Lao People's Democratic Republic: Agriculture and Natural Resources Sector Needs Assessment
(Financed by the Asian Development Bank and the Lao People's Democratic Republic)

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For the Ministry of Agriculture and Forestry

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ACRONYMS

ADB  Asian Development Bank
AFAS  ASEAN Framework on Services
AFTA  ASEAN Free Trade Area
ANR  Agriculture and Natural Resources
APTA  Asia Pacific Trade Agreement
ASEAN  Association of South East Asian Nations
ASYCUDA  Automated System for Customs Data
BOL  Bank of Lao PDR
BTA  Bilateral Trade Agreement
BDS  Business Development Services
CAD  Computer Aided Design
CAM  Computer Aided Manufacture
CCC  Customs Cooperation Council
CEPT  Common Effective Preferential Tariff
CFSVA  Comprehensive Food Security and Vulnerability Analysis
CMT  Cut Make and Trim
CSP  Country Strategy and Program
DAFO  District Agriculture and Forestry Office
DFD  Drug and Food Department
DFID  Department for International Development
DISM  Department of Intellectual Property, Standardisation and Metrology
DLF  Department of Livestock and Fisheries
DMC  Direct seeding Mulch-based Cropping systems
DOA  Department of Agriculture
DTIS  Diagnostic Trade Integration Study
EBA  Everything but Arms
EBS  Enterprise Baseline Survey
EIA  Environmental Investigation Agency
ESCAP  Economic and Social Commission for Asia-Pacific
ERPs  Effective Rates of Protection
FAO  Food and Agriculture organisation
FDI  Foreign Direct Investment
FRC  Forest Research Centre
FSC  Forest Stewardship Council
FTA  Free Trade Area
GAP  Good Agricultural Practice
GDP  Gross Domestic Product
GIS  Geographic Information System
GMS  Greater Mekong Sub-region
GOL  Government of Lao PDR
GRID  Gender Resource and Information Development Centre
GSP  Generalised System of Preferences
HRDME  Human Resource Development for Market Economy
ICS  Investment Climate Survey
IF  Integrated Framework
IFAD  International Fund for Agriculture Development
IPPC  International Plant Protection Convention
LDCs  Least Developed Countries
LEA  Lao Extension Approach
LEAP  Lao Extension for Agriculture Project
LECS  Lao Expenditure and Consumption Survey
LPDP  Lao-German Land Policy Development Project
LNCCI  Lao National Chamber of Commerce and Industry
LUPLA  Land-use Planning and Land Allocation
LWU  Lao Women's Union
MAF  Ministry of Agriculture and Forestry
MOA  Memorandum of Agreement
MOIC  Ministry of Industry and Commerce
MOF  Ministry of Finance
MPH  Ministry of Public Health
MPI  Ministry of Planning and Investment
MSE  Micro and Small Enterprise
MRC  Mekong River Commission
NAFRI  National Agriculture and Forest Research Institute
NAST  National Agency for Science and Technology
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NEM  New Economic Mechanism
NGO  Non Government Organisation
NGPES  National Growth and Poverty Eradication Strategy
NHDR  National Human Development Report
NIFGS  National Integrated Governance Framework Structure
NLMA  National Land Management Authority
NOSPA  National Organisations of Science and Technology Association
NPA  National Protected Area(formerly National Biodiversity Conservation Area)
NRA  National Regulatory Authority for UXO/Mine Action in Lao PDR
NRDP  National Rural Development Program
NSED  National Socio-Economic Development Plan
NTBs  Non-Tariff Barriers
NTFP  Non-Timber Forest Product
NTR  Normal Trade Relations
NOSPA  National Organisations of Science and Technology Association
NPA  National Protected Area(formerly National Biodiversity Conservation Area)
NRA  National Regulatory Authority for UXO/Mine Action in Lao PDR
NRDP  National Rural Development Program
NSED  National Socio-Economic Development Plan
NTBs  Non-Tariff Barriers
NTFP  Non-Timber Forest Product
NTR  Normal Trade Relations
OA  Organic agriculture
ODA  Official Development Assistance
PAFO  Provincial Agriculture and Forestry Office
PFP  Pesticide Free Production
PLUMPS  Provincial Land-use Master Plans
RDC  Rural Development Committee
SAPE  Sector Assistance Program Evaluation
SED  Small Enterprise Development
SFMG  Sustainable Forest Management Group
SME  Small and Medium Enterprises
SNV  Netherlands Development Organisation
SOCB  State Owned Commercial Bank
SOEs  State Owned Enterprises
SPS  Sanitary and Phyto-Sanitary
TA  Technical Assistance
TBT  Technical Barriers to Trade
TDF  Trade Development Facility
TRIMs  Trade Related Investment Measures
UNDP  United Nations Development Program
UNIDO  United Nations Industrial Development Organisation
USLBTA  US-Lao Bilateral Trade Agreement
UXO  Unexploded Ordinance
WB  World Bank
WCO  World Customs Organisation
WFP  World Food Program
WTO  World Trade Organisation
Introduction

This report is the result of a study by a team of consultants that was undertaken between May 2007 and May 2008. The study was divided into two phases, with the first phase being a scoping study completed in October 2007 with a workshop. The second phase began in December 2007. Initially the study was intended to be a Sector Needs Assessment, but during the course of the study, in January 2008, it was agreed by ADB and the Ministry of Agriculture and Forestry that an investment project should be prepared based on the preliminary findings.

Background

1. The ANR sector is currently the largest sector in the national economy, accounting for about 45% of national GDP and providing the main source of income for about 80% of the population. The proportion of total national GDP contributed by the ANR sector has been declining steadily, especially in recent years when mineral extraction and hydro-power generation have been growing rapidly. These latter two sectors now account for almost two-thirds (63%) of exports while ANR share of exports, especially timber has also been declining steadily and now accounts for less than 20%, of which agricultural products account for only 5%. At the same time, imports of agricultural products have been increasing steadily and have now reached almost 15% of the total, so that there is a net trade deficit in agricultural products. (for more detail on trade issues see Appendix III)

2. While the national economy has grown at an average rate of around 6.6% since 2000, the ANR GDP has grown by less than half that rate at around 3.1%. During the same period, the population of working age (>15-65 yrs) grew by about 3%. While a small proportion of the increased labour will have left agriculture to work in other sectors, it would seem that there has been little improvement in productivity of either land or labour over the past five years. If the performance of the sector is to be improved in the future it will be important to focus on ways to increase productivity of both these factors of production.

