

DRAFT: Conservation Agreements for Fish Conservation Zones around Hin Nam No NPA, Bualapha district.

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1 The Concept of Conservation Agreements

1.1 What are conservation agreements

In many countries, communities make use of biodiversity resources derived from protected areas for their livelihoods. There are often tensions between those livelihood needs of communities and the need to preserve biodiversity resources. In many cases however, communities are willing to engage in nature conservation by regulating their offtake of biodiversity resources, as long as their access to these livelihoods resources is either secured sustainably or compensated for adequately.

The concept of “conservation agreements” is being promoted as a way to promote communities who engage in nature conservation by rewarding them for their efforts. A good description of this concept has been developed by The Conservation Stewardship Program of Conservation International (CI, 2015), see text box below.

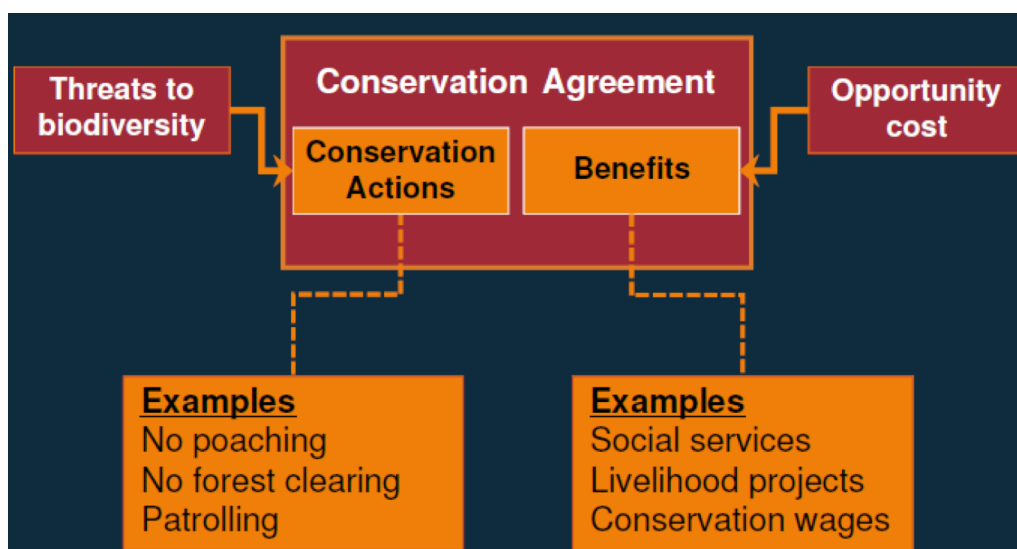
The agreement would be between two parties: the “resource users”, a village group engaged in conservation and an “conservation investor”, an institution providing rewards for conservation. The conservation agreement should cover three key points:

- (a) The conservation efforts of the resource users be clearly described as response to a threat to biodiversity or ecosystems.
- (b) The payment should be defined in relation to the “opportunity costs” experienced by the resource users. For example: if villagers decide not to take fish out of a fish conservation zone, this can be seen as a “cost”, because they lose fish catches from that area on the short run, in order to get benefits on the long run. The incentive/benefit should be at least equal or bigger than this cost.
- (c) There should be agreement on the indicators for success, how they will be monitored and what the consequences are if either party fails to comply.

Summary of the Conservation Agreement Approach

A Conservation Agreement specifies conservation actions to be undertaken by the resource users, and benefits that will be provided in return for those actions:

- The conservation actions to be undertaken by the resource users are designed in response to threats to biodiversity or ecosystems.
- The benefits provided by the conservation investor are structured to offset the opportunity cost of conservation incurred by the resource users.
- The agreement details the monitoring framework used to verify conservation performance, and the consequences of failure to comply with the agreement by either party.



Source: Conservation Agreements Field Guide, Conservation International, 2015

1.2 Why conservation agreements are needed in the Hin Nam No Area

The conservation values of Hin Nam No NPA

The Hin Nam No National Protected Area (NPA) covers 88,500 ha of mostly rugged karst mountains in Bualapha district. The NPA harbors rare wildlife species such as the Indochinese Black Langur, the Douc Langur and the Great Hornbill. It contains valuable tree species such as Mun Ebony and Rosewood.

