



TEA SECTOR DEVELOPMENT IN NORTHERN LAOS

WILD TEA FEASIBILITY AND DESIGN STUDY - FINAL REPORT

1. INTRODUCTION

The Lao forest tea study was financed by SDC and implemented by the National Agriculture and Forestry Research Institute (NAFRI), National Agriculture and Forestry Extension Service (NAFES) and CARE International in Lao PDR (CARE) from 1 December 2009 to 30 April 2011. The study was designed to:

- I. Assess the scale of northern Lao forest tea resources and the population that could benefit from these resources.
- II. Assess the quality and market potential of such resources and thereby potential contribution to poverty reduction.
- III. Assess the major current market for Lao forest tea and potential for new markets.
- IV. Build linkages with international companies who may be interested to support sector development.
- V. Draw conclusions on the poverty reduction potential of the forest tea sub-sector.
- VI. Propose strategies for sub-sector development.

It became rapidly apparent that the study needed to consider the tea sector as a whole rather than simply forest gathered wild teas. A key assumption at the study outset, since confirmed, is that Laos should not seek to compete in global low value bulk tea markets, but instead focus on niche tea products for speciality tea markets, including the domestic tea market.

2. METHODOLOGY

2.1 Study design and objectives

The study was undertaken through a partnership model, made up of SDC, NAFRI, NAFES and CARE. A letter of Agreement was signed on 22 January 2010 between the four organisations, NAFRI and NAFES coordinators were appointed and worked part-time on the study. A full time study manager was engaged by CARE who commenced work in March 2010 alongside a part-time (25%) technical advisor. A management board was established comprising NAFRI, NAFES, CARE and SDC which formally met three times (11 June 2010, 16 February 2011, 29 April 2011) during the study period to report on progress and assist in planning or adjustment of activities.

A 'technical reference group' was established. This was an informal network within the international tea industry to assist the study team access the required industry and technical knowledge. The reference group members provided their time on a voluntary basis to the study and made a significant contribution, including knowledge sharing, cupping of tea samples, and providing access to a broader network of tea experts.

The objectives of the feasibility and design study were to:

- I. Provide a quantitative assessment of the potential for sustainable poverty impact from the development of the wild and organic tea sector in the northern Lao PDR.
- II. Develop a clear strategy and programme design to assist develop the sub-sector through practical pilot activities designed to increase volumes and values of tea produced in northern Lao PDR.

To achieve the above objectives a series of research activities was undertaken to explore demand and supply side factors:

- a) A rapid resource assessment was undertaken to understand the locations and scale of forest tea resources and population size within each area.
- b) A rapid enterprise inventory was undertaken to understand the scale and location of the private sector engaged in the tea sector across the north, supplemented by field visits and interviews.
- c) Tea samples were gathered and used as the basis for quality assessment by reference group members, Yunnan based buyers and other international tea companies and specialists, to try to determine market potential. This was supplemented through reference group advice, other interviews and secondary research.
- d) Field assessments (tea mountain studies) were undertaken in four sites (Hongsa, Phongsaly, Peak and Viengxai) to provide a local assessment of the current state of the tea sector and contributions to household incomes.
- e) An assessment of the Yunnan market was undertaken to assess effects of changes within that market, current demand and opportunities.
- f) A rapid assessment of the aid sector actor's interest in, and existing support to, the Lao tea sector.

2.2 Study modifications:

A number of adjustments to the study methods and sub-study research areas were made during implementation. Key adjustments made were as follows:

The study was initially focused on the wild forest and organic tea sub-sectors. During the early stages of implementation it was noted that it was likely all tea cultivated within northern Laos are organic and that additional emphasis on the cultivated and ancient sectors was required for the following reasons:

- a. Pu-erh peak prices seen in mid 2008 are now understood to be an anomaly, unlikely to be repeated. This price anomaly allowed for widespread, very small-scale collection from wild reserves to occur.
- b. To reduce collection costs and enable viable volumes to be produced within the new price context some form of domestication would probably be required and had in fact occurred in some sites.
- c. Initial quality assessment exercises undertaken suggested that a majority of forest tea samples gathered had limited or no commercial value or potential because of their intrinsic taste characteristics
- d. During the study, the generally higher value and higher quality teas produced in ancient tea gardens have been progressively selected.
- e. The inclusion of tea gardens established during Pu-erh price growth period within a number of relatively remote and poorer communities. These gardens typically imported tea for cultivation from Yunnan.

The Yunnan market study initially planned to be supported through other donor financing was co-financed by the study with the SADU and URDP projects operating in partnership with NAFRI.

2.3 Study methodology and limitations:

The study was designed to generate sufficient information to enable a broad assessment of the potential of the forest tea sector within northern Laos and contribute to the design of pilot activities. The assessment was based upon the following:

- a. Drawing upon the skills, knowledge and advice of informal reference group members.
- b. Rapid inventories of resources and enterprises engaged in the sector.
- c. Collection and review of secondary information on the tea industry globally, regionally and in Laos.
- d. Collection and assessment of physical tea samples from across northern Laos through cupping, limited chemical analysis and using such samples to assess market interest.
- e. Undertaking four rapid, small-scale, site assessments in Hongsa, Phongsaly, Peak and Viengxai districts.
- f. Interviews with Lao based tea processors and traders.
- g. An assessment of the Yunnan tea market with a focus on the pu-erh tea subsector.

This final study report will discuss the key findings from sub-studies, indicate the viability for commercial development of wild tea within northern Laos and the conditions under which this is possible.

3. BACKGROUND

The tea sector is contributing to key National Growth and Poverty Eradication Strategy (NGPES) goals and MDGs through generating sustainable incomes and employment in remote upland areas, usually populated by non-tai ethnic groups. Women play the dominant role in cultivation, collection, processing and sale. In most locations tea is a supplemental rather than primary income source. The study finds that income from tea could be substantial with market and product development, and contribute to meeting basic needs of communities living in upland areas of northern Laos.

The tea sector potentially contributes to goals 2, 3 and 4 of the Agriculture Master Plan (AMP) 2011-2015, in particular *Goal 2: Agricultural commodities / pro-poor and green value chains. Increase modernization of production and agricultural and forestry commodities.* This includes commodity production, development of farmers' cooperatives, private sector partnerships.

Goal 3: *Sustainable production patterns*, including conservation of unique tea resources, sustainable use of wild tea and protection of wild and ancient tea.

Goal 4: *Sustainable forest management.* Programs within the AMP that have clear bearing on the tea sector are; Program 2, Commodity production and farmer organizations; Program 3, Sustainable production patterns, land allocation and rural development; Program 4, Forestry development; Program 7, Agriculture and forestry research and extension and Program 8, Human resource development. Sustainable forest management including (1) Preservation of wild forest tea means to preserve biodiversity and will lead to significant improvements of the national forest cover; and (2) provision of valuable environmental services and fair benefits to rural communities as well as public and private forest and processing enterprises.

3.1 Sector Overview

Tea prices, as measured by the FAO Tea Composite Price, have declined in real terms since the 1970s as supply expanded at a rapid rate, significantly greater than growth in demand. From 2006, world tea prices began a slow but sustained increase over the subsequent three years, underpinned by strong demand worldwide, particularly in emerging markets. Consequently, from USD 1.95 per kg averaged in 2007, the FAO Tea Composite Price averaged USD 2.38 per kg in 2008 and reached a record level of USD 3.90 in November 2009, the highest price since the FAO Tea Composite Price was created in 1989. Prices retreated from their record levels in early 2010 but continue to be high by historical standards. Global tea production rose from 3.5 million MT in 2005 to 3.9 million MT in 2009 with strong production growth in China. As shown below, production growth globally is primarily being driven by a growth in domestic consumption within tea producing nations. World black tea consumption grew at an average of 1.6% per annum over period 2000-2009 and is projected to grow at 2.1% over the period 2009-2019.

Table 1. Current Situation and medium term outlook of tea growth rates, FAO May 2010

Tea Type	Production growth rates %		Export growth rates %	
	2000-9	2009-19	2000-9	2009-19
Black tea	1.6	2.1	0.9	1.8
Green tea	7.0	4.7	5.4	5.5

3.2 Lao tea sector

The Lao tea sector can be divided into two sub-sectors; a) the production of maocha (rough tea) for the Yunnan pu-erh (compressed) tea market and b) the production of other, finished teas for export and domestic consumption.

Maocha is a rough, semi-processed green tea, this precursor product is solely used for the production of an ancient form of compressed tea - usually referred to as Pu-erh tea based on the principal production area in Yunnan. Pu-erh is a post-fermented tea with values typically rising with age. Pu-erh tea is primarily consumed within China although a small export market of around 5,000 MT's (roughly 10% recent production volumes) does exist, largely via Hong Kong. The Pu-erh market saw strong growth in the last decade, sometimes described as a speculative boom. This boom drove demand for higher value spring pick, sundried maocha (saiqing maocha) resulting in increased collection of wild forest and other 'teas' within many areas of northern Laos and Myanmar. The post-fermented nature of pu-erh and the blending of different maocha within a single 'cake' allows wild forest teas which are often quite bitter, to be used as a raw material. Maocha from quality wild and, more typically, ancient cultivated tea trees command substantial premiums within the pu-erh sector. Pu-erh is often marketed as coming from wild tea trees but this is not always the case.

The pu-erh market saw a return to lower price levels in 2008 with consequent declines in sourcing from Laos. Despite this, along with ancient tree teas, wild forest maocha with good intrinsic quality characteristics can obtain high prices by global tea standards. The higher costs associated with collection contribute to these high prices. Maocha prices from ancient and quality wild tea trees are typically higher than from modern cultivated varieties.

Finished tea production within northern Laos is almost entirely based on cultivated teas, either from ancient tea gardens or more recently established tea gardens. Because of high maocha prices, often only the lower value wet season pick is processed into black or green teas. Most ancient and modern cultivated teas appear to be *camellia sinensis* var. *assamica* which is typically used within Yunnan for both pu-erh and black teas. Green tea production from this variety is possible and occurs internationally but in general *camellia sinensis* var. *sinensis* is used. Modern cultivated tea production is primarily located in Phongsaly district but more recent cultivated tea gardens are also present in Houn, Beng, Sanamsai, Peak, Bountai, with varying, and reportedly low, levels of harvest and use. Both hand and factory processing of green and black teas is possible although at larger volumes, hand processing is less viable. Lao produced green and black teas currently enter Chinese and other international markets in small volumes.