3. The National Growth and Poverty Eradication Strategy (NGPES) was endorsed by the National Assembly in 2003 at the culmination of a preparation process that took several years. The Agriculture and Forestry component of the strategy distinguished three dominant farming systems, consisting of dry-land rice cultivation employing shifting cultivation, paddy rice cultivation along the Mekong plains and horticultural crops in the upland plateau in the south. The strategy then laid out a market based approach to modernise and strengthen the sector in the lowlands, while emphasising the provision of more support for the sector in the uplands, where poverty and lack of capacity are major limiting factors.

4. While the Ministry of Agriculture and Forestry is responsible for policy and general guidance of the sector, implementation of policy interventions is primarily the responsibility of the provinces. Each Province has a sector development plan in

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2 The first phase was carried out by Keith Ward (Team Leader) and John Schiller (Institutions specialist)

3 National Statistical Office
which is set out the measures that will be adopted to meet the goals set for the sector by the National Assembly. While the MAF has clear national goals, much of the current development of the sector is taking place at provincial level. Foreign investors seeking land generally go straight to the Provincial Investment and Planning Office, and are then directed to PAFO to find suitable land. This has led to an ad hoc approach with developments being driven by outsiders’ short-term requirements rather than by longer-term government priorities. With many concessions being awarded for periods of up to 50 years this type of development is pre-empting investment opportunities that may have better overall long-term benefits. Recognising that this situation was getting “out of hand” the government imposed a moratorium on major concessions in early 2007 that will run until the end of 2008. Assuming that the moratorium is lifted at the end of 2008, the government needs to have a clear strategy in place to ensure that future concession allocation will lead to sustainable investments that are socially and environmentally responsible.

Lessons from past ADB interventions

5. In 2005, ADB published a Sector Assistance Program Evaluation (SAPE) covering the investments made over the previous 20 years. It concluded that while individual projects have been relevant to the country’s development challenges and ANR issues, ADB sector assistance in ANR (in terms of objective, scope, type, and location) has been diffused, project driven, localised and lacking the coordination needed to overcome common constraints to commercialisation of the sector. While ADB country strategies have emphasized the importance of the transition of the ANR sector to a market-based economy, crop diversification, commercialization, and increased role of the private sector, the ADB-financed investment projects have generally emphasized improvements of rural infrastructure, facilities, and capacity development related to factors of production without adequate attention to finding solutions to binding constraints facing crop diversification, market orientation, and value addition. The country strategies for ANR sector assistance were considered too broad to provide guidance for focused sector assistance. The current program of ADB sector assistance in ANR includes investments in river basin and watershed management, livestock development, tree plantations, and initiatives to stabilize shifting cultivation. The current Country Strategy and Program (CSP) did not have a framework for prioritizing ANR sector assistance and clear links have not been established to optimize development synergies among projects and TAs.

6. SAPE also noted that while the CSP emphasizes the critical role of the private sector for ANR development for improving performance and marketing it does not distinguish between the needs of subsistence farmers and their immediate concerns for household food security on the one hand and opportunities for commercialization of agriculture. Although ADB has paid attention to the poor mountainous Northern Region through the Northern Regional Development Strategy (2004), and emphasized economic integration of the region with neighbouring economies, the dichotomy between subsistence farmers and those who can produce for the market has not been clearly dealt with. The Strategy was not immediately followed up by ADB, with the result that other donors have intervened in the northern region in the meantime.

7. The SAPE concludes that policy-based lending has been less efficient. It underestimated the efforts required to effect policy changes. Requirements for institutional preparedness for change, management of change, and the time needed to generate outcomes in the context of the Lao political economy were underestimated. The efficiency of TA operations was generally affected by inadequate counterpart arrangements, poor absorptive capacity, and lack of
institutional analysis. TAs intended for capacity development often resulted in capacity substitution. The policy reform measures achieved have been sustained, with no overt reversals in the formal policy direction. However, policy implementation has been affected by an environment characterized by regulatory uncertainty, unpredictability, lack of transparency and accountability, and other governance issues including corruption. Central and local government jurisdictions and decentralization measures have also influenced the reform process and implementation. TA operations often produced recommendations that could not be implemented because of deficient analysis of the implications of recommended actions concerning requirements for resources, institutional arrangements, and organizational development and management.

8. The SAPE recommends that ADB activities in the ANR sector should be more selective and focused in terms of composition and spread, and should take into account government priorities, the division of roles and responsibilities among development partners, past performance of ADB operations, identified lessons, and ADB’s comparative advantage and skills mix requirements. ADB should discontinue the project-by-project approach of defining relevance and priorities for the ANR sector, because this approach has led to diffused ANR sector assistance. This should result in a more strategic and results-oriented framework for prioritizing development assistance in the ANR sector. This should be based on an assessment of key challenges, binding constraints, and opportunities facing the ANR sector, including overriding considerations that have significant bearing on sector’s performance (e.g., the investment climate, governance, corruption, markets, and opportunities for economic integration and regional cooperation). The future approach should include using existing aid coordination channels more effectively to (a) share experience and knowledge, (b) find solutions to binding constraints facing the ANR sector, and (c) develop replicable approaches that can provide greater benefits countrywide.

a. Situation in the Southern Provinces

9. ADB supported the development of the Northern Region Development Strategy, which emphasised the need to integrate the ANR sector into the regional economy, in 2004, and this led to increased interest amongst donors, especially those concerned with poverty. When TA 4843 team discussed with MAF the need to take account of the SAPE recommendations for a more focussed approach in terms of spread, MAF clearly indicated that the southern group of provinces should be given priority, since they were relatively neglected in donor support, but had the highest potential to commercialise the ANR sector because of better infrastructure and access to markets, as well as more flatter land suited to a wide range of crops. With a proposed investment of around US$ 20 million, it was decided that five provinces should be the maximum for inclusion in the program. If the project period is about 6 years the average annual investment would be only around US$ 3.3 million. As Table 1 below shows this represents about 0.6% of the total ANR GDP for the five provinces, so that any more provinces would dilute the investment to an extent where it could have little impact.

10. The five Provinces that are the focus of the current proposed ADB project collectively account for about 28% of the national land area and about 35% of the total population. Table 1 below shows the Provincial economic indicators and the collective comparison with the national figures. This indicates that collectively, the total Provincial GDP is close to proportional to the land area, while the Provincial ANR sector GDP is close to proportional to the population. This suggests that the agricultural output is more determined by the number of farmers than by the
availability of land. However, this masks big differences between the provinces. Assuming that the labour recorded as being engaged in agriculture by the national census, produce about 70% of the ANR GDP, (with the remainder coming from forestry and company activities), Table 1 shows that the Agricultural GDP per capita engaged in agriculture in the five provinces is slightly higher than the national average in Champassak and is lower in the other four. Agricultural workers in Attapeu and Sekong are only producing about 25% of the average national agricultural output. This not only means much less income for the farmers, but also less tax revenue for the government as well as a greater risk of local food shortages. Some of the difference may be due to the method of calculating the sector GDP, since the national figure is from the national Statistics office, while the provincial figures are from the individual provinces.