Last but not least there are unique landscape features such as the big cave where the river Xe Bang Fai goes 6.4 km underground. These assets are of national and global importance for conservation and watershed protection. They have a potential for creating income from tourism.

Livelihoods issues of surrounding communities

There are 19 communities with 8,099 inhabitants living just around the Hin Nam No NPA in 1,570 households (2014). The majority of these households live far under the national poverty line (see annex 1). About half of all households deal with structural rice shortages and health issues. They lack access to basic services such as water, sanitation, road and market access, health and education services. Several large and small donor and NGO projects are now entering the area to alleviate these problems.

Poverty and lack of governance are the key threats to conservation

Illegal logging and hunting is still common among the communities surrounding Hin Nam No NPA as it provides a higher revenue than can be obtained from alternatives such as Non-Timber Forest Products or Fish. In fact, illegal logging and hunting are a main source of cash income for most households. District authorities have difficulties enforcing the law, as many parties stand to gain from illegal logging and hunting and there are few alternative cash income sources in the district.

Secondly, unregulated conversion of forests to agricultural land, often supported by donor projects, is starting to affect corridor areas between protected areas (e.g. between Hin Nam No NPA and Phou Luang NPF along the Xe Bang Fai river).

Linking livelihoods support from various aid programs to conservation outcomes

So the challenge remains to provide more incentives to local communities to engage in nature conservation. While it is hard to tackle the big issues of illegal logging and encroachment on the short term, there are good opportunities to support less conflictual community conservation efforts such as Fish Conservation Zones (FCZ). This paper explores a concept for providing support programs from donors, NGOs and private sector to support FCZ management by local communities through “conservation agreements”.

2 The Case for Promoting Fish Conservation Zones (FCZ)

2.1 Benefits of FCZ for communities

So far, Fish Conservation Zones were set up in four villages around the Hin Nam No NPA. In March 2016, a survey was held interviewing 58 households to assess the impact of this activity. On average, 90% of all fish consumed is derived from waters in rivers around the FCZ.

The average fish consumption per household was 106 kg per year. This is equivalent to an intake of 48 grams of fish per capita per day, which is 70% of the national average of 70 grams per capita per day (see annex 2).

With a protein content of 40%, fish would provide 20 grams of animal protein per capita per day. That is roughly 40% of the recommended daily allowances for protein intake in various ASEAN countries (see table 1).

The total value of all fish caught per year around the four Fish Conservation Zones amounts to 775 million kip or \$95,655 (on average \$23,914 per village). Per household the fish consumption is worth 201,042 LAK per month, which is equivalent to 25% of baseline household income measured in 2012 (793,000 kip per household per month).

Table 1: Recommended Daily Allowances for Protein Intake in various ASEAN countries in grams/day/person.

Age group	Indonesia	Malaysia	Phillipines	Singapore	Thailand	Vietnam
Infants(0-1)	13	11	12	17	16	22
Children 1-9	25	25	35	29	23	34
Boys (10-18)	50	50	60	74	52	57
Girls (10-18)	58	51	55	58	49	55
Men >19	55	60	67	68	57	60
Women >19	48	53	58	58	52	55

2.2 Opportunity Costs for villagers maintaining FCZ

There are very few hard data on the increment of fish catches that can be achieved through establishing FCZ. Likewise, it is not easy to assess how much fish villagers are foregoing by having a FCZ. How much fish are they not catching on the short run, because of having an FCZ, compared to the amount of fish gained by protecting the breeding stock? There are no reliable data on this, only rough estimates can be made.

One way to estimate opportunity costs is through an assessment of the actual amounts of fish residing in the FCZ by the end of the dry season. To do this, a part of the FCZ was harvested in three villages in April 2014. The average amount of fish found was equivalent to 2% of total fish catches, or 4 million kip (\$500) per FCZ per year.

