+ +	+ +	+	+

Note: Asterisks indicate the level of labor required during the month for a given crop. * ... Lowest; ** ... Middle; *** ... High; **** ... Highest. Minus sign indicates months with no labor requirement.

Overall labor intensity during a given month. + ... Lowest; ++ ... Middle; +++ ... High; ++++ ... Highest.

	January	February	March	April	May	June	July	August	September	October	November	December
Bamboo tree	1 st Year: Weeding. Earthenwork preparation.	Burning and cleaning up the ground.	Cultivation of maize (mix- cultivation).	Weeding 1 st time, earth up tree's root	Weeding 2 nd time, earth up tree's root	Harvesting	Dig up for plantation of bamboo.	Dig up for plantation of bamboo.	Weeding. Earth up tree's root	Weeding.	Weeding.	Weeding.
	2 nd Year: Weeding. Earth up tree's root. Some HH still max- cultivate maize	Weeding for bamboo trees. Tending of maize.	As in the 1 st year	As in the 1 st year	As in the 1 st year	Harvesting of maize	As in the 1 st year	As in the 1 st year	Weeding for bamboo trees.	Weeding.	Weeding.	Weeding.
	3 rd Year: As in the 1 st year	Weeding and tending bamboo trees	Weeding and tending bamboo trees	Weeding and tending bamboo trees	Weeding and tending bamboo trees	Harvesting of shoot (thinning)	Weeding and tending bamboo trees	Weeding and tending bamboo trees	Weeding and tending bamboo trees.	Weeding and tending bamboo trees.	Weeding and tending bamboo trees.	Weeding and tending bamboo trees.
	4 th 5 th years: As in the 1 st year	Weeding and tending bamboo trees	Weeding and tending bamboo trees	Weeding and tending bamboo trees	Weeding and tending bamboo trees	Harvesting of bamboo tree at any time during the year	Weeding and tending bamboo trees	Weeding and tending bamboo trees	Weeding and tending bamboo trees.	Weeding and tending bamboo trees.	Weeding and tending bamboo trees.	Weeding and tending bamboo trees.
	6 th 7 th years Onward: As in the 1 st year	Weeding and tending bamboo trees	Weeding and tending bamboo trees	Weeding and tending bamboo trees	Weeding and tending bamboo trees	Harvesting of bamboo tree at any time during the year	Weeding and tending bamboo trees	Weeding and tending bamboo trees	Weeding and tending bamboo trees.	Weeding and tending bamboo trees.	Weeding and tending bamboo trees.	Weeding and tending bamboo trees.
Labor intensity	-	-	-	-	-	-	-	-	-	-	-	-
	+	+	++	+++	+++	++++	++++	++++	+++	++	++	+

Note: Asterisks indicate the level of labor required during the month for a given crop. * ... Lowest; ** ... Middle; *** ... High; **** ... Highest.
 Minus sign indicates months with no labor requirement.

Overall labor intensity during a given month. + ... Lowest; ++ ... Middle; +++ ... High; ++++ ... Highest.

Attachment 6: Hamlet Organizations 6-1: Analysis in Tra Ang Hamlet, Vai Nua Commune

9 December 2002

Name of Organizations/Groups	Members		Criteria to be a member	Main Activities		Forestry related activities
	Male	Female		Main activities	Agriculture related activities	
The Hamlet Youth's Union ③	15	20	At the age of 15 to 28; actively participates in activities instructed by higher government authorities; committed to pay union fee; selected by voting.	Monthly meeting, helping each other for self-improvement (by criticize & self-criticize, support lending capital from union fee, etc.), assisting hamlet management board.	Maize cultivation for union fund (2000m ²).	Participates in afforestation in the area allocated by hamlet.
The Hamlet Veteran's Association ②	25	3	Used to be soldier, living in hamlet, committed to pay union fee; selected by voting.		Annually, assigns members to attend training courses opened by district extension station in commune for agricultural and forestry production, retraining the other members, lending capital to members for development of production.	
The Hamlet Women's Union ①	-	25	At the age of 15 to 50; actively in helping other people, committed to pay union fee; applying family planning; selected by voting.	Participates and raise awareness on family planning.	Assigns members (2members/year) to attend training courses in district for agricultural and forestry production, retraining for other members, lending capital to members for husbandry.	