For ancient and cultivated tea sectors it appears that within the present context, Yunnan's maocha market offers higher returns for spring picked teas with lower value wet season picked teas entering either the maocha or conventional markets. In some cases tea is picked only in the higher value spring season.

Ministry of Agriculture (MAF) data on estimated Lao tea production volumes show strong growth rates peaking in 2008 followed by a decline in volume by approximately 50%. Based on such data and prevailing prices, the total value of production is estimated to be close to US\$20 million. This data is however based on newly cultivated tea areas and thus excludes wild collection.

Table 2. Provincial tea production volumes (MT) (MAF 2010)

Province	2002	2003	2004	2005	2006	2007	2008	2009
Phongsaly	90	67	200	240	550	970	820	597
Oudomxai					10			0
Luang Prabang							1490	210
Houaphan			2			20	150	26
Champassak	82	158	118	60	50	50	50	57
Total	172	67	261	300	610	1040	2510	890

MAF tea production tea data, 2010

This data over-represents both the size of the sector during the growth period – in particular 2008 -and consequently the scale of the decline since then. This appears largely due to newly established (2005) tea

cultivation in Luang Prabang where, it appears that commercial harvest and processing has yet to occur.¹ Tea export data from the Ministry of Industry and Commerce (MIC, 2011), show substantially lower volumes and values of tea exports.

Table 3. Export data on tea from Laos (MIC Import-Export Data)

	2007	2008	2009	Total (t)
Export (t)	522	406	953	1,881
Export (\$)	2,105,041	461,382	334,914	3,123,185
Export price (\$/t)	\$4,035.58	\$1,136.41	\$ 351.43	\$1,660.72
Export price \$/kg	\$ 4.04	\$ 1.14	\$ 0.35	

Based on interviews with processors it appears likely that both volumes and values of tea exports are under reported. Per kg prices in 2009 in particular appear heavily under reported with study estimates based on processor interviews closer to an average of US\$2.8/kg. Based on this price factor, 2009 exports would be worth some US\$2.7 million. Study team calculations based on reported processor volumes and prices indicate that 2009 export values are in the range of US\$3.5 - \$4.5 million.

2. Tea resources

The study design foresaw the use of a rapid resource assessment methodology to obtain a better understanding of the distribution, scale and potential production volumes of forest 'tea'. Three broad categories were used; wild tea, ancient tea and more recently cultivated tea. Information gathered included information on the estimated size of the resource in different sites, the number of villages with each site or zone and the population of these as well as prior and current use of tea resources.

Given the methodology employed, there are a number of caveats regarding the data generated including; a) the areas of tea resources reported are primarily based on local estimates rather than on-site measurement, b) wild tea areas are likely to include other camellia types such as the closely related² camellia taliensis (see quality assessment). The study did not undertake any botanical assessment of tea species within these zones c) distinguishing between wild and previously cultivated ancient tea resources can be difficult with some reported wild tea areas likely to include ancient teas.

Tea is commercially produced from cultivars of *camellia sinensis* var. *assamica* and var. *sinensis*, the former of which originates across a broad area from northern India in the east to Vietnam in the west including northern Laos.

Tea classification systems have undergone a series of changes and have resulted in a degree of confusion over different types, in particular the sub-types present within *c. sinensis* var. *assamica*, including var. *macrophylla* which form the 'large leaf' tea typically used in Pu-erh production. Wild camellia sinensis is widely reported as being present within northern Laos although the extent to which such is truly wild or remnants of ancient cultivated teas is less clear. Tea hybridizes readily further complicating classification. In addition there are a number of other camellia species (including *C. taliensis*, *C. gradnibractiata*, *C. kwangsiensis*, *C. gymnogyna*, *C. crassicolumna*, *C. tachangensis*, *C. ptilophylla* and *C. irrawadiensis*) referred to as 'wild teas' and traditionally used as teas in Yunnan, and probably within northern Laos also.

C. taliensis is reported to be very similar in composition to *c. sinensis*³ with studies reporting that it could be a valuable plant resource for the production of tea. *Taliensis* and other *Camellia*'s are used in Yunnan for tea production⁴. At least one new commercial cultivar has been produced through a *c. sinensis/c. taliensis* cross⁵. High levels of key antioxidants are reported within some of these non-sinensis types. This has added

¹ Investor interview.

² ZHANG Ying-Jun, Chemical Analysis of Old Tea Trees in Bai-Ying-Shan Mountain and the Origin of Cultivated Tea. Journal of Tea Science 2009 Vol. 29 No. 5 pp. 329-335.(abstract)

³Da-Fang Gao et al (Kunming Institute of Botany) Phenolic Antioxidants from Green Tea Produced from Camellia taliensis. J. Agric. Food Chem., 2008, 56 (16). (abstract)

⁴ Da-Fang Gao et al. Phenolic Antioxidants from the Leaves of Camellia pachyandra Hu, J. Agric. Food Chem., 2010, 58 (15) (abstract)

⁵ Takeshi Saito et al, Anthocyanins from New Red Leaf Tea 'Sunrouge' J. Agric. Food Chem. Published date (web) April 11, 2011 . Abstract.

commercial significance in that new ISO standards for tea are being developed based on content levels of key compounds.

It is likely that *C. sinensis*, *C. taliensis* as well as other similar *C.* types often referred to as present in Yunnan are likely to be found in northern Laos and that 'wild' teas sold into Yunnan for Pu-erh production are drawn from this broad range of types including wild or ancient *C. sinensis*. The Kunming Institute of Botany reports interest in undertaking botanical assessments on Lao wild tea types, likely for potential commercial application, most probably within the tea extracts sector.

The study was not equipped to undertake a botanical assessment of the tea varieties present within northern Laos but based upon; a) rapid hybridization, b) high levels of tea diversity reported in Sipsongpanna, c) comments on some samples in the initial cupping exercise and d) research interest, it appears likely that Lao's wild 'tea' reserves contain unique, local tea types or landraces.

4. QUANTITY AND AVAILABILITY

The study used a rapid resource inventory (RRI) assessment method to assess the distribution, scale and potential production volumes of wild forest and ancient cultivated teas. The inventory collected information on the estimated size of the resource in different sites, the number of villages with each site or zone and the population of these as well as prior utilisation of these resources. Three broad categories were used; wild tea, ancient cultivated tea and recent commercially cultivated tea.

There are three limitations noted in this assessment method used. First, the areas of tea resources reported are primarily based on local estimates and not a global assessment. Second, tea areas are likely to include or comprise other camellia types such as the closely related⁶ *camellia taliensis*. The study did not undertake botanical assessment of tea species within these zones. Third, distinguishing between wild and ancient tea resources can be difficult with some wild tea areas likely to include previously cultivated teas.

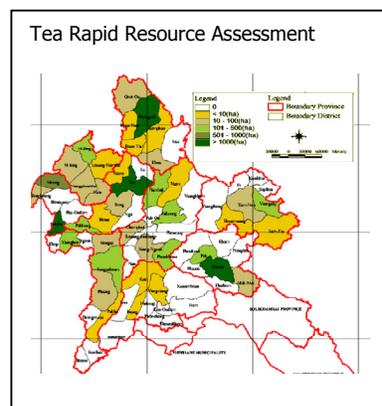
NAFES undertook the initial RRI assessment generating results from 32 zones within 21 districts. These initial results were supplemented through further data collection focussed on location, estimated area and populations using the network of tea sample suppliers established by the study. Further information was added to revise the inventory as the study progressed. See Annex 2 for final consolidated data. The RRI indicates a broad distribution of tea reserves across northern Laos within a total of 76 zones, totalling 11,892 Ha, with 242 villages located within these zones. By tea 'type' the data can be summarised as follows.

Table 4. Tea quantities by type (wild, ancient cultivated, commercial cultivated)

Type	Zones	Hectares (Ha)	Villages in zone	Households (HH) in zone
Wild	56	8,543	158	11,697
Ancient	7	426	39	1,764
Commercial	30	2,923	118	5,927

Nearly half of all commercially cultivated tea is located within Phongsaly district (1,400 ha) and most of the ancient tea reserves were found in Xaysathan district (320 Ha). Results of the RRI were mapped at district levels on the basis of the three categories by estimated area of each type (Annex 3).

Estimating potential production volumes by type is problematic, especially for wild tea zones where tree density varies significantly. Using conservativ⁷ estimated yields for fresh leaf production per hectare for commercially cultivated tea (1,000 kg/ha) and for ancient tea (250kg/Ha) a total potential production volume of 585 MT of processed



⁶ ZHANG Ying-Jun, Chemical Analysis of Old Tea Trees in Bai-Ying-Shan Mountain and the Origin of Cultivated Tea. Journal of Tea Science 2009 Vol. 29 No. 5 pp. 329-335.

⁷ Phongsaly yields per Ha estimated at 2,000kgs/ha/p.a.

tea⁸ from commercially cultivated and 21.3 MT's from ancient tea gardens is derived.

Determining the potential production volumes from wild tea areas is speculative due to uncertainties over total actual areas, wide variations in plant density within sites and varying difficulty of picking based on tree size. Using 100 kgs fresh leaf/ha the total wild tea areas identified by the RRI could have a potential yield of 171 MT. This equates to a total potential national production of approximately 770 MT of finished tea.

Domestication of wild tea types would significantly reduce labour costs associated with collection and has occurred in some sites. Such domestication involves relatively low plant density.

Based on wide distribution of wild teas, Laos appeared to have substantial areas of land suitable for tea cultivation and this was confirmed through a NAFRI land suitability mapping undertaken as part of the study. This land suitability mapping indicated that Xieng Khouang province has the largest areas of land classified as very suitable for tea cultivation at 160,000 Ha (Annex 4). The study was not designed nor the team equipped to make a botanical assessment of the Lao's wild tea resources. During the Yunnan assessment, it was noted that there is research interest in the Kunming Institute of Botany. Within Yunnan wild tea is considered endangered with those remaining areas protected.

5. QUALITY

The study assessed the quality of wild teas present within the north. Tea quality in relation to commercial potential is determined through 'cupping' by tea specialists, tea traders and tea researchers. As such the study focussed on the collection of tea samples for cupping purposes in order to assess quality. Tea samples were processed in a variety of ways including rough tea (maocha), black tea, green tea, and simply shade dried. These samples included commercially produced teas as well as those commissioned by the study. There were three limitations noted with this approach:

- a. The quality of processing determines final product quality. Variations in processing quality between all samples collected can therefore be expected to translate into variations in assessed quality. Many samples collected were poorly processed, smoke contaminated, dirty or mixed with foreign material, and often not sufficiently well dried. Poorly dried samples experienced rapid deterioration in quality, and might be producing false negatives in the cupping results.
- b. Most samples gathered had been processed to a rough tea (maocha) in Annex 5. This type of tea processing is specifically geared to the pu-erh industry and is the precursor material for pu-erh production with its intrinsic characteristics poorly known outside of this sector.
- c. Different tea markets have very different taste preferences and as such while a tea may be poorly rated within one market, it may be more appreciated within another. In addition, different cuppers from the same market may disagree on the quality of an individual tea, or its commercial potential.