Another rough estimate could be made by comparing the area size of the FCZ to the entire fishing area size (in meters of river length). This percentage could then be seen as being “lost” from the total amount of fish caught in the whole village. This gives an estimate of 9% of the total fish catch, or 23 million kip (\$2,100) per FCZ per year. It should be recognized that this estimate is probably much too high, as fishing in the FCZ is likely to lower the fish catches over

For the sake of creating a baseline for adequate compensation of opportunity costs, it would seem reasonable to take the 2% figure as a minimum requirement.

2.3 Process of setting up FCZ

2.3.1 Initial assessment

Most of local communities around the Hin Nam No have a river or a stream running through their village territory which is a key source of fish for their livelihoods. Local residents often explain concerns about declining fish harvests as a result of population growth which leads to overfishing. They are interested to preserve fish breeding stocks in deep pools in the river. They are also interested in creating rules that can keep outsiders out of their fishing grounds. In this sense, almost all communities in the areas could be considered for setting up an FCZ. This is a conservation measurement that has been practiced by many communities in Laos for many years. This conservation measurement is often not directly related to the presence of a protected area and can also be implemented in other areas.

Key criteria that can be considered for selecting communities to develop FCZ include:

- The village has a clearly defined riverine fishing area
- The village has identified a clear threat to their fish resources (reduced catches, disturbance by outsiders)
- The village has already tried to set up an FCZ by themselves and expresses interest in becoming a partner in a conservation agreement as a resource user group
- There is a conservation investor with available funds interested to work in the village (e.g. the Lux-Development Supported Khalodep Project).
- There is a capable implementer ready to commit to engagement, agreement design and project implementation (e.g. the GIZ Hin Nam No co-management project and its advisers).
- There are synergies with other conservation efforts, e.g. with the co-management system set up for the Hin Nam No NPA.

During this phase, it is important to establish an “engagement team” which can build a relationship with resource users. This team should remain as constant as possible to solidify the relationship with resource users. The process that is facilitated by the engagement team consists basically of

2.3.2 Assessing feasibility of FCZ, defining location and size of the FCZ

The first activity in selected villages is a community meeting. During this meeting, the engagement team can explain the concept of FCZ, its benefits and requirements and gauge the community’s interest in fish conservation. The threats to fish conservation perceived by the community are discussed and recorded. Usually a long discussion follows on the technical feasibility of setting up a FCZ (key fish species, key required actions to protect them, where are suitable sites with availability of water in the dry season etc.). A walk is made along the river or stream with interested community members to confirm the feasibility of what was discussed in the meeting and to map the area with a GPS. If the community agrees to set up and FCZ, they are asked to elect a committee and discuss rules.

2.3.3 Agreeing on rules

If the community agrees to engage in setting up an FCZ, they are asked to elect a committee of four members to be in charge of the process. This committee is then asked to lead a discussion on rules for management of the FCZ. The engagement team may also provide examples of rules from other sites and explain existing legislation that allows communities to set up FCZ (e.g. the wildlife and aquatic animals law, Hin Nam No co-management agreement, etc.). After agreeing on the rules and fines, they are recorded in a report which is signed by the committee and signed by the village headman, and in the case of Hin Nam No NPA to be submitted to the District Co-Management Committee for final approval (see Annex 3).

2.3.4 Disseminating and enforcing rules

Green wooden signboards are made and posted at key locations along the FCZ borders. This can often already be done during the first village meeting. The engagement team usually takes back all the data on the location and the rules to have a large signboard printed in the province capital. This signboard is brought back to the village during the second visit and officially installed at the FCZ border by the FCZ committee during a village meeting. Representatives from surrounding villages as well as local police authorities are also invited.

The FCZ rules, approved and stamped by the District Co-Management Committee are distributed among participants of this meeting.

The committee monitors the enforcement of the rules. They patrol the area regularly taking turns. If they catch somebody catching fish in the FCZ, they will notify the village authorities. Usually, the first time a warning is given. Repeating offenders are judged by the village court (“kai kia ban”) and fined according to the rules of the FCZ.

2.3.5 Monitoring of benefits

After one year, a survey is held among fishing households to assess whether fish yields have improved or not. The result of this assessment is presented in a village meeting. Here also the achievements of the committee in enforcing the rules are being evaluated. Usually some assistance of the engagement team is required in doing the survey, processing and reporting the results and in facilitating the meeting.