11. Lack of data makes it impossible to determine the relative importance of the different factors that have contributed to these observed differences in ANR GDP. In Champassak and Savannakhet, access is generally good in the lowland parts of the provinces and those farmers who produce a surplus can easily find markets for their produce, locally or to traders. These provinces also have a much higher proportion of their land under cultivation for paddy and other crops. The fact that both Attapeu and Sekong have very poor access to markets and a small local market is probably a major contributory factor to their much weaker performance. Most of the FDI has been very recent, and much is in long-term crops, such as rubber and eucalyptus, so that it is unlikely that the recent wave of investment in the sector has yet had a significant impact on the sector output.

Table 1: Comparison of economic indicators for the five southern provinces in comparison with national figures.

<table>
<thead>
<tr>
<th>Item</th>
<th>Attapeu</th>
<th>Champassak</th>
<th>Salavan</th>
<th>Savannakhet</th>
<th>Sekong</th>
<th>% National</th>
</tr>
</thead>
<tbody>
<tr>
<td>Province GDP (US$’000)</td>
<td>15,597</td>
<td>315,683</td>
<td>153,062</td>
<td>531,774</td>
<td>11,824</td>
<td>26.13</td>
</tr>
<tr>
<td>Province ANR GDP (US$’000)</td>
<td>10,138</td>
<td>198,110</td>
<td>92,811</td>
<td>254,667</td>
<td>7,686</td>
<td>34.77</td>
</tr>
<tr>
<td>Land area (’000ha)</td>
<td>1,032,000</td>
<td>1,541,500</td>
<td>1,069,100</td>
<td>2,177,400</td>
<td>766,500</td>
<td>27.81</td>
</tr>
<tr>
<td>Land area % National</td>
<td>4.36</td>
<td>6.51</td>
<td>4.51</td>
<td>9.20</td>
<td>3.24</td>
<td></td>
</tr>
<tr>
<td>Population</td>
<td>112,120</td>
<td>607,370</td>
<td>324,327</td>
<td>825,902</td>
<td>84,995</td>
<td>34.77</td>
</tr>
<tr>
<td>Population % National</td>
<td>1.99</td>
<td>10.80</td>
<td>5.77</td>
<td>14.69</td>
<td>1.51</td>
<td></td>
</tr>
<tr>
<td>Province GDP % National</td>
<td>0.40</td>
<td>8.02</td>
<td>3.89</td>
<td>13.52</td>
<td>0.30</td>
<td></td>
</tr>
<tr>
<td>Province ANR GDP % National</td>
<td>0.56</td>
<td>11.93</td>
<td>5.59</td>
<td>15.34</td>
<td>0.43</td>
<td></td>
</tr>
<tr>
<td>Province Agri. GDP /ha (US$)</td>
<td>131.2</td>
<td>276.5</td>
<td>267.7</td>
<td>475.7</td>
<td>90.1</td>
<td>616.2</td>
</tr>
<tr>
<td>Province Agri. GDP /cap (US$)</td>
<td>140.8</td>
<td>564.7</td>
<td>419.3</td>
<td>475.5</td>
<td>145.0</td>
<td>540.4</td>
</tr>
</tbody>
</table>

12. Setboonsarng et al. 2008 suggest that when rice farmers grow under contract to a company with requirements for specific varieties of rice, and direct links to markets, their productivity and their income increases compared with similar farmers growing usual varieties of rice for the local market. The labour input for a hectare of rice is only about 85 days for contract farmers compared with 147 days for normal farmers. Assuming that the labour input of 147 days is a reasonable average figure for traditional farming practice, then the rice production in the five southern provinces requires about 26% of the available labour, ranging between 19% in Sekong and 29% in Salavan. This equates reasonably well with the amount of time involved in growing a single crop of rice annually. There would therefore appear to be considerable scope for increasing labour productivity both for single and double annual cropping.
13. Comparing the value of the rice produced annually with the total labour engaged in rice production and the total land area utilised, suggests that the average annual return to the labour and land used for rice growing is between US$ 190 and US$340 per person and US$ 300-500 per ha., with Attapeu being the lowest on both counts. (These figures are consistent with the returns reported by Setboonsarng op cit allowing for the lower yields and smaller areas of the farmers in their study area). Limited data available suggests that returns from coffee are in the range US$ 220-500 per ha., while a feasibility study for a rubber plantation suggests an average annual return of about US$600 per ha. (This latter figure is a projection based on current prices for rubber and may well prove quite different in practice in due course. Should prices fall, or yields be lower than expected the returns will be lower.). The average annual return from Eucalyptus or Acacia plantations for pulpwood is around US$45 per ha. according to studies undertaken for a Lao Plantation Project.

14. The total annual production of rice in the five provinces amounts to about 1.2 million tonnes, and assuming that the average annual consumption of rice is around 400kg per person, the total requirement in the five provinces is about 780,000 tonnes, giving a surplus of around 420,000 tonnes. However, both Attapeu and Sekong appear to have a deficit in rice of around 2,500 and 6,500 tonnes respectively, while the other provinces have substantial surpluses. This seems to be mainly attributable to the higher dependence on hill rice with its lower yields in these two provinces. In Sekong 22% of the land used for rice growing is for upland rice, and it only produces 11% of the annual output.

15. A high proportion of the population in Attapeu and Sekong, many of whom are ethnic communities, are engaged in subsistence farming, which is one of the main reasons why the ANR contribution to GDP appears so low in those provinces as GDP only records market transactions. The low productivity limits the government’s revenue base for investment in improving services. However, despite the low output from these two provinces, collectively the five provinces' contribution to national ANR GDP is relatively higher than the national average, partly because the average area farmed by smallholders is higher than the national average and partly because the proportion of upland rice is lower than the national average.