While the approach adopted has its limitations, the only way to guarantee consistent processing between samples is to invest in small scale or "mini" tea processing equipment (essentially a scaled down mechanical tea processing factory) that has been specifically developed for the tea industry for varietal and environment control sample production and assessment purposes by Tea Craft⁹. The net result of the above constraints is that there is a risk of false negatives associated with the tea samples collected.

A total of 112 samples were collected from multiple sites over the study period, these were collected by a network of contacts developed by the study. These samples included:

- a) Multiple samples from the same sites over different higher quality picking periods – spring mostly in pick 2010, autumn pick 2011 and spring pick 2011.
- b) Multiple samples from the same sites but processed in different ways e.g. to maocha, shade dried etc. Some samples were produced from tea processing factories but most were farmer processed.
- c) Samples gathered from wild, ancient and modern commercially cultivated teas.

⁸ Fresh leaf to processed ratio of 5:1

⁹ www.teacraft.com

In addition, based on reference group suggestions the project team undertook two black tea processing trials in Khua and Hongsa districts. Samples produced from these trials were included in later sample sets sent to cuppers and taken to Yunnan for quality assessment.

Chemical analysis on six samples was undertaken gratis by the Taiwan Tea Research and Extension Station (TRES). Based on reference group members it is understood that chemical analysis can assist in assessing tea quality but does not necessarily translate into good cup quality. Results of chemical analysis can be found in annex 6. These results indicate generally lower proportions of key compounds than would normally be found in commercially available teas.

An initial cupping of 77, 2010 spring pick tea samples was undertaken by international tea specialists from the USA, China and Taiwan. This first cupping was a screening exercise, to identify a smaller number of teas for further assessment. Some of these samples were commercially purchased from southern producers, were highly ranked in terms of quality but were not included within rankings as not from northern Laos. The focus at this time of the study was on forest teas. A follow on cupping exercise using the top ranked nine teas with international cuppers was then held at NARFI to share results and facilitate discussion of tea quality assessment, qualities identified and the potentials of such.

Results from these initial cupping exercises are summarised in the cupping report (annex 8). In total nine teas were assessed as of high quality and a further 26 identified as having potential. Amongst the top nine, four were from wild tea sites in Phongsaly, Sayabouly, and Oudomxai. Three were ancient cultivated from Phongsaly and Houaphan and two were modern cultivated tea from Phongsaly and Luang Namtha.

Based on initial cupping results, the study then focussed on four of the teas for further assessment, two wild (Xay, Khua, NhotOu, and Hongsa) and two ancient cultivated (Phongsaly and Houaphan). Tea samples were then assessed by a) tea specialists in Yunnan b) western tea companies and c) tea research institutes in Taiwan and China. Assessment of quality was undertaken during the Yunnan market study with the study team taking better rated samples to Yunnan for cupping and assessment by tea researchers, larger tea companies and tea traders.

Through CARE UK, linkages were established with the Ethical Tea Partnership (ETP), an industry body based in the UK devoted to social and environmental sustainability within the tea industry. The ETP identified companies willing to undertake cupping on behalf of the study¹⁰. Linkages were also established with the largest tea producer in Japan, Itoen, the Tea Research and Extension Station (TRES) in Taiwan and a tea consultancy company – TeaCraft – based in the UK.

Response rates from ETP companies were low with responses received until early 2011. One larger UK based company reported preference for one ancient cultivated (153-Viengxay) and one modern cultivated tea (115-Phongsaly). Commercial interest in some samples was expressed by one UK company based on their linkages with a Vietnam based exporter. More detailed feedback on sample quality was received from Itoen, TRES and TeaCraft. A summary of samples collected and feedback received from cuppers is attached in annex 8.

Issues and recommendations associated with processing qualities were provided by the cuppers. Based on the quality assessment and cupping's undertaken the conclusions from wild tea types are that:

- a. Based on chemical analysis the intrinsic quality of fresh leaf varies considerably by location with qualities ranging from low to high.
- b. Processing quality is highly variable, with hand-made maocha often poorly processed. Market assessments indicate that simple improvements in hand-processing should increase average values by an estimated 50%.
- c. Based on current prices, many Lao teas are by global standards high value and within speciality tea price ranges.
- d. Approximately 30% of Lao forest tea samples possess the intrinsic characteristics for the maocha market in China and elsewhere. Spring picked, sundried maocha's have the greatest potential in this market with samples of these taken to Yunnan all having commercial potential. Some wild teas (e.g. sample 157) are generating high interest in Yunnan, Taiwan and elsewhere due to its unique flavours and shoot appearance.

¹⁰ Windmill tea, Twinings tea, Tetleys tea (Tata), Jing tea, Metropolitan tea company.

- e. A number of Lao teas have some potential for speciality markets beyond Yunnan – these include both black and green teas produced in Viengxay, Peak, Phongsaly and Nyot Ou districts. Copper comments indicate that processing improvement and consistency will be required.
- f. The organic nature of all Lao tea production is attractive to buyers in all markets; however the added values possible from certification remain largely un-captured.
- g. TRES undertook chemical analysis of high potential samples, and found a high degree of variation between sites of catechin content (5.8%-14%), polyphenols (10.2%-17.2%) and caffeine (2.8%-5.6%). Chemical composition is indicative of quality, these ranges indicate qualities from low through to high.

6. MARKETS

China is the world's largest tea producer with overall sector growth in value reported at some 40% per annum year-on-year (2005-2010) with a total value of some \$9.6 billion in 2010¹¹. The Pu-erh tea sector represents a small, specialised sector within the industry as a whole with production limited to Yunnan (90%) **Yunnan** remains the principal market absorbing at least 95% of production in Laos. A study on the Yunnan market was undertaken in partnership with the SADU and URDP projects. The Yunnan pu-erh sector showed exceptionally strong growth for many years but experienced a significant price correction in 2008. This had significant effects on the Lao tea industry also, reducing export volumes and values. In Yunnan the correction was most heavily felt in lower value segments and has resulted in an overall decline in pu-erh tea production volumes. While this price shock had clear and substantial effects in Laos, the current situation is now one of much lower market volatility and risk.

Currently, Lao tea sold into the Yunnan market is obtaining lower prices than equivalent quality Chinese teas for a number of reasons: a) poor quality picking and processing is resulting in 50% of potential value being lost, b) trade barriers to entry into the Yunnan market increase transaction costs particularly because trade is undertaken on a border trade basis with maximum volumes permitted per shipment being RMB 8,000 (US \$1,200) limiting economies of scale, and c) traders report that formal exports attract Chinese import taxes.

New trader entry into Yunnan markets is complicated by language and the close nature of relationships between existing tea traders. However, Yunnan tea traders consider Lao tea of good quality and would prefer to purchase from Lao traders, rather than purchasing directly from farmers. They would however require larger volumes per shipment than are currently produced in most sites.

Overall, tea production in Yunnan has continued to rise despite the Pu-erh price correction with an estimated 200,000¹² MT produced in 2010.

Tea processors in lower altitude sites within southern Yunnan (e.g. Mengla County) are facing a decline in local supply due to the expansion of rubber cultivation which is replacing tea gardens. There are interested to both increase supply from Laos and potentially invest in the Lao tea sector.

Most of Yunnan's pu-erh is sold into other provinces of China or exported, and Lao maocha's have good intrinsic quality. A key opportunity appears to be entry into higher value end markets. Hong Kong is a logical target market for high quality compressed tea cake. Hong Kong imports over 1,500 MT of pu-erh annually. The organic status of Lao teas could facilitate such entry.

Some black teas produced in Phongsaly are re-exported from Guangxi into western markets without Lao identity. Limited sale of Lao processed tea cake into international markets is also occurring. The Lao Forest Tea 'story' is attractive to western market buyers and the study has benefited from this with gratis cupping and other advice provided by commercial tea companies. Supporting entry into such niche markets through sample collection and distribution, attendance at international tea trade fairs and critical improvements in quality and expansion in volumes all represent opportunities.

¹¹ Beijing Zhongzhilin Information and Technology Co., LTD, China Tea Sector Development, 2011.
¹² Of which some 50,000 MTs is Pu-erh.

The Yunnan Market study in 2010 found the current organic status of Lao tea production for wild, ancient and cultivated tea is a unique comparative advantage that has yet to be capitalized on. The industry is currently small enough and relatively undeveloped enough to chart a development path based on continued organic production and potential for future international certification.

The study has established a simple logo and website (www.laoforesttea.com) to support market assessment and facilitate knowledge sharing about Laos' teas. This initial step on branding Lao tea as indigenous and organic can be built upon in the future.



Lao tea has interest from the **maocha market in China** because of its forest origin and organic status. In the maocha market:

- a) Wild, ancient and cultivated teas from a number of locations have potential within the Yunnan maocha market, particularly for mid-upper priced maocha market. The high value maocha markets purchase teas from specific tea mountains e.g. Yiwu, Baoshan, Banzhang, with high intrinsic and processing qualities, and a high profile in Maocha market
- b) There are wild tea sites where maocha collection is not currently occurring (157-Khua, 146-Pakbeng, 109-Meng, 121-Hongsa). The quantity of tea produced in these areas would need to increase, however buyers were quoted as interested during the Yunnan assessment.

Ancient cultivated teas have high potential within **speciality tea sectors**. Sales of black teas from Phongsaly and previously Houphan to EU markets are reported. Green tea's produced in Xieng Khoung were purchased by Lao Farmers Products who have export sales to EU markets.

- c) The potential in non-maocha markets is most likely from either modern cultivated varieties or ancient cultivated varieties. In particular, the ancient cultivated tea from Viengxay repeatedly received positive comment. The focus of further research and any market development actions associated with the speciality tea market should therefore focus on these areas rather than the wild tea sector.
- d) While some of the wild tea types exhibit certain taste characteristics that may have potential within speciality markets much greater potential is evident within the ancient and cultivated tea sectors.