2.3.6 Costs of setting up FCZ

The costs of the first village visit are around 2 million kip. The costs of processing documents and preparing signboards are about 3 million kip. The cost of the second meeting is about 3 million kip. The total establishment cost is 8 million kip (\$1,000) per village. The cost of the annual monitoring is about 5 million kip (\$600) per village (3 million for the household survey, 2 million kip for the annual meeting).

3 Defining the Village Conservation Effort

The main conservation effort made by communities with a Fish Conservation Zone is that they enforce a set of rules aimed at protecting the breeding stock of fish in deeper parts of the rivers during the dry season. Typical rules include:

- (a) No fishing allowed in the FCZ all year round
- (b) Fishing around the FCZ should be done by non-destructive methods. Using electricity, poison or explosives is forbidden.
- (c) No excavation of gravel or sand or other activities that disturb the fish are allowed in the FCZ
- (d) No hunting of birds and mammals (e.g. otters) allowed inside the FCZ

People who are caught not obeying the rules usually receive a warning the first time and are fined on subsequent times. These fines range from 3 million kip (first-time offender) up to 10 million kip per case (repeated offender).

4 Defining Indicators for Monitoring Success

There are quite a number of FCZ in Laos which have been established by various projects over the last 15 years or so. Most of them monitor their success by recurrent household interviews, asking fisherwomen and fishermen to estimate their catches. In the Hin Nam No area this was done in 3 villages in March 2016 (see Annex 2). These data can serve as a baseline. A second method is to review annually in a community how well the rules of the FCZ were followed.

5 Defining Rewards for Good Efforts

Based on the estimate of opportunity costs presented in section 2.2 above, rewards for FCZ should be at least in the order of 4 million kip (\$500) per village per year. The conservation

investor should provide these awards upon positive assessment of the conservation efforts. Local communities that already have FCZ proposed several requests for support, such as:

- Loudspeaker system for the village, to call people for meetings and to disseminate information. Approximate cost: \$1,000.
- Inputs for building a balcony over the riverside for entertaining visitors. Approximate cost: \$1,500
- Study-tours to other FCZ (\$500 per village)
- Costs for organizing annual evaluation surveys and meetings: 5 million kip (\$600)

6 Rules for dealing with Non-Compliance

If individual households did not comply with the rules, they will be fined according to the FCZ rules (see also section 3 above). If the resource users and the conservation investor cannot agree on mutual obligations, they should in the case of Hin Nam No NPA refer to the District Co-Management Committee to resolve their differences.

7 Draft Conservation Contract

To be added (example in annex 3).

8 References:

CI, 2015: Conservation Agreements: Field Guide for Design and Implementation. Conservation Stewards Program, Conservation International, 2015.
www.conservation.org/csp

Annex 1: Livelihoods and Poverty in 19 villages surrounding the Hin Nam No NPA

Income and Poverty

A survey held among 985 of the 1,570 households living in 19 villages around Hin Nam No NPA, showed that 73% fall under the national poverty line of 180,000 Kip/Capita/Month.

Table 2: Poverty distribution among 985 households in 15 villages around Hin Nam No NPA in 2011

Poverty Category based on national poverty line of 180,000 kip/capita/month	Income class kip/capita/month	Number Households	%	National Poverty Line	
Wealthy (more than 60% above poverty line)	>240,000	141	14%	Above	
Middle (up to 30% above poverty line)	180,000-239,000	125	13%	266	27%
Poor (up to 30% below poverty line)	120,00-179,000	283	29%	Below	
Very poor (30-60% below poverty line)	60,000-119,000	339	34%		
Destitute (>60% below poverty line)	<60,000	97	10%	719	73%
All	Total	985	100%	985	100%

The average total income per household was estimated to be 793,000 Kip/HH/Month or 143,200 Kip/Capita/Month (see table 2).

Table 3: Average income per household per month and per capita per month in 8 villages around Hin Nam No NPA, 2014.