Name of Organizations/Groups	Members		Criteria to be a member	Main Activities		
	Male	Female		Main activities	Agriculture related activities	Forestry related activities
The Hamlet Farmer's Association	80	80	At the age of 35 to 50; is farmer; has good knowledge on production, committed to pay union fee; selected by voting, follows government policies well.			
①						
The Hamlet Elderly Association	36	4	At the age of above 50; committed to pay union fee; be good examples to descendants.	Encourages descendants to be proactive in learning and production.		
②						
The Hamlet Militia Force	45	-	At the age of 18 to 45; selected by voting; healthy; follows government policies well; active in maintaining security of the hamlet.	Protects properties of hamlet.		
②						
The Security Group	14	-	Selected from the Hamlet Militia Force under the agreement of hamlet Communist Party; at the age of 18 to 45.	Protects properties and ensures security of the hamlet.		Patrolling of the protection forests (1 day/week).
②						
The Labor Exchange Group	6 groups; 10 HH/group (on average)		Active in supporting each other; application to become a member is agreed by all members of the group.	Supporting households in the group.		Assists forest protection, treats any violation cases.
①						

Note: Numbers in circle indicate the ranking of the groups' activeness by the participants.

Highest: ① Middle: ② Low: ③

Attachment 6: Hamlet Organizations 6-2: Analysis in Moi Hamlet, Thung Nai Commune

12 December 2002

Name of Organizations/ Groups	Members		Age	Agriculture related activities	Forestry related activities
	Male	Female			
The Hamlet Elderly ④	7	18	Female: ≥ 55 Male: ≥ 60	-	Encourage descendants to actively participate in afforestation and forest protection activities.
The Hamlet Veteran's Association ③	18	1	-	Spending association's fee as loan lending to members for production development.	Take part in forest patrolling (3times/month). Disseminate information and encourage descendants to actively participate in afforestation and forest protection activities.
The Hamlet Farmer's Association ①	37	20	Female: 18-55 Male: 18-60	Assign members to attend training courses in district/commune for farming techniques of crops and livestock (1-2 times/year; 3-5 people/time). Those who attended training courses are tasked to disseminate the techniques they have learnt to other members in hamlets meetings. Disburse loans from Bank for the Poor to the members who lend. On behalf of local people, receive fertilizer, pesticide, and seedlings.	Assigns members to join visits of models on fruit tree plantation and afforestation under 135 program. Assign members to attend training courses in district for forestry extension.
The Hamlet Women's Union ③	-	60	18 - 50	-	-
The Hamlet Youth's Union ④	13	9	15 - 28	-	-
The Security Group ②	6	-	-	Patrol and protect crops from animal damage.	Patrol protection forests, and treat activities that are against the law on forest management and protection. Remind local people to not practice slash and burn agriculture or other means that would destroy protection forests.

Name of Organizations/Groups	Members		Age	Agriculture related activities	Forestry related activities
	Male	Female			
The Hamlet Forest Protection Group ^②	4	-	-		Forest Patrolling (5-6 times/month). Discover and treat any activities violating law on forest mngt. and protection. Prevention of forest fire.
The Hamlet Disputes Settlement Group ^④	4	2	≥ 60	Settle the disputes on agricultural land.	Take responsibility for settling any disputes on forestry land (So far no such cases have occurred).
The Hamlet Fatherland Front Section ^③	3	-	-	Disseminate information and encourage local people to follow government policies relating to agricultural production.	Disseminate information and encourage local people actively participate in afforestation and forest protection activities.
The Hamlet Militia Force ^①	12	-	18 - 37	Patrolling, prevent animal damage on crops.	Same as the security team.

Note: Numbers in circle indicate the ranking of the groups' activeness by the participants.

Highest: ①

Lowest: ④

Annex 16 : Stakeholders' Workshop Report

1. Purpose

JICA dispatched 3 study teams between November 2001 and December 2002. Prior to the dispatch of the 3rd mission in Nov./Dec. 2002, Forestry and Natural Environment Department of JICA Headquarters prepared the 'Master Plan for the Project on Natural Forest Rehabilitation for Degraded Watershed Area in Vietnam,' building on the findings from the previous missions, and based on the brainstorming workshop held at JICA HQ.

Box 1 Abstract of the Master Plan

Overall Goal : Forest cover is increased, and the economic and environmental quality of forests are improved (thereby contributing to the goals of the national 5 Million Ha Reforestation Program).

Project Purpose: Techniques in the fields of assisted natural regeneration and maintenance necessary for rehabilitation of degraded watershed protection forests are developed, and are used by local people and forest management institutions in the target area.

Output 1: Techniques in the fields of assisted natural regeneration and maintenance necessary for rehabilitation systematically developed for field application.

Output 2: Techniques in the fields of assisted natural regeneration and maintenance necessary for rehabilitation for natural forest are introduced and used by local people and forest management institutions.

Since the basic framework of the Project had already been proposed in the form of a Master Plan, the Workshops held during the Preparatory Study (Nov./Dec. 2002) were used as a venue to revise and improve the Project's framework by receiving comments from the stakeholders, as an opportunity to obtain information needed to design the project, and to share the common vision among the stakeholders. More specifically, the Workshops covered the following subjects.