Based on Yunnan market study findings and result of discussions with tea specialists the following points need to be made regarding potential value of these wild tea resources:

- a. The potential value of a tea is based on its cup quality, this being determined by intrinsic characteristics of the fresh leaf and processing quality.
- b. Most wild tea within Yunnan is protected and rarely harvested with the highest value teas being obtained from ancient cultivated teas.
- c. Cupping results suggest that the market potential of wild teas is largely limited to the specific requirements of the pu-erh tea market with most the samples gathered not possessing the intrinsic characteristics suitable for this market.
- d. It is likely that there is a reasonably high level of wild 'tea' biodiversity within Laos given the high levels of such reported in Sipsongpanna. These wild 'teas' (which are likely to include a range of camellia's) may have genetic value for the global tea research industry.

Domestic Market

The domestic tea market in Laos is approximately 100 MTs per annum, with most teas consumed being low grade, green tea imported from Vietnam. Higher value, locally produced teas are available with an increasing range available. The domestic market for Lao teas is likely to be limited and low volume. Lao tea products are sold in domestic market and have a high profile, albeit low volume. The highest ranking teas in the domestic market are 151-Bankang, 107-Peak, and 112-Phongsaly. As with teas for export, processing quality requires improvement.

Specialty Markets

Cultivated and ancient teas may have much stronger potential within both conventional and speciality tea sectors. It appears this is due both to their origins and the processing styles. Sales of black teas from Phongsaly and previously Houphahan to western European markets are reported. Green teas produced in Xieng Khoung were purchased by Lao Farmers Products who have export sales to European markets.

The potential within non-maocha markets is, based on cupping results, most likely from either modern cultivated varieties or ancient cultivated varieties. In particular, the ancient cultivated tea from Viengxay repeatedly received positive comments. However, further analysis is required, given the scale of investment that would be required in producing and processing to a high and consistent quality to meet international speciality tea requirements and the associated risks with such, does not appear to warrant further assessment.

LAO TEA PRODUCTION AND INDUSTRY

The northern Lao tea industry is heavily oriented to the Yunnan market and from 2001 to 2008 showed strong growth. In large part this growth was due to Chinese traders and investors sourcing tea from wild and cultivated sites. In many sites this was the first time teas had ever been processed or purchased with small scale processing factories being established in many locations. The price correction in 2008 saw the closure of most processing factories with less than ten tea processor companies now present in the north.

Yunnan interest in Lao teas was stimulated by the Pu-erh tea sector growth with wild and ancient teas the most desirable raw materials. The maocha and pu-erh sectors continue to be the dominant tea sub-sectors in Laos. Using official figures as a base and adjustments based on study findings, Lao tea production is estimated to have peaked in 2008 at approximately 2,500 MT. Based on reported mid-range wholesale prices at that time the value of tea exports was an estimated US\$20.49 million. Official production figures show that volumes were significantly reduced in 2009, to under 900 MT. Volume declines were a result of 1) reduced number of Chinese buyers, 2) possible earlier over-reporting in Luang Prabang and 3) price declines reducing farmer motivations and thus supply. Despite this price shock and declines in volume sold, the sector has shown signs of resilience. In Phongsaly, processors are investing in increased capacity, 2) processors are diversifying their product range; 3) there is recent increased cultivation in a number of sites e.g. Nyot Ou, Peak, Beng, Viengxai districts and 4) high quality teas in some sites retaining their value.

Lao tea cultivation is chemical free but purposeful organic cultivation techniques are not used resulting in low yields. Combined with poor pruning techniques this results in low picking rates and lower returns to labour than would otherwise be possible. In Phongsaly, the combination of lower prices and low yields has resulted in some farmers picking only the higher value spring harvest, resulting in an overall decline in harvested volumes. Yields in Phongsaly are estimated at 2,000 kgs of fresh leaf per Ha with intensive organic production in Yunnan reportedly obtaining 10,000 kgs/ha.

Introducing improved organic cultivation techniques and better pruning should enable improvements in production volume and quality with resultant income gains. This will require tea cultivation specialist advice and the development of organic cultivation models that are appropriate to the Lao context.

The study has identified a number of wild and ancient tea sites where tea quality appears to be good and could provide a basis for further development. These include teas from Khua, Peak, Phongsaly, Nyot Ou, Xieng Hon and Samneua districts. Additional research is required, including further cupping and chemical analysis, to verify this.

Following the Pu-erh price correction in 2008 the collection zone for wild tea has reduced considerably for two broad reasons:

- a. In some sites, tea is of low intrinsic quality.
- b. In sites where quality is good, the cost of picking is high, processing qualities poor and volumes small, resulting in lower trader profit margins and interest.

In a number of sites however buying has continued and expanded with the domestication of forest tea occurring. Domestication significantly reduces picking costs and increases volumes with positive income and market entry benefits.

Fresh leaf can be processed into a variety of different teas, and needs to occur a few hours after picking. This makes on-site processing essential. Small scale, village level mechanical tea processing units can be

established at low cost, eg US\$10,000-\$20,000. Maocha can be hand processed with limited skills; improvements in quality can be achieved in many sites through a few simple, low cost changes to methods. The challenge is to develop the mechanisms for the broad dissemination of such approaches. Only a few communities have the skills to hand make black and green teas.

POVERTY REDUCTION

The population within the identified tea zones comprises a range of ethnic groups; Khmu, Hmong, Akha, Prai, Tai Daeng, Lao loum and others. Women play the dominant roles in cultivation, picking, processing and sale but with significant variations in roles by site, and women generally playing a much less significant role in factory based processing (ie larger scale processing). Tea cultivation has provided an alternative to opium production in Phongsaly and has enabled conversion of upland shifting cultivation sites to permanent tea gardens in many sites. Using standard¹³ tea garden establishment, cultivation and yield figures compared with locally variable fresh leaf¹⁴ prices as an indicative comparison of gross annual incomes, analysis of net profits and returns to labour was undertaken in three sites with cultivated tea:

Table 5. Profits for tea in three sites.

Site	Phongsaly District	Viengxai District	Paek District
Average fresh leaf price (kip/kg)	Kip 3,000	Kip 4,800	Kip 4,900
Gross annual income (kip/ha)	Kip 6 million	Kip 9.6 million	Kip 9.8 million
Return per labour day	Kip 33,300	Kip 53,200	Kip 54,300

Improvements in on-farm management should enable returns to labour to increase by an estimated 50%. Returns on labour from the collection of wild and ancient teas vary considerably, but are often in excess of kip 70,000/day¹⁵. The development of the tea industry in northern Laos on a smallholder basis appears to still offer good potential in many remoter, high altitude locations to contribute to poverty reduction. In some locations this potential appears to be primarily from spring pick collection and sale into the maocha market, whilst in other sites more intensive production and sophisticated processing presents an obvious opportunity. Estimating the scale of this potential in terms of number of households is problematic but at least 8,500 households sold tea in 2009, development of the sector could be expected to both increase the scale of incomes earned and number of households. Given the workload burden held by women, development of the tea sector requires further gender and power analysis.

¹³ Assumed figures are 2000kgs fresh leaf/Ha, picking rate of 15kg/day and other labour requirements of 45 days/year/Ha.

¹⁴ Fresh leaf prices were conservatively imputed for Viengxai and Nyot Ou based on current processed tea prices assuming fresh leaf comprises 60% of processed tea costs.

¹⁵ At the time of writing, the exchange rate was LAK8000 – USD1.00

EXAMPLE PRODUCTION ZONES

Site specific assessments were undertaken in four locations and information gathered on other sites where the potential for development of the sector appears good. Possible actions to address key issues within each site are shown.

Site / Assessment	Status	Suggested Actions	Risk
Phongsaly District. The centre of the Lao tea industry with over 1,600 Ha's currently under cultivation.	Three major processors, expanding processing capacity and new tea enterprises planned. Major challenges are to a) increase returns to labour, b) improved on-farm management and c) improved processing skills to enable higher value and greater factory independence from Yunnan buyers.	<ul style="list-style-type: none"> a. On farm demonstrations of improved organic cultivation, legume ground covers, shade trees and improved pruning. b. Factory and smallholder processor training from processing specialists. c. Subsidies for organic certification. 	Low
Viengxai District. Good quality black teas produced with strong market demand.	Existing, limited sales (700-800 kgs pa) of hand-made black teas, one buyer wants to increase volumes but limited success because of risks with manufacturing process. These risks able to be eliminated through mechanical processing and drying.	<ul style="list-style-type: none"> a. Support existing collector/buyer or farmer group establish small scale black tea mechanical processing unit (US\$15,000). b. Demonstrate on-farm organic cultivation methods to increase productivity and return to labour, and support expansion cultivation area. 	Low-Medium
Khua District. Visually very attractive wild tea var. with \$15/kg quoted purchase price in Yunnan.	Wild collection and limited domestication of local and Yunnan variety supported by NGO. Processing skills present, no additional training needed.	<ul style="list-style-type: none"> a. Re-establish sales to Yunnan by supporting Khua based NTFP Trader to develop linkages with Yunnan maocha buyers. b. Increase production volumes through subsidy to support expanded domestication and improved on-farm management. 	Medium
Xieng Hong, High rated wild tea varieties.	Limited tea culture, Limited domestication and cultivation for <i>Mieng</i> production only.	<ul style="list-style-type: none"> a. Finance farmer establishment of min. 5 ha of local wild variety and 5 ha of high quality other Lao types. b. Undertake processing trials when harvest ready. 	High
Peak District Good quality ancient wild tea, with domestication occurring.	Farmers are domesticating teas and increasing volume. Several buyers exist and have invested in supporting cultivation and processing.	<ul style="list-style-type: none"> a. Demonstrate on-farm organic cultivation methods to increase productivity and returns to labour. b. Support farmers group production and processing quality 	Low

6. PROPOSED STRATEGIES

Possible strategies to support overall tea sector development are presented below in a summary table.