Village	Average Income in Kip/Household/Month			% non cash	Income per capita Kip/capita/Month
	Cash Income	Non-cash Income	Total		
Nam Chala	29,861	252,917	282,778	89%	58,506
Ka-l	37,639	226,792	264,431	86%	72,325
Nong Ma	202,083	382,458	584,542	65%	73,068
Tang Beng	392,917	257,361	650,278	40%	92,897
Kanyou	588,125	343,542	931,667	37%	155,278
Nong Seng	727,083	442,653	1,169,736	38%	233,947
Nya Vai	772,361	434,417	1,206,778	36%	181,017
Ban Dou	941,458	312,083	1,253,542	25%	278,565
Average	461,441	331,528	792,969	42%	143,200
%	58%	42%	100%		

Big differences in poverty levels between communities

The differences between villages are striking: poor villages in the south (Nam Chala to Tang Beng) achieve less than half the income of the relatively better-off villages in the north (Kanyou-Ban Dou). The main reason is the difference in rice growing: northern villages can rely on paddy fields for lowland rice cultivation, the southern villages live in steep valleys where rice fields are difficult to make, so they rely on upland rice produced by shifting cultivation.

Reliance on nature: the importance of “non-cash” income

Another aspect is the importance of so-called “non-cash income”. What does this mean? E.g. if a household collects bamboo-shoots from the forest and consumes them, this is regarded as non-cash income. The value of such income can be calculated by comparing what it would have cost to buy such a wild product on the local market. If a household consumes 2 kg of a product that would cost 5,000 kip per kg on the market, the “non-cash” income can be regarded as being worth 10,000 kip.

Non-cash income made up on average 42% of total household income. This indicates a very high reliance on wild foods and other natural products in the livelihoods of local communities.

Illegal logging is one of the key sources of cash income

Cash Income provides 58% of total household income. How do people earn cash income? Like in most rural communities in Laos, selling livestock is overall the most common source of cash income (44%), but this is mainly relevant for the more well-off households in the North (46%) rather than in the poorer communities in the South (see table 3).

Labor is the second source of cash income (33%). However, in the Hin Nam No Region, the only market for paid labor is the illegal logging sector. It is therefore likely that labor in illegal logging provides 33% of household cash income, and even more in the Southern part (53%).

Table 4: Sources of Cash Income in 8 villages around Hin Nam No NPA, 4 in the south and 4 in the north. Source: GIZ Household Baseline Survey, 2014.

Source	Av South	% South	Av North	% North	All	% All
1: Livestock	55,313	33%	350,938	46%	203,125	44%
2: Labour	87,674	53%	223,090	29%	155,382	34%
3: Selling rice	1,042	1%	116,389	15%	58,715	13%
4: Salary	12,917	8%	58,611	8%	35,764	8%
5: Small business	8,681	5%	347	0%	4,514	1%
6: NTFP sales	-	0%	5,278	1%	2,639	1%
6: other crop sales	-	0%	2,604	0%	1,302	0%
TOTAL	165,625	100%	757,257	100%	461,441	100%

Besides income from labor, quite a few rural households also gain a substantial amount of income by selling illegal timber. While local people do not like to talk about this, a rough estimate of this income can be made by estimating annual exports of timber from Bualapha district. A conservative estimate of the volume of illegally sold wood by local communities of 300m3 per year would put average income for illegal timber sales at 63,700 Kip/HH/Month or 14% (see table 4). Taken together, income from log sales and logging labor is likely to be 45% or more. It is therefore very likely to assume that illegal logging is the primary source of cash income for local communities.

Table 5 A conservative estimate of income from illegal logging by local communities around Hin Nam No NPA. Actual figures are likely to be higher. Source, anonymous informants, Bualapha, 2014.

Parameter	Estimate
volume (m3)	300
price (million kip/m3)	4
value (million kip/m3)	1,200
value (Euro)	133,333
No households	1,570
Income from log sales (kip/HH/month)	63,694
Income from logging labour (kip/HH/month)	143,200
Average Cash Income (kip/HH/month)	461,441
% income from logging labour	31%
% income from log sales	14%
% income from illegal logging	45%

Food Security

Besides a great reliance on seasonally collected wild foods, the food security of communities around the Hin Nam No NPA can be characterized according to rice self-sufficiency. Roughly one half of the communities have paddy fields and therefore they produce a surplus of rice. These communities are mostly situated in the northern part. The communities in the southern part rely mostly on shifting cultivation as they live in narrow valleys where paddy construction is difficult. They experience an average shortage of rice for almost four months per year (see table 3).