- (1) Problems analysis by stakeholders.
 - To reach a common understanding among the stakeholders on the core problem the Project is aiming to solve.
 - To identify potential activities that could be undertaken to solve the problems.
- (2) Discussion and confirmation on the organizational structure for project management and implementation.
- (3) *Ex-ante* assessment of the Project by stakeholders (Impact and Sustainability).

2. Dates and Venues of the Workshops

1st Workshop

Date: 3rd December 2002

Time: 9:30 – 16:30

Venue: Meeting Room of Plant Protection Sub-Department,
Department of Agriculture and Rural Development (DARD),
Hoa Binh Province

Subject: Problems Analysis

2nd Workshop

Date: 16th December 2002

Time: 9:30 – 17:00

Venue: Meeting Room of Department of Forestry Development (DFD)

Subject:

- Organizational Structure for Project Management and Implementation
- *Ex-ante* Assessment on Impact

3rd Workshop

Date: 23th December 2002

Time: 9:30 – 16:30

Venue: Meeting Room of Department of Forestry Development (DFD)

Subject: *Ex-ante* Assessment on Sustainability

3. Participants

Table 1 Participants of the 1st Workshop (Problems Analysis)

	Name of Participants	Position
1	Dinh Van Duc	Deputy Director, Department of Agriculture and Rural Development (DARD), Hoa Binh Province
2	Bui Quang Huy	Extension Station, Cao Phong District
3	Xa Van Chinh	Chairman, Hien Luong Commune People's Committee
4	Dinh Chi Quyet	Extension Station, Da Bac District
5	Nguyen Van Hieu	Extension Station, Thung Nai Commune
6	Nguyen Van Thuong	Forestry Section, Binh Thanh Commune People's Committee
7	Bui Van Chuc	Director, Sub-Department of Forestry Development (Sub-DFD), Hoa Binh
8	Nguyen Cong Quan	747 Program
9	Pham Quang Minh	Head, Silviculture Division, Department of Forestry Development (DFD), MARD
10	Vo Dai Hai	Forest Science Institute of Vietnam (FSIV)
11	Ngo Dinh Que	Research Center for Forest Ecology and Environment, FSIV
12	Bui Doan	FSIV
13	Kensci Oda	Long Term Expert Attached to DFD, MARD

Table 2 Participants of the 2nd Workshop
(Organizational Structure for Project Management and Implementation,
and *Ex-ante* Assessment on Impact)

	Name of Participants	Position
1	Nguyen Hong Quan	Deputy Director, DFD, MARD
2	Pham Quang Minh	Head, Silviculture Division, DFD, MARD
3	Pham Duc Tuan	Chief, Extension Division, DFD, MARD
4	Pham Xuan Nam	Expert, Silviculture Division, DFD, MARD
5	Nguyen Hoang Nghia	Deputy Director, FSIV
6	Nguyen Quang Trung	Official, International Cooperation Department, FSIV
7	Ha Huy Thinh	Director, Research Center for Forest Tree Improvement, FSIV
8	Ngo Dinh Que	Research Center for Forest Ecology and Environment, FSIV
9	Bui Doan	FSIV
10	Dinh Van Duc	Deputy Director, DARD, Hoa Binh Province
11	Bui Van Chuc	Director, Sub-DFD, Hoa Binh Province
12	Kensci Oda	Long Term Expert attached to DFD, MARD

Table 3 Participants of the 3rd Workshop (*Ex-ante* Assessment on Sustainability)

	Name of Participants	Position
1	Nguyen Hong Quan	Deputy Director, DFD
2	Tricu Van Hung	Director General, FSIV
3	Vo Dai Hai	Deputy Director, FSIV
4	Pham Xuan Nam	Expert, Silviculture Division, DFD
5	Nguyen Quang Trung	Official, ICD, FSIV
6	Bui Doan	Expert, Research Center for Forest Ecology and Environment, FSIV
7	Bui Van Chuc	Director, Sub-DFD, Hoa Binh Province

4. Summary Results

4.1 Problems Analysis

Process

The participants agreed on the Core Problem, which is the situation that ‘the Forests in the Watershed Protection Area is degraded.’ Through brainstorming, participants listed the root problems that attribute to the core problem. These root problems were categorized into 3 groups: (1) Problems that relate to local people (e.g. problems related to production activities, and problems related to local people’s awareness); (2) Problems related to technology; and (3) Problems concerning government management. Among these problems, the group identified the key issues that the Project could focus on in view of the Overall Goal and the Project Purpose stipulated in the Master Plan (Box 2). The group then divided into smaller groups, and discussed and identified potential solutions and the specific activities that could be taken to address each issue. The results of the participants’ analysis are presented in the end of this Annex (Diagram 1 and Table 5).