Strategy	Rationale
1. Enhance production	Clear value and income gains can be achieved through improved on-farm management, picking and processing. Current returns to labour could be substantially increased.
2. Site specific interventions.	While Phongsaly district remains the primary tea production area in the north, opportunities for sector development are more widely distributed. Many opportunities are site specific requiring flexible, locally tailored responses. On ground actions in support of the sector are required. Develop provincial and district strategies for sector development.
3. SME development	Support the establishment or growth of larger numbers of smaller scale tea enterprises to achieve the greatest pro-poor and sector development benefits.
4. Foreign investment	FDI should bring technical knowledge and established market linkages to support sector development. Encouraging larger numbers of relatively small scale investors in multiple sites across the north region appears likely to most rapidly enable poverty reduction gains to be made.
5. Research and protection	Understanding of Lao's tea biodiversity remains limited, specialist research is required with subsequent measures to balance protection of genetic resources and their utilisation.
6. Enabling environment	Given poverty reduction potentials, measures to reduce or eliminate domestic taxation and fee burdens should be explored. Access to loan and small scale investment finance is widely reported by processors as a constraint.
7. Market assessment and linkages	Continuing study of samples with more targeted distribution of samples to potential buyers in target markets. This is likely to facilitate direct sales and new market entry. Other market linkage support actions and subsidies are also required. Longer term institutional development from this base is suggested.
8. Human resources	Building national tea processing and grading technical skills is required to facilitate sector development.

Possible actions within each area are described below.

Strategy 1: Enhance production:

- 1.1 Initiate a programme of on-farm cultivation trials and demonstrations in Phongsaly district to improve farmer returns to labour from organic tea cultivation. Models developed could then be trialled and disseminated in other locations in the medium term. Models are likely to include a) use of shade trees, b) soil fertility and water retention improvement through use of legume ground covers and c) improved pruning and bush shaping.
- 1.2 Build national tea processing skills by providing processing factories with access to specialist tea processor trainings to maximize product quality at factory levels.
- 1.3 Utilise existing networks of Lao tea and other NTFP traders to improve household level processing of Maocha and develop incentive mechanisms.
- 1.4 FAO have indicated interest in supporting a Technical Cooperation Project (TCP) for the Lao tea sector using a framework similar to that undertaken with coffee which could undertake the above actions. FAO has substantial experience internationally in working with the tea sector.
- 1.5 Support government to play a key role in facilitating fair contract farming models as well as providing technical support for quality improvement.

Strategy 2: Site specific interventions:

- 2.1 Based on study findings, the development of local strategies in support of tea sector development is warranted in Phongsaly, Xieng Khouang and Houaphan through provincial level multi-sector working groups. Modest financing to support strategy development and subsequent implementation would be required, as well as a sector wide development strategy to enable the success of site specific development.

Strategy 3: SME development:

Supporting the development of larger numbers of small and medium sized tea enterprises is the core strategy proposed. Where farmers are interested this could include support to farmer or processing group establishment, as has occurred in Peak district. Key actions to support SME and group development are suggested to include:

- 3.1 Facilitate development of market linkages with key current and potential markets through financing cross-visits by Lao tea processors, production groups and NTFP traders.
- 3.2 Fully sponsor tea processor attendance at regional tea trade fairs such as the Hong Kong International Tea Fair¹⁶ (11-15th August, 2011).
- 3.3 The establishment of a small matching investment grant fund to co-finance a) tea garden establishment with farmers, b) processor equipment purchase with SME's in specific sites and c) organic/fair-trade initial group establishment and certification costs. Given the small size of the sector at present, an initial fund could be limited to US\$100,000-200,000. This recommendation is based on findings from site specific studies undertaken.
- 3.4 Support increased networking between existing tea processing companies around actions of shared interest (e.g. 3.1 above) as a first step towards sector representative structures.

Strategy 4: Foreign Investment:

4.1 The goal of the proposed FDI strategy is to facilitate increased access to technical skills and market linkages (rather than investment capital) within multiple sites within the north. The development of small-scale tea enterprises will then stimulate increased production and potentially enterprise replication by Lao entrepreneurs. Given this goal it is suggested that encouraging small investors may present interesting possibilities. To enable this, a proactive identification of investors could be considered based upon:

- Clear criteria being developed on the type of investors sought and potential locations of such investors.
- Supporting the development of simple provincial/district level investment feasibility studies based on existing available incentives and current policies which could include links to farmer production groups or development of small scale contract farming models.
- Supporting potential investor's on-site assessments and application processes.
- Include all related government organizations into the tea development work etc. MAF, MIC, government office.

FDI investments made to date within the tea sector have had mixed results. There are two main reasons for this, most were made prior to the Pu-erh price correction and farmers assumed almost all the risks associated with new tea garden establishment. Focussing on a) existing small scale tea processors, b) sites with existing reasonable volumes of wild, ancient or newly cultivated teas and c) ensuring investors establish their own small scale, central tea gardens should mitigate such risks.

Strategy 5: Research and protection:

- 5.1 Current understanding of Laos' genetic tea resources remains limited. Specialist tea research institutions elsewhere, especially China, are likely to be interested in collaborative research activities to better understand Laos' tea genetic resources. New sub-species may well be present within the north with commercial potential and value. Ensuring Lao ownership of all genetic resources discovered through such a process is required.
- 5.2 Previous collection of wild tea types undertaken during the 1930's provides an existing collection of wild forest types on-farm and in the previous research station in Xieng Khouang. The preservation of these samples and addition of new could provide the basis for future Lao tea varietal development.

¹⁶ <http://www.hktdc.com/fair/hkteafair-en>

5.3 A balance needs to be struck between the protection of Laos' wild forest tea reserves and their use based on site specification. Some current practises have involved the felling of ancient trees to enable leaf collection and stimulate re-growth. Domestication strategies proposed can support this balance. Where clearly confirmed high value types are present, ensuring local government awareness of such and the introduction of additional protection measures could be required.

Strategy 6: Enabling environment:

A number of financial measures for sector support are suggested.

- 6.1 Enabling farmers and processors source medium term (5 year), low interest loan finance, as well as short term working capital finance can contribute to sector development.
- 6.2 Local entrepreneurs are seeking small scale investment co-financing to establish tea processing facilities with mechanisms to enable this required.
- 6.3 Taxes, export regulations and fees have direct and indirect costs to processors. Further study is required in this sector.

Strategy 7: Market assessment and linkages:

- 7.1 In the short term, continue the work undertaken by the study in sample collection, quality assessment and distribution to potential buyers. This should now have a greater focus on fewer markets with a) Yunnan, b) Hong Kong, c) France and d) the USA proposed. This should enable a more comprehensive understanding of high potential sites and potentially build sales linkages. Mechanisms to enable the feedback of results to suppliers will need to be developed. This activity is perhaps best structured as either a stand-alone 'project' or as part of an existing project/program with a similar management board structure (NAFRI, NAFES, NGO, Donor) as the study.
- 7.2 This structure could also provide a technical support role to the implementation of a number of other proposed actions as required. This structure would also provide a means for human resource development associated with the tea sector.
- 7.3 In the longer term and as warranted by sector growth, this could progressively develop into a tea development and marketing cooperative providing quality assurance and marketing services to smaller SME processors/groups. While initially such a structure would need to be externally financed, opportunities for revenue generation through quality improvement and sales would exist.
- 7.5. Promoting Lao tea within the tourist market and branding Laos teas on the basis of indigenous nature, forest reserves, organic production. This could perhaps include an approved 'Lao tea Brand' which includes branding guidelines to re-enforce key promotional messages.
- 7.6 Further study be undertaken on the establishment of a 'tax free' market site close to the Yunnan border.
- 7.7 Further study of food safety as products enter export markets and government capacity for regulation and monitoring.
- 7.8 Associated with this issue was that of individual tea technical standards. Establishing simple technical standards associated with different tea types (green, black, maocha etc) will improve product quality and consistency.

Strategy 8: Human Resources:

There are limited human resources within Laos with tea technical knowledge. A number of the strategies proposed will contribute to the development of human resources.

- 8.1 Initiate a program for tea processor training based in Phongsaly. This should cover best practise maocha production as well as of other tea types. Participant attendance should be partially subsidized. Lao and regional trainers.
- 8.2 Provide a limited number of scholarships to attend short-course training in Yunnan on maocha quality assessment and grading to support quality improvement and enable in-country grading. Such training is offered by the Longrun Pu'er Research Institute within the Yunnan Agriculture University in Kunming.

- 8.3 Fully finance a limited number of longer term apprenticeships/intern positions within smaller sized Yunnan tea factories, most probably within Mengla country.
- 8.4 The development of tea technical skills at DAFO, PAFO and MAF in support of above actions would be required, this could include the development of a tea unit within MAF or within a research institution.

CONCLUSIONS

The tea sector has the potential to more significantly contribute to poverty alleviation within a number of areas in northern Laos. Given the current small size and relatively underdeveloped nature of the sector, external assistance to facilitate this is justified on poverty reduction grounds.

Based on study findings, CARE is actively seeking funds for a follow on programme of support to the sector along the lines outlined in Annex 7. In addition, the SDC financed SADU project will be initiating actions in support of the tea sector in Xieng Khoung as the first step towards a longer term support to the sector. The SDC financed TABI project, with a focus on agro-biodiversity plans to initiate work with the sector through a planned subproject in Luang Prabang and Xieng Khoung focussed on domestication and protection of forest tea genetic resources. FAO has indicated interest in undertaking a technical cooperation project focussed on organic tea cultivation if requested by MAF. Clear potential for additional small scale support also exists through building linkages with other projects including those of the Lao National Tourism Authority.

ANNEX I: GLOSSARY OF KEY TERMS

Ancient Tree Tea: Tea produced from leaves of tea trees that were planted in tea gardens more than 100 years ago. In general these tea trees have matured to heights of at least 2 metres. Distinct from **wild tea**, ancient tea trees are not naturally occurring, but were deliberately planted at some stage in the past.

Black Tea: Known internationally as black tea and within China as **red tea**. Produced by a process of withering, rolling, oxidizing and drying to reach the characteristic black tea flavor. Black tea can be produced by the **orthodox** or **CTC** method.

Camellia Sinensis var. Assamica: Large leafed variety of tea naturally occurring in a range from Assam (India) through Burma, Yunnan, Lao and Vietnam. Known in China as Da Ye Cha (big leaf tea). Variety of tea commonly used for making **Pu'er tea** in Yunnan and **black tea** in Assam.

Camellia Sinensis var. Sinensis: Small leafed variety of tea common through most of China and lowland areas of South East Asia. Commonly used to produce **green tea**, with some exceptions (for example black tea production in Darjeeling).

CTC: Crush, Torn, Curled. Industrial method of black tea production produces an even, granulated product suitable for use in teabags.

Cultivated Tea: Tea planted in organized tea gardens or plantations and generally kept pruned and managed to facilitate plucking and increase yields. By the Chinese definition, tea planted in this manner becomes **ancient tree** after 100 years.

Dark tea (heicha): Post-fermented teas, usually sold in compressed form. The most famous of the heichas is Pu'er tea.