Table 6: Rice Balance in Kg/capita/year, compared to the national standard of 360 kg/capita/year. Negative numbers mean shortage, positive surplus. The last column translates the rice shortage/surplus into numbers of months per year. E.g. poor households in Nam Chala have only 250 kg rice/capita/year, so they lack 110 kg compared to the national standard. This shortage means they lack rice for more than 3 months per year.

Rice Balance	Poor	Middle	Well-off	Average	rice availability in no of months/year
South					
Nam Chala	-110	-46	-87	-97	-3.2
Ka-l	-29	-148	13	-56	-1.9
Nong Ma	-270	-10	-125	-134	-4.5
Tang Beng	-75	-174	-233	-155	-5.2
Average South	-121	-95	-108	-110	-3.7
North					
Kanyou	-227	384	40	54	1.8
Nong Seng	-65	-120	-6	-65	-2.2
Nya Vai	-40	556	400	325	10.8
Ban Dou	-80	-18	756	257	8.6
Average North	-103	201	297	143	4.8
Average 8 villages	-112	53	95	16	0.5

Fish and other aquatic animals (frogs, shrimps, shells) as well as insects are the main source of protein in the diet. Livestock is mostly kept for selling and not much consumed. The amount of wild fish consumed caught is estimated to be around 100 kg per household per year, or 48 grams per capita per day. The value of this consumption amounts to 201,042 kip per month, or 25% of household income measured in 2012.

Access to Services

None of the 19 villages around Hin Nam No can be classified as non-poor according to the prevailing government criteria. Only six villages qualify as ranking above the minimum income criteria, but they lack access to some basic services. All other villages lack basic services as well. Lack of all year round road access is the most common deficiency, followed by lack of clean water, access to health services and schools (see table 4).

Table 7: Ranking of villages around Hin Nam No NPA in terms of Government poverty criteria of income and access to services in 2014. Source: Co-Management Strategy for the Hin Nam No NPA 2016-2020.

No	Village Name	Income	School	Health Center	Clean water	Road access	Total Score
1	Nong No	1	1	1	0.5	1	4.5
2	Nongboua	1	1	1	0.5	1	4.5
3	Sa Ang	1	1	1	1	0.5	4.5
4	Kuankhayom	1	1	1	1		4
5	Nya Wai	1	1	1	1		4
6	Vangkhon	1	1	1	0.5	0.5	4
7	Vangmaneu		1	1	0.5	1	3.5
8	Dou		1	1	0.5	1	3.5
9	Nongseng		1	1	0.5	1	3.5
10	Phanop		1	1	0.5	1	3.5
11	Khayou		1	1	1	0.5	3.5
12	Sean Phan		1	1	1	0.5	3.5
13	Nongma		1	1	1		3
14	Nongping		1	1	1		3
15	Nya Wet		1	1	1		3
16	Thongsam		1	1	0.5	0.5	3
17	Ka I		1	1			2
18	La Boi		1				1
19	Thaplao		1				0
	No villages	6	19	17	16	11	

Income: score 1 if average income higher than 180,000 kip, score 0 if lower

School: score 1 if access to a primary school exists within 1 KM, score 0 if not

Health Centre: score 1 if access to a health centre exists within 2 KM, score 0 if not

Clean water: score 1 if there is sufficient clean water, score 0.5 if there are facilities but not enough water, score 0 if no facilities are available

Road Access: score 1 if road access exists all year round, score 0.5 if road is good but some bridges missing, score 0 if no good road in wet season.

Vulnerability, Risk Assessment

Livelihoods in local communities can be considered vulnerable to a variety of risks (table 7).

The main causes of risks are:

- (a) A harsh environment with limited availability of agricultural land, irregular rainfall causing regular crop shortages and animal diseases and the risks of disasters, especially flooding.
- (b) Lack of adequate government services causing low education and health levels, difficult road access, no access to financial services and little support for innovation
- (c) Lack of leadership and advocacy skills among communities, causing an low levels of social safety nets such as community revolving funds
- (d) An economy that relies on subsistence farming for food and illegal logging as the main source of cash income, depending on a dwindling resource with very few alternative income options
- (e) Potentially rich mining resources which could bring resettlement and environmental pollution.