16. Since the adoption of NGPES there has been a massive influx of foreign investment in the sector, especially into the lowlands along the Mekong plains. While this is in line with the strategy the scale and speed of the influx and the impact that it is having, has been far greater than anticipated even five years ago.

b. The impact of FDI on the sector

17. It is too early yet to measure any impact of these recent investments on the growth and performance of the sector, but in the two most recent years for which national statistics are available (2005 and 6) the growth rate in the crops sub-sector has actually declined slightly to around 2.5%. Detailed data does not exist that would allow the contribution to sector GDP from the smallholders and the foreign investment to be distinguished, but it seems likely that any increase due to the FDI has been offset by reductions in output from the traditional sector. There are also some social and environmental costs from the FDI that are becoming increasingly apparent and this is reflected in increasing concern within government that concessions are being granted without proper consideration of the long-term implications. The Ministry of Agriculture and Forestry is currently carrying out an appraisal of all concessions while a moratorium has been imposed on any further concessions until the end of 2008. A closer inspection of these developments
in the five southern provinces suggests that there are some serious economic consequences developing that will have a negative impact on the sector in the near future if nothing is done about it. The productive agricultural land in the lowlands along the Mekong is limited in extent and with the exception of irrigation schemes, most of the rice paddy is rain-fed on former dry deciduous forest land, which has an iron pan that limits water infiltration and so keeps the surface layers moister for longer. This retention of water is suitable for rice cultivation, but for other crops that do not tolerate waterlogged soils it requires deep ripping.

18. Most of the concessions that have been awarded over the past few years are to companies wishing to establish large estates for crops like rubber, sugar, cassava and eucalyptus. While some of these companies are supporting smallholder “outgrowers” most are taking land that had formerly been used for food production and some are clearing and converting forest land contrary to government policy. While they are providing wage employment for some of the farmers that have been displaced, which in theory should enable those people to buy their food, there is no sign as yet, that the productivity of the remaining land is increasing to offset the output lost from the land converted to other crops. In addition demand for staple food is growing due to population growth and increased incomes. There is therefore a serious risk that in the near future, Lao PDR will find itself in the situation that the Philippines is in currently, having to import rice at a time of rising world prices.

19. While some farmers, who have given up some of their land are glad of the opportunities for wage employment to supplement income, not all the people displaced by loss of land wish to become wage labour in commercial plantations. There are reports of a number of responses by local communities: some migrate to Thailand or urban areas, while others are encroaching on forest land to establish new farmland.

20. This analysis suggests that the main benefits from FDI to date has been to diversify the rural economy and provide more employment opportunities, but it seems to have had little impact on the traditional agricultural practices, and it has increased the risk of staple food shortages in the near future due to the reduction in land available to smallholders. The impact on land-use does however seem to vary according to the investor. One company interviewed that is operating in the lowlands, reported that they only took land for which none of the villagers could provide evidence of having paid land tax. This is one basis for determining which land is not being used to any significant extent by local villagers but in many cases such land may be considered as “common” land for grazing and casual collection of wild plants that can provide important supplementary nutrition or cash income. On this basis they found that around 20% of the gross area that they surveyed could not be claimed by villagers on the basis of either a title or a tax certificate. Another company that was less scrupulous about negotiating with villagers took over about 50% of the land within their concession area, leaving some residents landless.
### Table 2: Distribution of land-use by province (ha)

<table>
<thead>
<tr>
<th>Land-use</th>
<th>Attapeu</th>
<th>Champassak</th>
<th>Salavan</th>
<th>Savannakhet</th>
<th>Sekong</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Province area</td>
<td>1,032,000</td>
<td>1,541,500</td>
<td>1,069,100</td>
<td>2,177,400</td>
<td>766,500</td>
<td>6,586,500</td>
</tr>
<tr>
<td>Forest land</td>
<td>965,343</td>
<td>1,126,081</td>
<td>914,540</td>
<td>1,896,123</td>
<td>733,793</td>
<td>5,635,881</td>
</tr>
<tr>
<td>Of which unstocked</td>
<td>457,145</td>
<td>293,239</td>
<td>328,592</td>
<td>665,326</td>
<td>327,188</td>
<td>2,071,600</td>
</tr>
<tr>
<td>Paddy + crops</td>
<td>34,386</td>
<td>317,657</td>
<td>130,377</td>
<td>199,341</td>
<td>22,029</td>
<td>703,790</td>
</tr>
<tr>
<td>Perrenial</td>
<td>350</td>
<td>125,016</td>
<td>58,373</td>
<td>19,017</td>
<td>0</td>
<td>202,755</td>
</tr>
<tr>
<td>Non agriculture</td>
<td>36,419</td>
<td>97,454</td>
<td>24,183</td>
<td>81,761</td>
<td>10,677</td>
<td>294,148</td>
</tr>
<tr>
<td>Land for grazing</td>
<td>30,150</td>
<td>117,625</td>
<td>106,450</td>
<td>347,225</td>
<td>27,475</td>
<td>628,925</td>
</tr>
<tr>
<td>Total current LU</td>
<td>1,044,134</td>
<td>1,695,722</td>
<td>1,154,693</td>
<td>2,265,648</td>
<td>792,659</td>
<td>6,996,510</td>
</tr>
<tr>
<td>Concession area</td>
<td>0</td>
<td>38,500</td>
<td>2,000</td>
<td>153,445</td>
<td>14,385</td>
<td>208,330</td>
</tr>
<tr>
<td>Mineral expl. area</td>
<td>2,400</td>
<td>160,133</td>
<td>22,360</td>
<td>196,128</td>
<td>137,440</td>
<td>518,461</td>
</tr>
</tbody>
</table>

21. Table 3 above shows the estimate of current land-use within the five provinces from the Assessment of Forest Cover and Land-use 1992-2002, but with the area of paddy and crop land adjusted according to the Agriculture Statistics for 2006. The total of forest land, agricultural land (paddy, crops and perennial) and “other” land uses more or less accounts for the whole provincial area. The estimate of land used for grazing, which is not recorded, has been arrived at on the basis of the number of buffalo, cattle, sheep and goats assuming 2 large animals and 4 small animals per ha., and is indicative only, as it must be assumed that grazing takes place on fallow agriculture land during the dry season and in “unstocked” forest during the rainy season. The resulting area is smaller than the area recorded in the Assessment as “grassland” in some provinces and larger in others, but is of a similar order of magnitude.

22. The available data does not give the area of agricultural land before the recent influx of FDI in the region, but Table 3 shows that the area applied for as concessions amounts to about 35% of the area of paddy and crops, some of which will have to come from former smallholder’s agricultural land, and some from land clearance, possibly areas of “unstocked” forest. The data on the amounts invested is confusing, since some of the projects include expected investment in processing facilities that may or may not materialise in the future. Assuming an average investment of about US$1,000 per ha. the total investment proposed to date may eventually amount to around US$ 200 million in the five southern provinces if all the proposals materialise. The investments will be spread over several years, but no data is available on progress with the investments already approved.