Green Tea: Tea produced by withering, heating, shaping and drying. Unlike **black tea**, green tea does not undergo any oxidization.

Hongqing Maocha: Rough green tea that is produced in a process similar to Shaiqing maocha, but is dried in an oven, rather than in the sun. Generally of lower value than Shaiqing maocha.

Orthodox: Traditional method of producing **black tea** that produces various grades of whole leaf, broken leaf and small tea pieces. Used to produce both very inexpensive black teas and the highest grades of black teas.

Pu'er Tea: Compressed, post-fermented, tea made in Yunnan utilizing **Shaiqing Maocha** as the base material. Reputedly one of the oldest forms of tea, produced as both **Shengcha** and **Shucha**. Protected by a Geographic Indication since 2008, Pu-erh now indicates location source rather than processing style. Other locations in China produce essentially the same compressed tea product. Other names commonly used for such products include compressed tea, tea cake, brick tea.

Red Tea: Chinese name for **black tea**, referring to the color of the liquor.

Shaiqing Maocha: Sun dried rough green tea. Produced by withering, panfiring, shaping and sun drying. Higher value base material for **Pu'er Tea**.

Shengcha – Pu'er tea: Produced by compressing steamed **Shaiqing Maocha** without any additional processing.

Shucha – Pu'er tea: Produced by compressing **Shaiqing Maocha** that has undergone an accelerated post-fermentation process. First produced in Yunnan in the 1970s. Can be drunk immediately, compared with **Shengcha**, which is supposed to reach peak flavors after at least 5 years aging.

White Tea: Tea produced by sun/shade withering over an extended period, followed by drying. Usually produced from buds or 1 leaf and one bud, white tea is one of the most delicate and lightly processed teas, and also one of the rarest and most expensive.

Wild Tree Tea: Tea produced from leaves of old tea trees growing naturally in a forest environment. Wild tree tea includes a number of different varieties of *Camellia Sinensis* and also a number of different *Camellia* species. Deforestation and over-exploitation have meant that the area of truly wild tea has decreased markedly in the last 50 years. Laos may well be home to one of the largest areas of naturally growing wild tea trees.

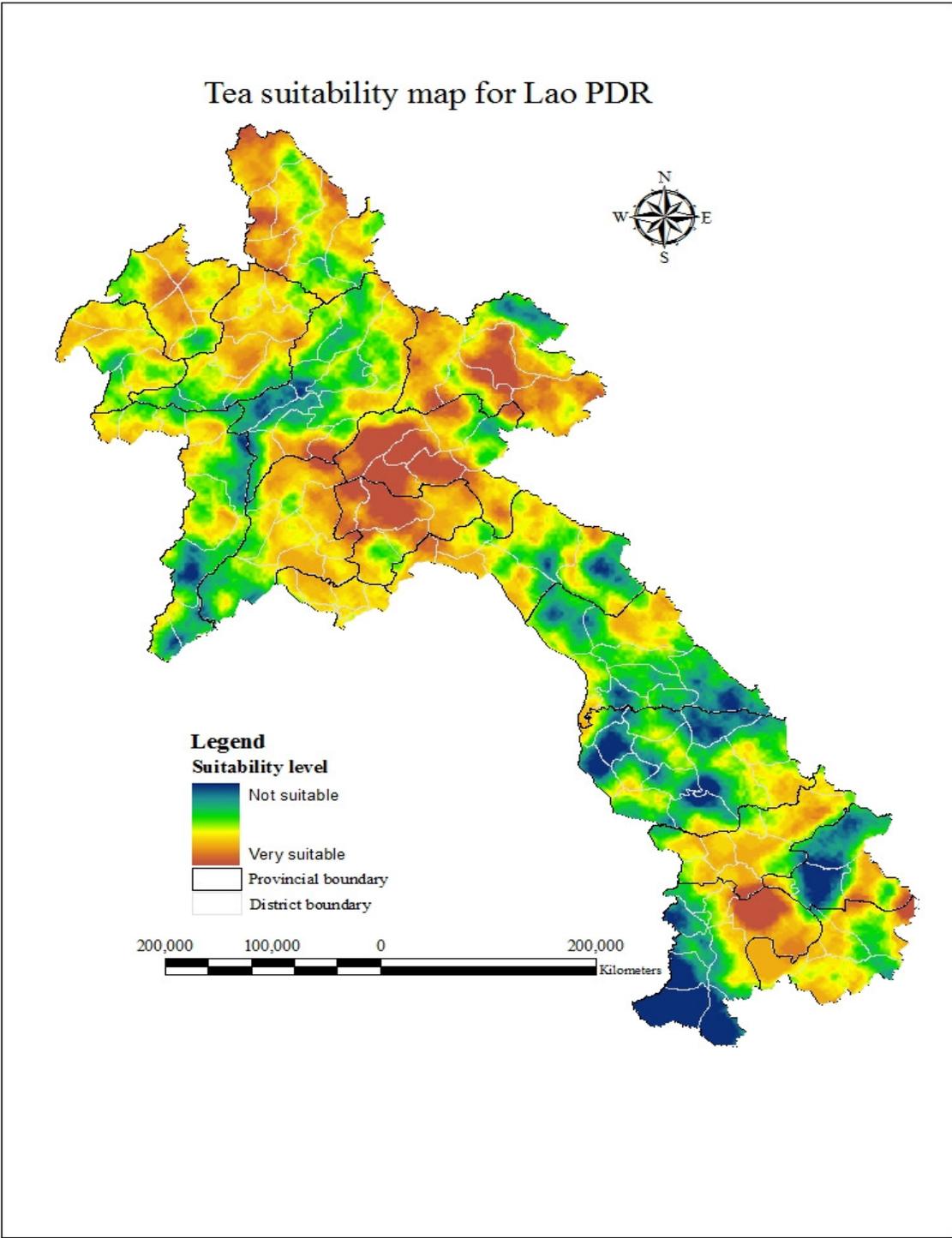
ANNEX 2: RESULTS OF RAPID RESOURCE INVENTORY

Province	District	TeaZone	NoVillages	No Households	No People	WFT-area	WFT-age	CFT-area	CFT-age	CCT-area	CCT-age	Total Area (ha)
Bokeo	Meng	Phonsavang	3	275	1,413	40	200	0	0	0	0	40
Bokeo	Meng	Pongpha	1	65	295	75	500	0	0	0	0	75
Bokeo	Meng	Torlae	2	280	1,670	400	600	0	0	0	0	400
Bokeo	Pak Tha	Kiewlom	2	156	1,013	350	400	0	0	0	0	350
Bokeo	Pak Tha	Modkajook	1	61	330	700	400	0	0	0	0	700
Bokeo	Pak Tha	Phousatane	1	65	333	650	500	0	0	0	0	650
Bokeo	Ton Phieng	Nam Tee	2	230	1,380	50	500	0	0	0	0	50
Houaphan	Vieng Xay	Xone Neua	1	200	700	150	500	0	0	3	5	153
Houaphan	Xam Neua	Phou chea	5	493	3,475	15	35	0	0	0	0	15
Houaphan	Vieng Xay	Nam Sang	2	58	370	0	0	3.7	50	0	0	3.7
Houaphan	Xam Tai	Long Keam	2	87	348	0	0	3.2	56	0	0	3.2
Houaphan	Houamueng	Na Phieng	1	70	326	7	100	0	0	0	0	7
Luang Namtha	Long	Nam khouang	4	100	600	15	80	4	8	4	8	23
Luang Namtha	Namtha	Nam sa	2	0	0	2.5	105	0	0	5	4	7.5
Luang Namtha	Nalae	Phong	10	100	400	5	40	3	3	3	5	11
Luang Namtha	Sing	Lao Khao	3	188	765	20	100	0	0	0	0	20
Luang Namtha	Sing	Soup E Kao	2	95	421	25	100	0	0	0	0	25
Luang Namtha	Sing	Xieng Kheng	8	403	1,774	350	100	0	0	0	0	350
Luang Namtha	Vieng Phouka	Nong kham	8	50	290	5	15	0	0	10	5	15
Luang Prabang	Chomphet	Phou Mieng	2	100	500	50	100	0	0	0	0	50
Luang Prabang	Nam bark	Chong ja	3	307	2,096	170	100	0	0	65.9	3	235.9
Luang Prabang	Ngoy	Soup Kan	1	83	538	0	0	0	0	2	3	2

Luang Prabang	Pakxieng	Boumkong	2	90	500	20	100	0	0	0	0	20
Luang Prabang	Pakxieng	Donexay	4	384	1,452	30	100	0	0	0	0	30
Luang Prabang	Pakxieng	Buangkham	10	600	3,000	92	100	0	0	0	0	92
Luang Prabang	Pakxieng	Hatvan	2	100	500	35	100	0	0	0	0	35
Luang Prabang	Phoukhoun	Nam pad	2	155	1,288	1	10	0	0	235	2	236
Luang Prabang	Phoukhoun	Sam Neak	3	119	543	0	0	0	0	44.5	3	44.5
Luang Prabang	Xieng Ngien	Kiew Kacham	3	16	73	0	0	0	0	87	3	87
Luang Prabang	Xieng Ngien	Kiew Kacham	1	87	487	3	50	0	0	0	0	3
Oudomxay	Beng	Na home	4	224	1,299	11	20	22	5	123	2	156
Oudomxay	Houn	Nam Phoun	3	180	750	2.5	50	0	0	0	0	2.5
Oudomxay	Houn	Phou Xie	4	280	1,200	5	50	0	0	0	0	5
Oudomxay	Na mor	Moo theur	5	272	1,249	5	30	0	0	50	2	55
Oudomxay	Na mor	Phou pad	4	342	2,404	2	28			1	8	3
Oudomxay	Pak Beng	Houysengkham	3	283	1,417	15	1000	0	0	0	0	15
Oudomxay	Pak Beng	Kone Lang	4	330	1,995	60	1000	0	0	0	0	60
Oudomxay	Pak Beng	Mokho Ngai	4	272	1,549	70	1000	0	0	0	0	70
Oudomxay	Pak Beng	Phou Luang	4	344	1,965	20	1000	0	0	0	0	20
Oudomxay	Pak Beng	Thetsaban	2	373	2,489	50	1000	0	0	0	0	50
Oudomxay	Xay	Hour nam kut	5	703	4,842	2,000	500	0	0	0	0	2000
Oudomxay	Xay	Km 16 (Nokok)	1	1	10	0	0	0	0	2	4	2
Oudomxay	Xay	Km 44	2	123	1,158	1,200	500	0	0	50	3	1250
Phongsaly	Bountai	Seng kang kour	2	0	0	0	0	0	0	53	3	53
Phongsaly	Bounnear	Mai	0	0	0	0.5	100	0	0	320	3	320.5
Phongsaly	Khoua	Done ka jork	3	116	706	9.5	25	0	0	26.96	4	36.46
Phongsaly	Khoua	Seng Lad	7	255	1,416	0	0	0	0	47.95	4	47.95