Table 8: Risk Analysis of communities living around Hin NamNo NPA (source: key informant interviews. design: after Frankenberger et al 2002)

Sources of Livelihood	Types of Risks				
	Environment	Social		Economic	Conflict
		State	Community		
Human Capital <i>Labor power, education health</i>	-Floods cause diseases	-Poor services cause poor education and health	-Education is not valued in some communities	-Few labor opportunities, no education, poverty trap	-Future competition with cheaper foreign labor
Finance and Natural Capital <i>Productive resources (land, animals, savings, etc.)</i>	-Some lack paddy fields, -Livestock mortality, -Regular disasters	-Poor roads -No banking or insurance services -State supports some logging	-Very few community revolving funds, rice banks found	-Lack of investors creating jobs -UXO limits use of land - Poverty still widespread	-Conflicts due to un-regulated access to forests and agricultural land
Social Capital <i>Claims, kinships, networks, leadership, safety nets</i>	-Disasters (floods) strain social security nets	-Top-down relation with communities -Limited social support from Gov.	-Poor leadership - No advocacy influencing state support	-Lack of market options favor unequal patron-client relations	-Internal conflicts in communities -Resettlement could unravel social pattern
Income Sources <i>Productive and exchange activities, employment, seasonal migration</i>	-Agriculture depends on rainfall, -Floods -Reliance on wild foods	-Very limited support for diversifying income -No electricity in some villages	- Lack of educations limits options on labor market - Little entrepreneurship	-Logging is main source of cash, what to do when the timber is gone?	-Logging competes with alternatives: NTFPs, tourism, payment for conservation

Annex 2: Summary results of a household fish consumption survey among 58 households in four villages where Fish Conservation Zones were established, March 2016.

Code	Parameter	Unit	Formula	Villages				Total
				Ban Nongping	Ban Vangkxon	Ban Nongseng	Ban Thasaat	
A	Village	Name		Ban Nongping	Ban Vangkxon	Ban Nongseng	Ban Thasaat	
B	No HH interviewed	No		13	14	17	14	58
C	Total no persons in interviewed households	No		93	84	94	78	349
D	Average no persons per household	No	=C/B	7.2	6.0	5.5	5.6	6.0
E	Fish caught around FCZ	kg/hh/yr		90	112	83	102	97
F	Fish bought from market	kg/hh/yr		10	10	9	10	10
G	All Fish Consumed per HH per year	kg/hh/m	=E+F	100	123	92	112	106
H	All Fish Consumed per HH per month	kg/hh/m	=G/12	8.327	10.208	7.701	9.351	8.845
I	Fish Consumed per Capita per month	kg/pp/m	=H/E	1.2	1.7	1.4	1.7	1.5
J	Fish Consumed per Capita per day	gram/pp/day	=G*1000/D/365	38.3	55.9	45.8	55.2	48.3
K	% from FCZ/river	%	=E/G	90%	92%	90%	91%	91%
L	% fish bought	%	=F/G	10%	8%	10%	9%	9%
M	Total No HH in the village	No		125	29	61	77	292
N	Fish Price	kip/kg	kip/kg	25,000	25,000	25,000	25,000	25,000
O	Value of FCZ	kip	=E*M*N	282,451,923	81,510,714	126,933,824	197,037,500	704,450,000
P	Value total fish consumed per village per year	kip	=G*C*N	312,250,000	88,812,500	140,927,941	216,012,500	774,806,897
Q	Value total fish consumed in \$	\$	\$	\$ 38,549	\$ 10,965	\$ 17,399	\$ 26,668	\$ 95,655
R	Value fish consumed per HH per month	kip/month	=H*N	208,167	255,208	192,525	233,780	221,121
S	Value of fish from FCZ per HH per month	kip/month	=L*R	188,301	234,226	173,407	213,244	201,042
T	Value of fish per capita per month	kip/month	=I*N	29,099	42,535	34,818	41,960	36,748
U	Value of fish per capita per month in \$	\$	\$	\$ 3.59	\$ 5.25	\$ 4.30	\$ 5.18	\$ 4.54

Annex 3: Example of Fish Conservation Zone Management Rules



Lao People's Democratic Republic
Peace independent Democratic Unity prosperity



District Office for Natural Resource and Environment

Number:

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Bualapha; Date.....