Box 2 List of Key Issues relating to the core problem

- Local people practice upland farming.
- Local people have no (limited) knowledge and methods on protection and maintenance of forest.
- Lack of information on natural forest rehabilitation technology.
- Lack of natural forest rehabilitation technology.
- Natural forest management techniques for local people have not been established.
- Application of forest protection techniques (e.g., agroforestry) has not been established.
- Management methods of natural forest are not extended to local people.

Main Outputs

- (1) Confirmation and common understanding among the stakeholders on the core problem the Project is aiming to solve.
 - The Core Problem was confirmed to be the statement: ‘the Forests in the Watershed Protection Area is degraded.’

- (2) Revisiting the Project’s Approach
 - In order to analyze the different approaches the Project could consider to solve the core problem, a priority ranking exercise was conducted. The group ranked the main problems from various stakeholders’ point of view, including research, state management, extension, and local people. There was a clear difference in the ranking results between the stakeholders at the central level (research and state management), and the stakeholders at the local level (extension and local people). The stakeholders at the national level placed higher importance on issues related to technology, whereas stakeholders at the local level placed higher ranking on the problems concerning local people, particularly on the practice of upland farming (Table 4).

Table 4 Priority Ranking of the Main Problems from Various Stakeholders’ Points of View

Main Problem	Stakeholders			
	Research	State Management	Extension	Local People
Lack of information on natural forest rehabilitation technology.	2	2	4	5
Lack of natural forest rehabilitation technology.	1	1	5	3
Application of forest protection techniques (e.g., agroforestry) has not been established.	5	2	3	4
Local people practice upland farming.	3	3	1	1
Local people have no knowledge and methods on protection and maintenance of forest.	4	4	2	2

- Attempt was not made to come up with a common ranking for the group as a whole, as the purpose of the ranking exercise was to understand the different importance the stakeholders place on the issues. However, the Preparatory Study Team took note of the importance on the issue of upland farming, which was initially not included within the scope of the Master

Plan. (NOTE: This matter was later reflected in the Project Design, under the on-farm trial component on farmland management.)

(3) Identification of potential activities to solve the problems.

- Specific activities were proposed, which fed into the project formulation process. Many of the activities were considered as activities in the Project Design Matrix (PDM) and the Plan of Operations (PO).

4.2 Organizational Structure for Project Management and Implementation

Process

The workshop took form of an open discussion. To facilitate the discussion, a draft organizational chart was distributed to the participants. Consultants of the JICA Preparatory Study Team explained the draft organizational chart first, and the proposed roles of each operational units. The participants were encouraged to discuss among themselves on the draft organizational chart, and to propose an alternative if they wish to recommend a better structure. It was emphasized that the organizational structure should be operational, should fit the requirements of the GOV, and most importantly, that it should allow the Project to work as a 'team.' Intensive discussions were held among the Vietnamese participants, and between the participants and the consultants.

Main Output

(1) Confirmation on the organizational structure for project management and implementation.

- Stakeholders agreed on the organizational structure presented in Annex 4 of the Project Document.

4.3 Ex-Ante Assessment on Project Impact

Process

This exercise was held at a later stage of the Preparatory Study Mission, after the basic project framework was agreed between GOV and JICA. The facilitator requested the participants to discuss and identify both positive and negative impacts that may result from the Project in the following areas:

① At the National Level

- Impacts on technical advancement
- Impacts laws, regulations and government programs
- Potential for nation-wide application
- The degree of achieving the overall goal of the project
- Impacts on the national and provincial policies

② At the Local Level

- Impacts on the environmental conditions of the target area
- Impacts on the rights and benefits of local people
- Impacts widening the gap between rich and poor
- Impacts on the lives of local people in the 20 communes
- Impacts on forest managers (FE, WMB)
- Impacts on agriculture and forestry extension workers

The results of the participants' analysis are presented in the end of this Annex (Table 6).

Main Outputs

(1) *Ex-ante* assessment of the Project by Stakeholders (Impact)

① Positive Impact at the National Level

- The participants assessed that the Project will have an impact on national programs, not only on forestry programs, but also on poverty alleviation and job creation programs. As for the geographic aspects, the techniques developed by the Project are expected to be applicable widely, especially in similar watershed areas like the Song Da Watershed where natural forest rehabilitation is urgently needed.

② Positive Impact at the Local Level

- The expected impact at the local level was diverse. Positive impact is expected in improving the natural environment (prevention of soil erosion, securing water source, and increasing forest cover). The Project's impacts on socioeconomic aspects are also expected, in raising local people's awareness, empowerment, and in increasing their income. The Project is also expected to contribute on capacity building for forest managers (FE and WMB), and agriculture and forestry extension workers.