Phongsaly	Nhot Ou	Kum Nout ou	7	425	863			0	0	66.9	5	66.9
Phongsaly	Samphan	Oomtham	1	22	150	0	0	0	0	205	3	205
Phongsaly	Phongsaly	Hadsa	1	36	199	0	0	0	0	25	15	25
Phongsaly	Phongsaly	Km 18	4	250	1,383	0	0	0	0	298	15	298
Phongsaly	Phongsaly	Komen	7	227	1,255		0	70	400	254	0	324
Phongsaly	Phongsaly	Phoufa	13	504	2,787	0	0	0	0	409	15	409
Phongsaly	Phongsaly	Phonkeo	7	853	4,717	0	0	0	0	322	15	322
Phongsaly	Phongsaly	Kiew	7	264	1,491	0	0	0	0	116	15	116
Vientiane	Fueang	NaPheng	3	305	2,500	2	10	0	0	0	0	2
Vientiane	Kasi	Nongkham	3	250	1,253	3	10	0	0	0	0	3
Vientiane	Kasi	Viengkham	2	350	1,190	2	10	0	0	0	0	2
Vientiane	Vangvieng	Phatang	1	250	1,350	3	7	0	0	0	0	3
Xayabouly	Hongsa	Nam Kean	1	20	180	20	50	0	0	0	0	20
Xayabouly	Hongsa	Vieng Keo	1	240	600	0	0	0	0	5	15	5
Xayabouly	Paklai	Mueang Pa	2	300	1,320	5	150	0	0	0	0	5
Xayabouly	Phieng	Hour na	2	383	1,988	15	150	0	0	0	0	15
Xayabouly	Phieng	Houysin	0	0	0	3	130	0	0	0	0	3
Xayabouly	Xaysathan	Xaysathan	10	968	5,424	0	0	320	100	0	0	320
Xayabouly	Xieng hone	Donetan	6	941	4,321	50	120	0	0	0	0	50
Xayabouly	Xieng hone	Dong mieng	3	393	1,977	0	0	0	0	84	30	84
Xayabouly	Xieng hone	Hang	0	0	0	1	150	0	0	0	0	1
Xieng Khouang	Khoun	Dongpamieng	1	85	465	10	100	0	0	0	0	10
Xieng Khouang	Khoun	Some phan xay	2	58	698	1	5	0	0	0	0	1
Xieng Khouang	Khoun	Youn	2	168	1,409	1,500	3	0	0	0	0	1500
Xieng Khouang	Mok	Nam Pheuk	0	0	0	1.5	50	0	0	0	0	1.5
Xieng Khouang	Mok	Nam Pheung	2	30	120	4	40	0	0	0	0	4
Xieng	Mok	Nam Xay	2	250	700	0	0	0	0	5	7	5

Khouang												
Xieng Khouang	Peak	Phousannoy	1	61	356	12	100	0	0	0	0	12
Xieng Khouang	Peak	Phousangai	1	0	0	200	100	0	0	0	0	200
			242	16748	90025	8543.5		425.9		2923.21		11892.61



ANNEX 5: DETAILS OF TEA SAMPLES COLLECTED

Code	Province	District	Resource Type	Sample Type	Processing Type	Date Collected
101	Oudomxay	Xay	Wild Forest Tea	Maocha	Farmer Processed	April 2010
102	Luangnamtha	Luangnamtha	Ancient Cultivated	Shade dry	Farmer Processed	April 2010
103	Luangnamtha	Luangnamtha	Ancient Cultivated	Shade dry	Farmer Processed	April 2010
104	Luangnamtha	Luangnamtha	Ancient Cultivated	Shade dry	Farmer Processed	April 2010
105	Houaphanh	Vieng Xay	Commercial Cultivated	Black tea	After grading by trader	May 2010
106	Xiengkhouang	Khoue	Wild Forest Tea	Shade dry	Farmer Processed	April 2010
107	Xiengkhouang	Paek	Wild Forest Tea	Green tea	Farmer Processed	April 2010
108	Xiengkhouang	Paek	Wild Forest Tea	Green tea	Farmer Processed	April 2010
109	Bokeo	Meong	Wild Forest Tea	Maocha	Farmer Processed	April 2010
110	Sayabury	Xienghone	Wild Forest Tea	Green tea	Small Factory Processed	April 2010
111	Phonsaly	Phongsaly	Commercial Cultivated	Maocha	Factory Processed	5-Apr-10
112	Phonsaly	Phongsaly	Ancient Cultivated	Maocha	Factory Processed	5-Apr-10
113	Phonsaly	Phongsaly	Commercial Cultivated	Maocha	Factory Processed	5-Apr-10
114	Phonsaly	Phongsaly	Ancient Cultivated	Maocha	Factory Processed	5-Apr-10
115	Phonsaly	Phongsaly	Commercial Cultivated	Maocha	Factory Processed	5-Apr-10
116	Phonsaly	Khoua	Wild Forest Tea	Maocha	Farmer Processed	5-Apr-10
117	Sayabury	Saysathan	Commercial Cultivated	Green tea	Small Factory Processed	5-Apr-10
118	Sayabury	Saysathan	Commercial Cultivated	Green tea	Small Factory Processed	5-Apr-10
119	Luangprabang	Phu Khoun	Wild Forest Tea	Steam and sun dry	Farmer Processed	7-Apr-10
120	Luangprabang	Phu Khoun	Wild Forest Tea	Shade dry	Farmer Processed	7-Apr-10
121	Sayabury	Hongsa	Wild Forest Tea	Shade dry	Farmer Processed	April 2010
122	Sayabury	Hongsa	Commercial Cultivated	Shade dry	Farmer Processed	April 2010
123	Luang Prabang	Ngoy	Commercial Cultivated	Maocha	Farmer Processed	April 2010
124	Oudomxay	Xay	Commercial Cultivated	Maocha	Farmer Processed	April 2010
125	Luang Prabang	Chomphet	Wild Forest Tea	Maocha	Farmer Processed	April 2010
126	Houaphanh	Viengthong	Wild Forest Tea	Maocha	Farmer Processed	April 2010
127	Oudomxay	Xay	Wild Forest Tea	Maocha	Farmer Processed	April 2010
128	Phongsaly	Yord Ou	Wild Forest Tea	Maocha	Farmer Processed	April 2010
129	Phongsaly	Boun Neua	Commercial Cultivated	Maocha	Small Factory Processed	April 2010
130	Phongsaly	Yord Ou	Wild Forest Tea	Maocha	Farmer Processed	April 2010
131	Luangprabang	Nambak	Wild Forest Tea	Maocha	Farmer Processed	7-Apr-10
132	Phongsaly	Phongsaly	Commercial Cultivated	Maocha	Farmer Processed	7-Apr-10
133	Phongsaly	Phongsaly	Commercial Cultivated	Maocha	Factory Processed	7-Apr-10
134	Phongsaly	Phongsaly	Wild Forest Tea	Maocha	Farmer Processed	7-Apr-10

135	Vientiane	Vangvieng	Commercial Cultivated	Shade dry	Farmer Processed	April 2010
136	Phongsaly	Phongsaly	Commercial Cultivated	Maocha	Farmer Processed	April 2010
137	Phongsaly	Phongsaly	Commercial Cultivated	Maocha	Farmer Processed	April 2010
138	Phongsaly	Phongsaly	Ancient Cultivated	Maocha	Factory Processed	April 2010
139	Phongsaly	Phongsaly	Commercial Cultivated	Maocha	Factory Processed	April 2010
140	Phongsaly	Phongsaly	Commercial Cultivated	Maocha	Factory Processed	April 2010
141	Luang Prabang	Pak Xeng	Wild Forest Tea	Shade dry	Farmer Processed	April 2010
142	Vientiane	Kasi	Wild Forest Tea	Shade dry	Farmer Processed	April 2010
143	Vientiane	Kasi	Wild Forest Tea	Shade dry	Farmer Processed	April 2010
144	Vientiane	Feuang	Wild Forest Tea	Shade dry	Farmer Processed	April 2010
145	Oudomxay	Pakbeng	Wild Forest Tea	Maocha	Small Factory Processed	April 2010
146	Oudomxay	Pakbeng	Wild Forest Tea	Shade dry	Farmer Processed	April 2010
147	Oudomxay	Pakbeng	Wild Forest Tea	Shade dry	Farmer Processed	April 2010
148	Xiengkhouang	Mok	Wild Forest Tea	Shade dry	Farmer Processed	May 2010
149	Xiengkhouang	Mok	Wild Forest Tea	Maocha	Farmer Processed	May 2010
150	Xiengkhouang	Mok	Wild Forest Tea	Maocha	Farmer Processed	May 2010
151	Houaphanh	Viengxay	Ancient Cultivated	Black tea	Farmer Processed	April 2010
152	Houaphanh	Xam Neua	Commercial Cultivated	Black tea	Farmer Processed	April 2010
153	Houaphanh	Viengxay	Commercial Cultivated	Black tea	Farmer Processed	April 2010
154	Houaphanh	Houameung	Wild Forest Tea	Maocha	Farmer Processed	April 2010
155	Phongsaly	Khoua	Commercial Cultivated	Maocha	Farmer Processed	April 2010
156	Phongsaly	Khoua	Wild Forest Tea	Maocha	Farmer Processed	April 2010
157	Phongsaly	Khoua	Wild Forest Tea	Shade dry	Farmer Processed	April 2010
158	Phongsaly	Khoua	Wild Forest Tea	Maocha	Farmer Processed	April 2010
159	Phongsaly	Khoua	Wild Forest Tea	Shade dry	Farmer Processed	April 2010
160	Phongsaly	Khoua	Commercial Cultivated	Shade dry	Farmer Processed	April 2010
161	Luangprabang	Xieng Ngeun	Wild Forest Tea	Shade dry	Farmer Processed	May 2010
162	Luangprabang	Xieng Ngeun	Commercial Cultivated	Shade dry	Farmer Processed	May 2010
163	Luangprabang	Ngoy	Commercial Cultivated	Shade dry	Farmer Processed	May 2010
164	Bokeo	Meong	Wild Forest Tea	Maocha	Farmer Processed	May 2010
165	Bokeo	Meong	Wild Forest Tea	Maocha	Farmer Processed	May 2010
166	Champasack	Paksong	Wild Forest Tea	Green tea	Factory Processed	5 May 2010
167	Champasack	Paksong	Wild Forest Tea	Green tea	Factory Processed	5 May 2010
168	Luang Namtha	Long	Wild Forest Tea	Maocha	Farmer Processed	May 2010
169	Bokeo	Meong	Wild Forest Tea	Maocha	Farmer Processed	May 2010
170	Bokeo	Meong	Wild Forest Tea	Maocha	Farmer Processed	May 2010
171	Bokeo	Pak Tha	Wild Forest Tea	Maocha	Farmer Processed	May 2010
172	Champasack	Pakxong	Ancient Cultivated	Green tea	Small Factory Processed	May 2010
173	Champasack	Pakxong	Ancient Cultivated	Green tea	Factory Processed	May 2010
174	Oudomxay	Houn	Wild Forest Tea	Shade dry	Farmer Processed	April 2010