23. These figures take no account of the area assigned for mineral exploration which amounts to about 8% of the total area, very similar to the proportion nationally. Not all the land conceded for mineral exploration will eventually be mined, but until exploration is complete it will inhibit investment in agriculture. The biggest question mark relates to the “unstocked” forest and its suitability for development for

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4 Urban, water, barren rocky land, swamps and grassland

5 Source: data provided by Provincial PAFOs. The Investment Division of the Planning Department in MAF estimate is 201,888 ha.

6 Ministry of Mines and Energy
agriculture or plantations as opposed to restoration as forest. Much of it is on steeply sloping land and is therefore not suitable for agriculture, while most of the forest on flatter land is dry dipterocarp with relatively low agricultural potential.

24. Two matters stand out from the data;
   • In Savannakhet the area applied for (but not yet all approved) for concessions is almost as large as the area used for rice paddy and crops.
   • In all provinces the area of un-stocked forest is very large totalling more than 2 million ha. and this represents a wasted resource, since it is neither producing agricultural nor forest products to anything like its potential.

Sector Development

25. To meet the development goals of the ANR sector of (i) food security, (ii) commercialisation of agriculture, (iii) stabilisation of shifting cultivation and (iv) sustainable forest management it is clearly important to address the issue of productivity of staple food crops since the four goals are interdependent. Commercialisation of agriculture, mainly through FDI threatens food security and forest cover, unless, at the same time, productivity of traditional agriculture is improved, partly through helping practitioners of shifting cultivation to produce the varieties of rice, that they both like to consume and can sell if they have a surplus, by more productive means and partly by raising the productivity of both rain-fed and irrigated paddy rice production.

26. The NGPES set out agricultural development strategies for the two main zones recognised at that time as shown in Table 2 below. These strategies are still generally applicable, but additional land management systems should now be recognised.

Table 3 : Agricultural Development Strategies for main agricultural/land management systems according to NGPES

<table>
<thead>
<tr>
<th>Lowlands /Mekong Corridor</th>
<th>Sloping/Uplands</th>
</tr>
</thead>
<tbody>
<tr>
<td>Improve and diversify farming systems with increased and intensified cash crop, livestock and fisheries production.</td>
<td>Plan land-use zoning based on bio-physical (slope and land capability) and socio-economic parameters.</td>
</tr>
<tr>
<td>Expand and intensify value added processing by promoting local and foreign investment.</td>
<td>Accelerate participatory land allocation and land use occupancy entitlement.</td>
</tr>
<tr>
<td>Develop market research and information systems and regional market links between producers and wholesale and retail buyers throughout the region.</td>
<td>Diversify farming systems and agro-forestry development through adaptive research, trials and demonstrations of farmers’ fields.</td>
</tr>
<tr>
<td>Develop internationally accepted product grades and standards.</td>
<td>Promote community management of natural resources.</td>
</tr>
<tr>
<td>Rehabilitation, expand and intensify irrigation schemes with community based management.</td>
<td>Sustainable land use management with soil erosion control, afforestation, plantation forestry and conservation management.</td>
</tr>
<tr>
<td>Strengthen and expand rural credit facilities through free competition and market determined interest rates.</td>
<td>Strengthen demand driven extension programs.</td>
</tr>
<tr>
<td></td>
<td>Expand and intensify small-scale community managed irrigation schemes.</td>
</tr>
<tr>
<td></td>
<td>Develop and expand rural savings and credit systems; target credit to support technology adoption by the poor.</td>
</tr>
</tbody>
</table>
Strengthen rural and agribusiness lending by SOCBs and private commercial banks.
Open community market access by upgrading and expanding feeder roads and market information.

27. Within the five provinces it is necessary to recognise some additional farming and land management systems to those defined in NGPES.

In the lowlands along the Mekong, there are now three main farming systems:

- Smallholder rain-fed rice paddy production, predominantly in former dry dipterocarp forest
- Large-scale commercial estate production of commodities, primarily for export and
- Fishing and aquaculture along the rivers and in areas to be inundated where there may be a risk of the water being contaminated with dioxins.

The uplands are better divided into two zones:

- Smallholder rain-fed rice production using shifting cultivation on sloping land at medium altitudes to the west, in former evergreen or semi-evergreen forest. The agriculture in this zone is becoming more diversified with a range of crops. This zone is heavily polluted with UXOs.
- Forest land on steep sloping uplands and highlands which should be predominantly forest, but much has been cleared for shifting cultivation. Large parts of this zone has been designated as National Protected Area (NPA) or protection forest and is in need of rehabilitation and regeneration.

The third zone identified in NGPES is

- Highland Boloven plateau which is still predominantly horticultural production, with coffee of growing importance.

28. The agricultural development strategies described above are still appropriate to promote the development of the smallholder activities within the various zones, but it is necessary to define similar strategies for the other farming/land management systems identified above:

- A strategy is needed for promoting and managing local and foreign investment in the lowlands where it is in competition with food crop production. The government has specified the “2+3” approach where investors propose to use contract farming, but some investors are more interested in conducting their own operations.
- The strategy outlined above is generally appropriate for the sloping land areas in the uplands, where difficult access and the tradition of shifting cultivation make it less attractive for investors. However, these areas are predominantly occupied by ethnic communities and need a substantial amount of capacity building to enable them to adapt to new ways to improve their
livelihoods. A strategy to speed up and reduce the cost of UXO clearance is essential, if these areas are to contribute effectively to the development of the sector.

- A strategy for the management and rehabilitation of the natural forest areas that are designated as NPA and protection forest that supports communities that have encroached into the NPAs to limit further encroachment, manage the forest resources and rehabilitate forest that has been degraded. This should also include the mobilisation of various payments for environmental services.