③ Negative Impacts

- The stakeholders raised the following points as potential negative impacts of the Project.

Firstly, the project may have impact on the availability of agricultural land. The Project is expected to implement activities mainly on unused bare land and/or on slope land not suitable for agriculture. While such land are normally not highly productive, and legally should be rehabilitated to become forestland, there may be situations in which the Project competes for land with upland farming. In such circumstances the area available for upland farming could be reduced, which would affect local people's livelihoods. (NOTE: In view of this potential negative impact, the Project has incorporated support on farmland management in the activities under Output 2 [i.e., on-farm trial activities on soil conservation, agroforestry, etc.] so as enable local farmers to gain sufficient return from agriculture without engaging in slash-and-burn shifting cultivation. Economic aspects of the technology to be developed are also highlighted in the Project design, including costs of introducing the technology, and on the timing and scale of the benefits it may bring to the farmers).

- The second point of concern is the potential conflict or ill feelings between local farmers who directly participate in (hence benefit from) on-farm trial activities and those who will not be involved. (NOTE: In view of this concern, the Project Document recommends that the Project should work with existing groups and organizations in the village in the process of selecting the farmers. It is also recommended that the Project should work closely with these organizations and with local authorities such as commune people's committee and village chiefs. The use of clear and transparent selection procedures will also be important in order to avoid conflicts).
- The third point expressed by the participants was the nature of forestry research, which requires a long timeframe to produce tangible results. In other words, there was a concern that the duration of the project may not allow the research to achieve substantial output that can be applied in the field. (NOTE: The Project addresses this risk by combining *new research*, and the consolidation of *existing information*, both of which will be experimented and applied in the field).

4.4 Ex-Ante Assessment on Project Sustainability

Process

The participants were requested to discuss and share their opinions on how the project's results will be sustained after the project is ended. More specifically, the participants discussed the following issues.

- How the technology developed by the project would be used by the stakeholders.
- The potential constraints that might hinder the stakeholders from using the technology.

The participants discussed the above 2 points for the following stakeholders.

- National Level (DFD, FSIV, Extension Division)
- Local Level (Local People, DARD/Sub-DFD, Forest Enterprise, Watershed Management Board, Agriculture and Forestry Extension System)

The results of the participants' analysis are presented in the end of this Annex (Table 7).

Main Outputs

(1) *Ex-ante* assessment of the Project by Stakeholders (Sustainability)

① How the technology developed by the project would be used by the stakeholders

- From the workshop, it was clear that the participants shared the common understanding on the future direction of the Project, and as to how the respective stakeholders would use the Project's results. At the national level, the DFD's role would be to issue procedures and regulations applicable for 661 conditions, and also to use the Project results to reassess the economic and technical norms of the 661 Program. FSIV will continue research and monitoring of the experimental plots, demonstration plots and on-farm trial plots. They will also use the Project results to develop technical guidelines, and transfer the technologies to forest management practitioners, such as DARD and FE. The Extension Division of DFD at the central level will distribute the newly developed technology to provincial and district levels through its line of organizations. At the local level, the Project results will be used mainly through the 661 Program, following the instruction of DFD. The FE, WMB, and AFE extension workers may also provide feedback to the DFD based on their experience in implementing the new procedures/technologies in the real setting.

② The potential constraints that might hinder the stakeholders from using the technology.

- The main constraints identified by the participants that may hinder the effective application of technology included: (1) costs and benefits of introducing newly developed technology; (2) appropriateness of the technology; (3) financial resources for research and monitoring; (4) human and financial capacity of local people; and (5) human and financial capacity of Forest Enterprise, Watershed Management Board, and AFE system.

- In view of (1) and (2), the project document have emphasized the importance of developing technology that are technically appropriate and economically affordable. In terms of (3), it will be important for the GOV to ensure that sufficient financial resources are secured beyond the project duration, so that follow up monitoring of project results can be conducted without difficulties. The Project and the GOV should also place high efforts in strengthening the capacities of local institutions (FE, WMB, and AFE) who act as extension agents and also as 'end-users' of the newly developed technology, because the effective outreach of project benefits beyond the project duration is highly dependent on the capacity of these organizations. (NOTE: The Project design that places high emphasis on on-farm trial activities, through which on-the-job training opportunity will be provided to these organizations, is one effort attempting to strengthen their capabilities.)