175	Oudomxay	Houn	Wild Forest Tea	Shade dry	Farmer Processed	May 2010
176	Luang Namtha	Sing	Wild Forest Tea	Maocha	Farmer Processed	May 2010
177	Luang Namtha	Sing	Wild Forest Tea	Maocha	Farmer Processed	May 2010
178	Sayabury	Hongsa	Wild Forest Tea	Maocha	Farmer Processed	May 2010
180/101	Oudomxay	Xay	Wild Forest Tea	Maocha	Farmer Processed	June 2010
181	Sayabury	Saysathan	Wild Forest Tea	Green tea	Small Factory Processed	July 2010
182/157	Phongsaly	Khua	Wild Forest Tea	Black tea	Farmer Processed	July 2010
183/157	Phongsaly	Khua	Wild Forest Tea	Black tea	Farmer Processed	July 2010
184	Phongsaly	Phongsaly	Ancient Cultivated	Green tea	Factory Processed	July 2010
185	Phongsaly	Phongsaly	Ancient Cultivated	Black tea	Factory Processed	July 2010
186	Phongsaly	Phongsaly	Commercial Cultivated	Black tea	Factory Processed	September 2010
187	Phongsaly	Phongsaly	Commercial Cultivated	Green tea	Factory Processed	September 2010
188	Oudomxay	Pakbeng	Wild Forest Tea	Maocha	Small Factory Processed	2 November 2010
189	Oudomxay	Xay	Wild Forest Tea	Maocha	Farmer Processed	2 November 2010
190	Houaphanh	Samneua	Wild Forest Tea	Maocha	Farmer Processed	2 November 2010
191	Phongsaly	Phongsaly	Ancient Cultivated	Green tea	Factory Processed	2 November 2010
192	Phongsaly	Phongsaly	Ancient Cultivated	White tea	Factory Processed	2 November 2010
193	Phongsaly	Phongsaly	Ancient Cultivated	Black tea	Factory Processed	2 November 2010
194/101	Oudomxay	Xay	Wild Forest Tea	Maocha	Farmer Processed	October 2010
195/121	Sayabury	Hongsa	Wild Forest Tea	Shade dry	Farmer Processed	October 2010
196/121	Sayabury	Hongsa	Wild Forest Tea	Shade dry	Farmer Processed	October 2010
197/121	Sayabury	Hongsa	Wild Forest Tea	Black tea	Farmer Processed	October 2010
198/128	Phongsaly	NhotOu	Wild Forest Tea	Maocha	Farmer Processed	October 2010
199/153	Houaphanh	Viengxay	Commercial Cultivated	Black tea	Farmer Processed	October 2010
200/157	Phongsaly	Khua	Wild Forest Tea	Maocha	Farmer Processed	October 2010
201/181	Sayabury	Saysathan	Ancient Cultivated	Green tea	Small Factory Processed	October 2010
202/101	Oudomxay	Xay	Wild Forest Tea	Maocha	Farmer Processed	March 2011
203/107	Xiengkhouang	Peak	Ancient Cultivated	Green tea	Farmer Processed	March 2011
204/108	Xiengkhouang	Peak	Ancient Cultivated	Green tea	Farmer Processed	March 2011
205/110	Sayabury	Xienghone	Wild Forest Tea	Maocha	Small Factory Processed	April 2011
206/112	Phongsaly	Phongsaly	Ancient Cultivated	Maocha	Factory Processed	April 2011
207/115	Phongsaly	Phongsaly	Commercial Cultivated	Maocha	Factory Processed	April 2011
208/128	Phongsaly	NhotOu	Wild Forest Tea	Maocha	Farmer Processed	April 2011
209/14	Oudomxay	Pakbeng	Wild Forest Tea	Maocha	Farmer Processed	April 2011

5						
210/15 1	Houaphanh	Viengxay	Ancient Cultivated	Black tea	Farmer Processed	April 2011
211/15 3	Houaphanh	Viengxay	Commercial Cultivated	Black tea	Farmer Processed	April 2011
212/15 7	Phongsaly	Khua	Wild Forest Tea	Shade dry	Farmer Processed	April 2011
213/18 1	Sayabury	Saysathan	Ancient Cultivated	Green tea	Small Factory Processed	April 2011

ANNEX 6: RESULTS OF CHEMICAL ANALYSIS OF SELECTED TEA SAMPLES

Sample No.	Moisture (%)	Solublecomponent(%)	Total catechin (%)	Total polyphenol (%)	Caffeine (%)	Theatine(%)
101	6.1	27.9	10.30	12.55	3.89	1.06
107	9.0	35.3	14.06	17.27	5.64	1.82
121	11.2	29.6	5.83	10.18	4.32	2.04
128	9.1	31.2	12.25	13.72	3.85	1.52
151	9.0	30.4	7.03	11.40	4.30	1.87
157	12.5	31.9	7.86	13.80	4.69	1.69

ANNEX 7: PHASE THREE PROPOSED FRAMEWORK

Programme Outline:

A five year programme is proposed that would combine on-ground sub-projects in a minimum of five sites with broader actions associated with strengthening product quality and markets that would facilitate linkages and the development of networks between key players within the different sub-project and other sites.

Structure:

Component 1: Site specific sub-projects

- 1.1 Formulation of on-site sub-activity plans.
- 1.2 Support to development of Provincial tea sector development plans.
- 1.3 Establishment and management of co-financing subsidy programme.
- 1.4 Organic tea cultivation and processing technical assistance to on-site trials.

Component 2: Quality assessment and development

- 2.1 Sample collection, cupping and quality assessment to further identify high potential sites.
- 2.2 Annual tea processor training programme.
- 2.3 Annual Phongsaly tea festival

Component 3: Market development

- 3.1 Facilitate direct linkages between Lao traders and Yunnan buyers through cross-visits with samples.
- 3.2 Promotion of increased domestic consumption through mass media advertising/show rooms.
- 3.2 Sponsor larger processor / trader attendance at regional tea trade fairs.

Component 4: Human resources

- 4.1 MAF/Team member capacity development (tea quality assessment and grading).

Sub-Projects:

Sub-projects would be implemented in partnership with local government, private sector and NGO as most appropriate within that site. The extent of programme investment and engagement will vary significantly by site depending upon the local situation, presence of other organisations, and other resources available. In general the programme will seek to complement and support existing actors rather than to lead. The programme would provide co-financing subsidies designed to reduce farmer / processor risks and stimulate a more rapid expansion to address key issues associated with supply volumes and quality.

Based on study findings, provisional sites, partners and actions would be as follows:

District	Current Challenges	Provisional suggested actions	Key Partners	Input level	Risk level
1. Phongsaly Over 1,600 Ha's currently under cultivation both Yunnan and local var.	Low returns to labour. Not gaining full benefit from organic production.	d. Improved organic cultivation trials and demonstrations. e. Methods, legume ground covers, shade trees and improved pruning. f. Facilitate organic certification as required by buyers. g. New market linkages.	PAFO/DAFO Processing factories Farmers MAF/ADB	High	Low
2. Viengxai Good quality black teas produced from ancient stock - strong market demand.	High risks / time consumption with hand processing Very small volumes	c. Co-finance small scale mechanical processing unit (US\$15,000) enabling farmer sales of fresh leaf and lower risks. d. Facilitate cultivation expansion using improved organic techniques.	PAFO/DAFO Current buyer Farmers LNTA	Medium	Low-Medium

		e. Improved pruning techniques.			
3. Khua Attractive wild tea var. with \$15/kg quoted purchase price in Yunnan.	Market linkages not present. Limited production volume.	c. Linking local NTFP traders with buyers. d. Facilitate cultivation expansion using improved organic techniques / pruning. e. Processing skills	PAFO/DAFO NTFP trader Farmers NGO	Low	Medium
4. Paek Good quality ancient wild tea, with domestication occurring.	Production sites limited. to	c. Simple provincial strategy for tea sector expansion. d. Co-finance with buyers expansion in cultivation. e. Organic cultivation methods / improved pruning. f. Possible co-financing of processing equipment.	PAFO/DAFO Current buyers Farmer groups TABI / SADU	Medium	Low
5. Nyot Ou Good quality wild tea, domestication occurring.	Limited processing skills. Limited volumes.	a. Processing skills. b. Demonstrate on-farm organic cultivation methods to increase productivity and returns to labour	PAFO/DAFO Current buyer NGO	Low	Low

There are a number of other sites that have been provisionally identified but are at this stage relatively higher risk, these districts include Beng, Hongsa, Phoukhoun, Xai, Xienghon. The program should be sufficiently flexible to enable support to be provided to other locations as required.

While discussions have been held with key players in all sites, specific 'project design' or partnership strategies has not occurred. The first phase of the programme would be to undertake sub-activity design processes in each site with partner agencies.

Sector level actions would draw upon linkages and partnerships within the different sites to undertake specific actions of benefit to the sector as a whole and where economies of scale can be achieved through such. It is proposed that the following actions – drawn from the earlier listing - would be facilitated through a centrally based team:

Management:

It is proposed that this programme be implemented through a 'project' structure utilising similar management arrangements as the study has to date with a core implementation team and management board. In the longer term, this core team, whose skills would be developed through the programme could develop into a Lao tea sector development agency that could be an operationally independent, stand alone, registered institutional structure but under the leadership of a board comprising relevant government and donor agencies. Current sector size and stage of development does not appear to warrant such a structure at this stage.