### Table 4 Additional agricultural strategies for landscape/farming systems

<table>
<thead>
<tr>
<th>FDI Lowlands</th>
<th>Moderate Uplands</th>
<th>Upland Forests</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prioritise crops and investments according to markets trends and availability of suitable sites</td>
<td>Prioritise Districts for clearance of UXOs according to potential for introducing improved land management regimes</td>
<td>Prepare Provincial Land-use Master plans to designate definitive boundaries for NPAs and protection forest</td>
</tr>
<tr>
<td>Evaluate appropriate land rental values for different sites.</td>
<td>Survey local knowledge on crops that can be cultivated and identify private sector partners with links to markets to assist promotion</td>
<td>Survey, delineate and demarcate boundaries of NPAs and Protection forest on the ground and register boundary with NLMA</td>
</tr>
<tr>
<td>Carry out participatory land-use planning in priority districts with potential for investment to identify land available for leasing</td>
<td>Carry out participatory land-use planning in priority districts with potential for investment to identify land available for leasing</td>
<td>Contract local communities to inventory NPAs to determine internal boundaries for core and buffer zones, condition of forest and assets for ecotourism development.</td>
</tr>
<tr>
<td>Appraise technical, financial, social, economic and environmental implications of investment proposals</td>
<td>Determine land areas suitable and available for tree crops (timber, rubber, fruit)</td>
<td>Prepare management plan for NPAs and protection forest to specify areas in need of replanting/rehabilitation</td>
</tr>
<tr>
<td>Identify catchment areas for important water supply and storage facilities to regulate land management practices and improve water management</td>
<td>Identify catchment areas for important water supply and storage facilities to regulate land management practices and improve water management</td>
<td>Train and contract local communities to protect specified forest areas and carry out restoration measures.</td>
</tr>
<tr>
<td>Identify any public sector investment/contribution required to support selected investments</td>
<td>Develop agro-forestry intercropping and silvo-pastoral systems to improve food security for local communities and generate income</td>
<td>Develop agro-forestry intercropping and silvo-pastoral systems suitable for buffer zones to improve food security for local communities, restore forest cover and generate income</td>
</tr>
<tr>
<td>Develop performance standards and indicators for social and environmental safeguards</td>
<td>Develop performance standards and indicators for social and environmental safeguards</td>
<td>Negotiate with WREA and water utilities for payment for watershed protection services</td>
</tr>
<tr>
<td>Arrange independent third party monitoring of investors to ensure compliance.</td>
<td>Develop performance standards and indicators for social and environmental safeguards.</td>
<td>Arrange independent third party monitoring of investors to ensure compliance.</td>
</tr>
<tr>
<td>Where investors propose contract farming, ensure that participating smallholders are fully aware of responsibilities and financial implications</td>
<td>Develop performance standards and indicators for social and environmental safeguards.</td>
<td>Assess scope for attracting REDD funding to prevent further deforestation</td>
</tr>
<tr>
<td>Where investors propose contract farming, ensure that participating smallholders are fully aware of responsibilities and financial implications</td>
<td>Develop performance standards and indicators for social and environmental safeguards.</td>
<td>Invite tenders from tourism companies for development of ecotourism within NPAs</td>
</tr>
</tbody>
</table>

29. The MRC has carried out analysis of watershed landform throughout the Mekong basin, and data is available for each District within Lao PDR. The study
recognises five land form classes ranging from the steeply sloping land in the upper river basins classed as “protection forest” to the almost flat lowland agricultural areas. The data does not classify the soils or the current land-use within each of the zones and so it does not indicate suitability for particular crops, but it does give an indication of the distribution of the land management systems. Table 5 below gives the distribution of the five land classes that correspond roughly with the land management systems identified above. The two “forest” classes, which make up about 25% of the total area in the south, should be retained as forest for protection, conservation on the steeper slopes and sustainable production on the slightly less steep areas. The “agroforestry” and “upland agriculture” zones, which make up about 43% of the total area, corresponds roughly with the “moderate sloping uplands” in Table 4 above and should be developed with a mixture of agriculture, agroforestry, industrial plantations, livestock and natural production forest. “Lowland agriculture” which makes up about 32% of the total area is generally suitable for paddy, crop production and commodity crops, with some forest for soil protection, water conservation and landscape aesthetics.

Table 5 Distribution of land forms within provinces according to the MRC watershed classification

<table>
<thead>
<tr>
<th>Land form</th>
<th>Attapeu</th>
<th>Champassak</th>
<th>Salavan</th>
<th>Savannakhet</th>
<th>Sekong</th>
<th>Total</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Protection forest</td>
<td>89,712</td>
<td>27,546</td>
<td>63,365</td>
<td>43,032</td>
<td>261,152</td>
<td>484,807</td>
<td>7.6</td>
</tr>
<tr>
<td>Production forest</td>
<td>284,691</td>
<td>140,825</td>
<td>155,270</td>
<td>199,934</td>
<td>345,744</td>
<td>1,125,595</td>
<td>17.6</td>
</tr>
<tr>
<td>Agro forestry</td>
<td>195,874</td>
<td>237,024</td>
<td>180,166</td>
<td>312,081</td>
<td>186,711</td>
<td>1,111,855</td>
<td>17.4</td>
</tr>
<tr>
<td>Upland agriculture</td>
<td>172,139</td>
<td>352,260</td>
<td>287,173</td>
<td>742,366</td>
<td>82,213</td>
<td>1,636,120</td>
<td>25.6</td>
</tr>
<tr>
<td>Lowland agriculture</td>
<td>209,522</td>
<td>723,613</td>
<td>262,767</td>
<td>833,264</td>
<td>9,266</td>
<td>2,038,431</td>
<td>31.8</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>951,938</td>
<td>1,481,268</td>
<td>948,741</td>
<td>2,129,746</td>
<td>885,116</td>
<td>6,396,807</td>
<td>100</td>
</tr>
</tbody>
</table>

30. Of significance in Table 5 is:

- the very small area described as lowland agriculture in Sekong, (much of which may be inundated when the proposed hydro-power dams are constructed in the Sekong river)
- the very large areas of the “forest” zones in Attapeu and Sekong, where agricultural development will be both difficult and unwise from an environmental perspective,
- the large area described as upland agriculture, especially in Savannakhet and Salavan where the total area in the two provinces is almost the same as the area of lowland agriculture.
- the area of lowland agriculture in Savannakhet, is slightly bigger than in Champassak, but the proportion used for paddy and crops is much smaller (see table 2) mainly because much of it is covered with dry dipterocarp forest and is therefore not well suited to intensive agriculture.

31. The strategies outlined above in Tables 3 and 4 provide guidance on what needs to be done, with the exception of the following additional strategies for the traditional lowland agriculture:

- the need to promote appropriate mechanisation in the lowlands to increase labour productivity and output and compensate for labour migration.
• the need for more detailed land-use surveys to identify areas where rainfed agriculture and/or commodity crops can be grown,

• the need to promote modern farming practices such as GAP, PFP, DMC and OA for urban and regional markets to increase value.

• The need to establish commodity based producer groups to improve access to factors of production and markets.