Diagram 1: Brainstorming Results of the Problems

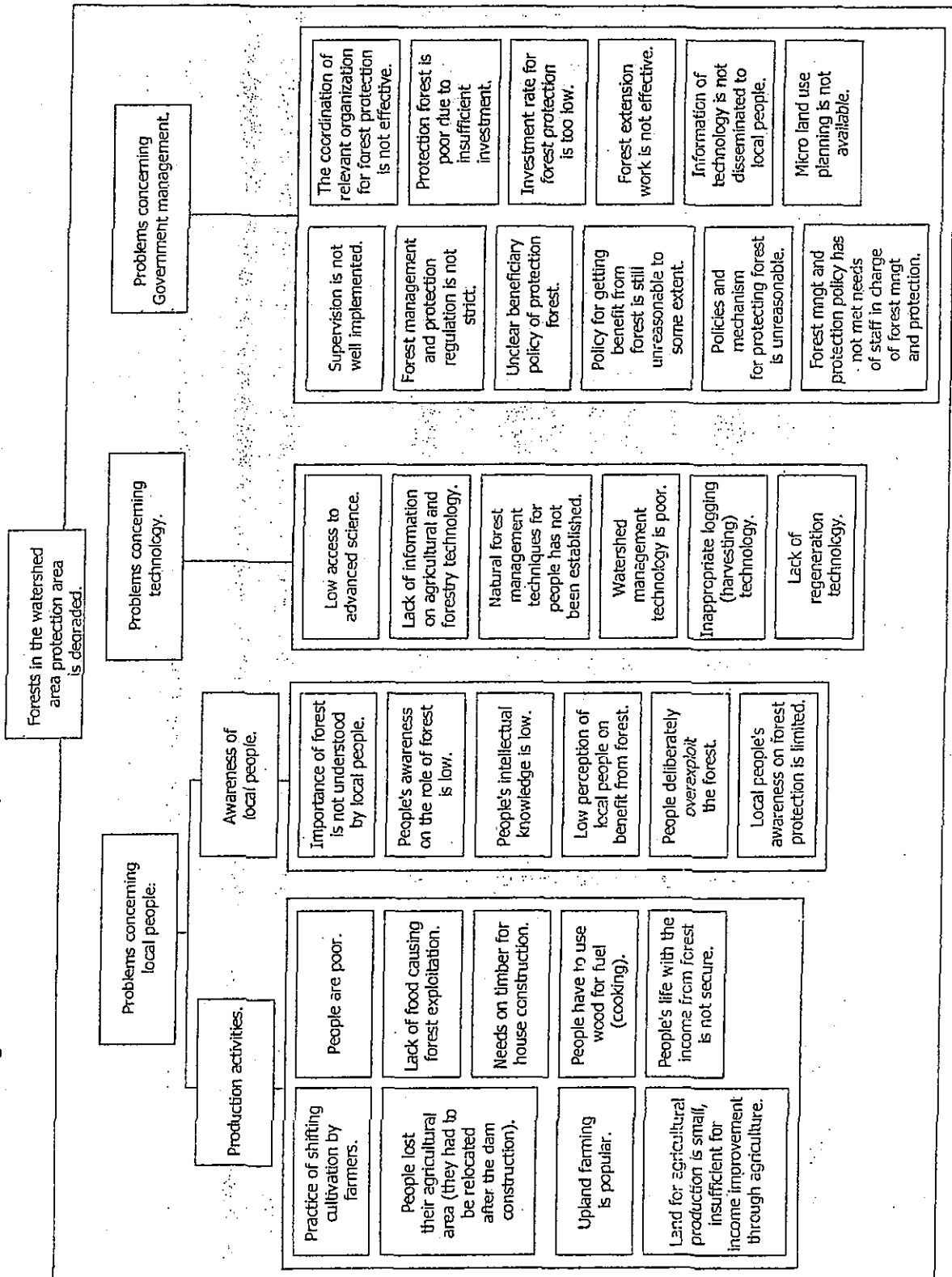


Table 5 Solutions and Potential Activities for the Key Issues

① Upland Farming

Main problem that can be considered by the project	Solutions	Activities
Local people practice upland farming.	<ul style="list-style-type: none"> Land planning for permanent upland farms. 	<ul style="list-style-type: none"> Effectively combine forest plantation, protection and income increasing activity (to ensure that local people get benefits from protection forest).
	<ul style="list-style-type: none"> Making agroforestry model suitable for each area (different natural conditions) in the Song Da area. Agroforestry suitable for the local area should be developed. 	<ul style="list-style-type: none"> Application of inter-cropping of agriculture and forest trees. Distribute suitable density of forestry and agriculture trees. Provide people with production capital assistance to apply the model (?)
	<ul style="list-style-type: none"> Improve agriculture and forestry extension. 	<ul style="list-style-type: none"> Publish technical books on agriculture and forestry production that are easily understandable and easily applicable. Open field classes to increase people's knowledge. Provide instruction to the people on how to use capital effectively (guide them to purchase new and suitable high yield variety). Provide guidance on suitable animal husbandry (including fish farming). Organize field visits to learn from good models.
	<ul style="list-style-type: none"> Identify market for agriculture and forestry product consumption. 	
	<ul style="list-style-type: none"> Requirement of clear and detailed policy, regulation regarding benefits of forest products. 	
<p>Note: Solutions / activities that were put aside because it was unlikely to be considered by the project.</p>	<ul style="list-style-type: none"> Increase investment for forest protection (i.e., increase forest protection allowance provided by the government). Support the extension by providing capital assistance. Investment and support on high productivity crop and animal varieties. 	