Regulation for Village Fish Conservation Zone and Fishing management

- According to the Law of Aquatic and Wildlife Chapter I, Article 5: Policy on aquatic and wildlife and Chapter III Article 17: Establishment of the habitant or/and conservation area for aquatic and wildlife.
- According to the unity agreement which was made by villagers and village authority of Ban Nongping for making the rule on management of Fish Conservation Zone and fishing including a establishing the location of Fish Conservation Zone on date: 19/11/2014.

Article 1: Purpose and meaning of Fish and aquatic Conservation Zone

Fish and aquatic Conservation Zone of Ban Nongping was established by the agreement of all villagers and village authority. This Fish Conservation Zone has the size of 150 m lengths, contains of 1 deepest section named Vang Som Nang. The boundary of FCZ starts from the swimming place of villagers at KoK Deua tree goes down along the Xebangfai River until to garden of Mr. Gold.

Villagers and village authority of Ban Nongping has agreed to set up the Fish and Aquatic Conservation Zone and announced to all villagers and outsiders to be aware that this area have been set up to be a place for protecting the fish and other aquatic animals, it means that “No fishing” or Not a loud to do any activities inside this FCZ which would disturb or threaten to the fish and aquatic animals leave away to unsaved places. The warning is to help this Fish Conservation Zone become a saved home for rehabilitation of aquatic animals by natural techniques for increasing the quantity of fish and other aquatic animal in the river and helping the villagers can do fishing surrounding to the Fish Conservation Zone for household consumption easier in the future.

Article 2: Punishments and finning

• *The punishment for violator does fishing inside FCZ:*

If There is any person / or group of people violated to the FCZ regulation or any actions that cause to damaging FCZ. All violators would be fined depending to the finning cost mentioned below:

Information of fines:

- 1st time: would be fined of XXXXXXXX kip per person and also confiscate the fish and equipment.
- 2nd time: would be fined of XXXXXXXXXX kip per person and also confiscate the fish and equipment.
- 3rd time: would be fined of XXXXXXXX kip per person, confiscate the fish and equipment and continue to send the violator to district level for further punishment.

• Punishment for illegal fishing in the rivers (Outside of FCZ).

Using of electricity, poisonous techniques, bombing are all prohibited, if there is any illegal fishing in the village those violators would be fined as mentions below:

- 1st time: fine 500,000 kip (five hundred thousand), also confiscate of fish and equipment.
- 2nd time: fine Kip 1,000,000 kip (one million), also confiscate of fish and equipment
- 3rd time: Kip fine 1.500.000 kip (one million and five hundred thousand), also confiscate of fish and equipment and continue to sending the case to district level for next penalty.

Article 3: monitoring system of FCZ and committee.

The committee of Fish Conservation Zone in Ban Nongping:

- | | |
|---------------|-----------------------|
| 1. Mr. Keota | Head of FCZ committee |
| 2. Mr. Khamdy | Committee |
| 3. Mr. Lop | Committee |
| 4. Ms. Pone | Committee |

Article 4: Benefit sharing and FCZ fund management

FCZ fund is generated from different source of income such finning, Fishing ticket selling and etc... in the end of every year, the fund will be summarized and split into 3 parts for the benefits sharing such as:

- 50% is going to contribute into village fund.
- 20% is giving to Fish Conservation Fund (this fund is managed by FCZ committee)
- 15% is giving to the committee of Fish Conservation Zone (incentive payment).
- 15% is giving to the reporters of FCZ management/or villagers who found the violators of FCZ (incentive payment).

Article 5: Effectiveness of FCZ regulation

This rule is start effecting after it has been signed by all parties between village authority and DoNRE.

Dated

Certified by DoNRE

Date.....

Certified by village authority