Guidance is needed on how the strategies will be implemented. The ADB project provides an opportunity to define sub-project investments aimed at implementation of the strategies identified that will become models for each of the zones. There have been a number of initiatives and projects over the past few years that have developed and/or piloted approaches to most of the farming systems, often with support or assistance from donors, the private sector or NGOs. In order to secure the maximum possible benefit from investing the ADB project funds, good examples of such interventions should be used, wherever possible for scaling up, or extending.

32. It is clear from the analysis above that FDI is not a panacea for commercialising and modernising the sector. There are some good examples that need to be supported and used as models for further development, there are some that are merely inappropriate because they are either in the wrong place or are using the wrong crop because of lack of pre-investment research and proper appraisal, and there are some that are definitely harmful, because they have disregarded social and environmental responsibilities or have displaced food production without compensating for the loss, or both.

33. The strategy for managing FDI must avoid repeating the mistakes of the past and increase the range of benefits for the Lao PDR economy from social development and environmental improvements as well as just tax revenue and foreign exchange earnings. The best of the mining and hydro-electricity investments have brought a range of benefits that more than compensate for the social and environmental costs that have been incurred, and the latter have been recognised and evaluated before investment commenced. MAF and the Provinces need to be equipped to undertake full appraisals of investment proposals, and to become more pro-active in seeking investments that are consistent with the sector development strategy. (For more details on the measures needed to improve the performance of contract farming see Appendix IV)

34. In addition to the private sector that has been investing in land for productive purposes, there are a growing number of local and foreign private sector companies and NGOs that are providing services such as remote sensing, surveying and mapping, social and environmental monitoring, removal of UXOs and provision of extension services. As with investors, the quality of the services provided by these companies varies and not all provide good value for money, but the use of competitive bidding can help to raise standards and reduce costs in the medium-term.

**Implementation Partners**

35. Major problems faced by government in implementing the kind of measures specified in Tables 2 and 3 above, are lack of experienced staff at provincial and district level and an adequate recurrent budget to cover operating costs on a long-term basis. There are many examples quoted of District level staff being unable to properly perform their duties either because of lack of transport (motorcycles) or lack
of funds to run and maintain the vehicles or both. Many donor funded projects in the past have failed to achieve sustainability, because activities stop as soon as the flow of project funds stops. In order to avoid such problems in the future, it is worth seeking to contract many of the needed services to the private sector or NGOs for an agreed period, during which time the selected contractor would seek to make the service self financing. There are numerous examples of farmers being willing to pay for a service when they find it really beneficial, and the private sector is more efficient than government at responding to the market needs and so generating revenue.

36. Many private sector service companies and NGOs are in touch with both domestic and international market developments and opportunities that government officials may be unaware of, and therefore are better placed to provide support for smallholder farmers in increasing productivity of existing crops and diversifying into new crops with good market prospects. There are many NGOs that are linked to trading and marketing organisations like Fairtrade that can help farmers to access new international markets and get better prices for their products than are given by local traders. At present smallholders often get such support from traders or companies wishing to promote contract farming for specific crops. Again, the results are variable, with some extremely successful examples, and others where farmers have been duped by unscrupulous operators and in some cases have become indebted by taking credit and then failing to achieve production standards.

**Government Role**

1. **Sector policy and management**

37. The role of government, primarily through the Ministry of Agriculture and Forestry should be to develop appropriate policies and strategic plans for the development of the sector and determine priorities and the resources needed to implement the policies and plans. With limited government resources available for the foreseeable future, considerable reliance will have to be placed on private sector investment, much of which will have to come from overseas. The government therefore needs to develop guidelines for private investment in the sector to ensure that the resources (both human and financial) that the private individuals and companies can provide are used in the best interests of the national economy.

38. On the one hand it is necessary to properly appraise, supervise, and monitor the performance and compliance of companies and NGOs that submit proposals to engage in the sector, whether they are investors or service providers and, when necessary, impose sanctions on those that do not meet required standards. On the other hand it is also necessary to identify interventions that are needed for a balanced development of the sector where private sector involvement is desirable but is not happening because of some constraining factor(s). In such situations it may be possible to attract investment by providing incentives in the form of essential public sector investment that will reduce costs (e.g. improving access to remote areas) or by identifying elements of the cost that have economic, social or environmental benefits but which prevent the activity from being financially viable, so that government support is justified. (For more details on how capacity needs to be strengthened to deal with these issues see Appendix II)

39. The government is already, in effect, providing subsidies to the private sector in the form of low land rentals and tax concessions, but these are not structured in a way that helps the government to achieve its goals and are not always justified by the benefits to the country as a whole. A schedule of land rents that is related to the value of the land, taking account of access and site conditions (soil, topography,
climate and vegetation cover) would ensure that the best land was used for valuable crops, while lower rents in remote and difficult areas where yields are likely to be lower would offset the additional costs and lower returns from operating in such areas. MAF and the PAFOs need the expertise to enable them to assess realistic land rents and use them as a tool for managing investment in the sector until such time as a market mechanism develops.

40. One of the measures (No. 8) adopted by the government (see box 1 below) to achieve the development goals for the sector is the modernisation of farming practices to increase productivity. From the analysis above, it is clearly of extreme importance to increase smallholder productivity and to improve the quality of the products in order to increase income and improve livelihoods. The need to exercise quality control is also recognised, and it will remain an important government function to establish internationally acceptable standards, monitor production systems and to carry out tests both to certify products and detect any pollutants. The Department of Agriculture has established the Clean Agriculture Development Centre (CADC) with both an Inspection and a Certification Capacity. The Department has prepared a proposal for a sub-project with an estimated investment of US$3.54 million for facilities and staff capacity building to bring the Centre to the required standards to undertake all the necessary functions nationally. The services provided by the Centre would be charged to commercial companies, but may need to be subsidised for smallholders in the short-term.

Box 2. Measures adopted by government for implementing the four Goals for the ANR Sector

- **Measure 1: Agriculture & Forestry Sector Perspective**
  - Enhancing cooperation to support & better understand the responsibilities, ownership, & ways of implementing the agriculture sector’s development priorities from now to 2010.

- **Measure 2: Survey & Allocation of Agriculture & Forestry Production Zones**
  - Zoning for rice production & increasing productivity in irrigated & non-irrigated areas.
  - Zoning for intensive agricultural production & development of new cooperative system;
  - Review of the land lease policy; finalization of forest land allocation; formulation of detailed policy & measurements to strictly enforce & manage protected areas, watersheds/upstream/water sources & other areas.