② Awareness of Local People

Main problem that can be considered by the project	Solutions	Activities
Local people have no (limited) knowledge and methods on protection and maintenance of forest.	<ul style="list-style-type: none"> Increase awareness and knowledge of local people. 	<ul style="list-style-type: none"> Training on methods for forest regeneration. Training on agroforestry with suitable orientation for local people. Compilation of materials on protection and assisted natural regeneration, which will be distributed to local people. Organization of technical training courses for local officers and people on protection, maintenance and regeneration of forest. Enhancement of dissemination through mass media.
	<ul style="list-style-type: none"> Identify detailed management methods. 	
	<ul style="list-style-type: none"> Detailed and suitable land planning for production. 	
	<ul style="list-style-type: none"> Introduce new varieties of animals and crops with high productivity helping local people to produce effectively. 	
	<ul style="list-style-type: none"> Requirement on regulation rules and village rules for protection. 	
	<ul style="list-style-type: none"> Review and evaluate the implementation period to learn from experiences. 	
	<ul style="list-style-type: none"> Review and evaluate forest protection work to learn suitable measures. 	

③ Lack of Technology (1)

Main content (this column is divided by the column)	Conditions	Activities
Lack of information on natural forest rehabilitation technology.	<ul style="list-style-type: none"> • Collection of available information. • Analysis and systemizing of collected information. 	<ul style="list-style-type: none"> • Review and sum up practical experience. • Visiting and learning. • Application of suitable and new regeneration technology. • Development of information technology (Internet). • Training of technical staff. • Organize workshops on regeneration technology.
Lack of natural forest rehabilitation technology.	<ul style="list-style-type: none"> • Identification of suitable regeneration technology. • Improvement of technical guidance. • Establishment of demonstration models for maintenance technology of depleted forest in degraded area. • Establishment of demonstration models on natural regeneration technology. • Technical guidance on technology for maintenance of depleted forest in degraded area. • Improvement of native species seedling production. • Establishment of database on study area. • Inventory and categorization of forest status. • Identification of priority tree species for implementation of study. • Techniques for planting native species. • Establishment of multi-story forest. • Proper harvesting techniques. • Establishment of forest rehabilitation on bare land. • Technique for plantation of non-timber tree. • Direct sowing on bare land. 	<ul style="list-style-type: none"> • Land use planning. • Opening of technical training courses. • Enforcement of forestry extension work. • Dissemination of information. • Enforcement of publishing books for wide use.

④ Lack of Technology (2)

Main Problem (What can be considered as the problem?)	Solutions	
<p>Natural forest management techniques for local people have not been established. Application of forest protection techniques (e.g., agroforestry) has not been established.</p> <p>Management methods of natural forest are not extended to local people.</p>	<ul style="list-style-type: none"> • Review experience in agroforestry production. • Market research on consumption of products. • Research and application of multi-purpose tree species (protection and income). e.g., <i>Anarium album</i>, <i>Dracontomelum</i>, etc. • Experiment on fallow systems e.g., <i>Hybrid Acasia</i>, <i>Leucoena Leucocephala</i>, <i>Macademia</i>, etc. • Mixed plantation of bamboo and broad leaf tree. (e.g., <i>Michelia mediocus</i>, <i>Endospermum chiaeusa</i>, <i>Cinamomum fleir</i>) • Mixed plantation of forestry tree + medicine tree + tea. 	<ul style="list-style-type: none"> • Use fast growing species in agroforestry models. • Establishment of village nursery techniques. • Plantation of green hedgerow with legume tree for soil conservation. • Orchard in the low land and around houses.

Table 6 Results of the *Ex-ante* Assessment on Project Impact by the Workshop Participants

① National Level

Impacts on.....	Positive Impact	Negative Impact
Technical advancement	<ul style="list-style-type: none"> Techniques are improved and applied by people. 	<ul style="list-style-type: none"> (Concerns) Because of time limitation, some of the matters cannot get conclusions.
Related to laws, regulations and government programs	<ul style="list-style-type: none"> Improve some policies and mechanisms for national programs. Contribute to the implementation of other programs (poverty alleviation, job creation, etc.). 	
National wide application	<ul style="list-style-type: none"> Similar watershed areas like the Song Da Watershed that need to be protected and managed. There are many poor and degraded forests that need to be rehabilitated and properly used. 	<ul style="list-style-type: none"> Cannot apply everywhere.
The degree of achieving the overall goal of the project	<ul style="list-style-type: none"> Forest cover increases, environment is better, possible to increase income. 	
National and provincial policies	<ul style="list-style-type: none"> Improve policies on benefit sharing, government investment, and poverty alleviation. 	<ul style="list-style-type: none"> People may lack (lose) their cultivation area. Difficult to improve peoples' income during the initial period.

② Local Level

Impacts on.....	Positive Impact	Negative Impact
Environmental condition of the target site	<ul style="list-style-type: none"> Soil erosion control. Regulation of water source. Increase of forest cover. 	<ul style="list-style-type: none"> Decrease of area for food crop cultivation.
Cultural aspects	<ul style="list-style-type: none"> Increase of awareness of local people in terms of culture and society. 	
⇒ Any impact on the rights and benefits of local people?	<ul style="list-style-type: none"> Enabled to distribute their comments, recommendations for forest rehabilitation solutions. Create more jobs (income earning opportunities). 	<ul style="list-style-type: none"> Jealousy may arise among people who do not participate in project activities.
⇒ Any impact on widening the gap between rich and poor?	<ul style="list-style-type: none"> No. 	
The lives of local people in the 20 communes	<ul style="list-style-type: none"> Increase of income and improvement of living environment and cultural conditions. 	
Forest managers (Forest Enterprise, Watershed Management Board)	<ul style="list-style-type: none"> Strengthening of knowledge on forest management. 	
Agriculture and forestry extension workers	<ul style="list-style-type: none"> Improvement of professional knowledge and providing additional document for extension workers. 	

Table 7 Results of the *Ex-ante* Assessment on Project Sustainability
by the Workshop Participants

① National Level

	How will the technology developed by the project be used?	If the technology is not used by them, what will be the constraints?
DFD	<ul style="list-style-type: none"> • Issue procedures and regulations applicable for 661 conditions. • Establishment of economic and technical norms. 	<ul style="list-style-type: none"> • If the technology is too expensive (requires high investment), it cannot be applied widely (i.e., cannot be incorporated into the procedures and regulations of 661 for nation wide application).** • If the benefits brought by the technology to the people is too low. • If the technology is too complicated. • Budget for follow-up monitoring and study results might be insufficient.
FSIV	<ul style="list-style-type: none"> • Continue improving technology. • Continue monitoring models. • Development of technical guideline and procedures (for consideration by DFD: refer above). • Technical transfer.* 	
Extension Division	<ul style="list-style-type: none"> • Documentation (manuals, guidelines) to use the technology nationwide. • Hold training courses for technical transfer. (Extension Division ⇒ Provincial Extension Centers ⇒ District Extension Stations) 	

* FSIV to DARD, FE, etc., at various provinces. Trainings are often conducted receiving funds from Ministry of Education, foreign aids, or national programs (e.g., 661). There are also cases in which DARD in the provinces pay for FSIV's service to conduct training.

** If the technology is too costly, it is unlikely that local farmers can invest in such technology. Therefore, researchers must be realistic in terms of the level of input required for the application of the technology.

② Local Level

	How will the technology developed by the project be used?	If the technology is not used by them, what will be the constraints?
Local People	<ul style="list-style-type: none"> • Studying procedures. • Visit to models. • Implementation following the annual plan and procedures of DARD, and guidance of FE and WMB. 	<ul style="list-style-type: none"> • People's knowledge and awareness are low. • Lack of capital of local people. • Market, forest product processing.
DARD (Sub-DFD)	<ul style="list-style-type: none"> • Implementation following DFD's instructions (i.e., the use of procedures and techniques, norms to implement annual plan for the Province). • Draw experiences for organizing and steering (Apply the technology, and make suggestions from using it). 	<ul style="list-style-type: none"> • Local people's benefit is low. • Insufficiency of land for agricultural cultivation if local land use planning is not suitable. • Technology is too complicated for local people.
Forest Enterprise Watershed Management Board Agriculture and Forestry Extension System	<ul style="list-style-type: none"> • Implementation following DARD's instruction. • Provide seedlings to local people. • Site Planning for application. • Technical consultation for local people. • Organize technical training courses. • Extend the technology to local people. • Provide suggestions to technical addition and amendment. 	<p>Extension capacity. (Common constraints for FE, WMB, and AFE)</p> <ul style="list-style-type: none"> • No. of extension workers. • Knowledge of extension workers. • Budget for extension work.

Note:

- FE and WMB only do the extension work within the area they manage. Their main role is the implementation of the programs such as 661.
- Extension work of AFE is larger in scale compared to FE and WMB, and their extension work is more in-depth.