- **Measure 3: Seed & Breed Availability**
  - Improve seed varieties, emphasizing improved rice & coffee varieties.
  - Improve animal breeding using hybrid technology & improved grass seed for forage.
  - Enhance investment, training & marketing.

- **Measure 4: Extension Services & Human Resources Development**
  - Promotion of high productivity & low cost production technologies.
  - Capacity building of DAFO; development of technical staff & establishment of technical & information service centers for village development groups.

- **Measure 5: Establishment of Village Development Groups linked to Sector Development**
  - Implementation of the Politburo Order to establish village cluster development groups (koum ban pathana);
  - moving development towards the grassroots level.

- **Measure 6: Organizing Production & Establishing Economic Structures from the Local / Grassroots Level**
  - Strengthen production groups in pilot areas; formation of production cooperatives for marketing systems, processing services, communications, savings & credit.

- **Measure 7: Irrigation & Prevention of Droughts & Floods**
  - Allocation of irrigated areas for integrated agricultural development;
  - Improve & expand reservoir systems to mitigate droughts & floods; maintenance of irrigation pumps; promote energy efficient pumps.

- **Measure 8: Increase Productivity (through the application of fertilizer, compost, improved seeds, advanced technology)** GREEN REVOLUTION TECHNIQUES
  - Support intensive use of technology to increase agricultural & forestry productivity.

- **Measure 9: Quality Control through SPS & Disease Prevention**
  - Aim to improve bio-safety of food for consumption & ensure compliance with ASEAN & WTO procedures & principles.

- **Measure 10: Financial Mechanisms**
  - Improve the use of assistance provided by development partners & internal & external public & private investment.

- **Measure 11: Achieving Economies of Scale in Production (lowering production costs)**
  - Doubling productivity by: expanding the production of goods with a comparative advantage; applying modern technology; energy efficiency; & developing policies & quality control measures to support production.

- **Measure 12: Implementation of Monitoring & Evaluation**

- **Measure 13: Decentralization**
  - Instituting a management hierarchy that supports collaboration among the Government, people & economic sectors.
2 Land-use Planning

41. The government also needs to resolve all the uncertainties over availability of land so that smallholders and companies have the security necessary to generate the returns needed to recover their investment in improving the land. This requires the National Land Management Authority (NLMA) to coordinate all the economic sectors with interest in land to resolve which land-use should take precedence in areas of overlapping interests. Provincial Land-use Master Plans urgently need to be prepared and endorsed by the National Assembly. The definitive plans that identify important national assets such as mineral deposits, National Protected Areas (NPA) and reservoirs created by dams, need to be at provincial level in order to be at a sufficiently large scale to avoid any ambiguity and to facilitate identification on the ground.

42. The total area where there is overlap between sectors is relatively small overall, and so draft Provincial Land-use Master Plans (PLUMPS) covering all the land where there is no inter-sectoral dispute could be produced relatively easily and quickly. This task should be contracted out to one of the land-use survey companies operating in the country. NLMA would then have to mediate between the sectors only in the areas where there are competing interests. The publication and distribution of such an Indicative Plan would enable MAF to proceed with the detailed land-use planning at village, Kumban and District level to identify land that is used/needed by local communities, and land that can be available for leasing to potential investors.

43. The detailed village, Kumban and District level land-use planning is already being tackled in various parts of the countries by a range of organisations, including donor funded projects, NGOs and private sector companies. It is essential to speed up this process and prioritise and coordinate all the initiatives so that interventions aimed at developing the sector can proceed effectively. The GTZ funded LPDP is currently co-ordinating the preparation of guidelines for village and Kumban level participatory Land-use planning by a working group from MAF and NLMA, which is expected to be published in September 2008. These guidelines can be used as terms of reference for private sector involvement during project implementation.

3 Clearance of UXO

44. As indicated above the “upland agriculture” zone is extensive in the south and offers high potential for growth and development, but it also the zone with the biggest concentration of UXO. According to international convention it is the responsibility of the bombed country to clear unexploded ordinance, but countries with limited resources can request assistance from the international community. The most important form of ordinance from the point of view of agricultural development is the cluster bomb of which it is reported that over 260 million of the sub-munitions (bombees) were dropped on Lao PDR between 1965 and 1973.

45. At the Oslo Conference on cluster munitions in February 2007 the participating countries committed themselves to “Conclude by 2008 a legally binding international instrument that prohibits the use and stockpiling of cluster munitions that cause unacceptable harm to civilians and secure adequate provision of care and rehabilitation to survivors and clearance of contaminated areas”. Since the initial Oslo Conference there have been three further meetings (Lima, Vienna and Wellington) and there are now 19 countries in the Asia-Pacific region, (including Lao
PDR) subscribing to the Wellington Declaration that “affirms the objective of concluding the negotiation of such an instrument prohibiting cluster munitions in Dublin in May 2008.

46. By the time that this project is implemented, it is very likely that such an international agreement will be in force, and Lao PDR, being the country with the highest level of contamination, will be in a very strong position to request help from the international donor community to rid itself of these weapons. This is a particularly opportune moment for Lao PDR to take a strong initiative, because the topic has a very high international profile at the moment, and Lao PDR can argue that its ability to increase food production, which is also an issue of international concern is severely hampered by the presence of UXOs in some of its most productive land.

47. The current arrangement for bomb UXO clearance is very “bottom up”, whereby requests are made from Village and Kum ban heads through Districts and Provinces to UXO Lao under the Ministry of Labour and Social Welfare, who then prioritise and program the clearance. UXO Lao has a limited budget and with current costs being around US$2,400 per ha. the areas cleared annually are relatively small (hundreds of hectares not thousands) In addition to the government programme, NGOs and private companies wishing to develop areas such as for road or mines, can contract one of the commercial ordinance clearing companies directly. The National Regulatory Authority for UXO/Mine Action Sector in Lao PDR (NRA) in the Prime Minister’s Office coordinates the national effort, represents the government at international meetings and maintains a database on both the location of the UXO and areas that have been cleared.

48. The NRA have proposed that the Ministry of Agriculture and Forestry should make representations to the Prime Minister’s Office for a concerted effort to clear UXOs from areas with high potential for agricultural development, so that the NRA can use the Oslo process to seek additional support for Lao PDR to facilitate efforts to increase food production.

49. A proposed sub-project in Xepon and Nong Districts of Savannakhet Province and Ta Oy and Samuoy Districts in Salavan Provinces would promote agriculture and forestry activities in a region with high economic potential, where there are also high levels of poverty and food insecurity, because investment is inhibited by the UXOs. The initial investment proposed would cover about 15,000 ha. but it cannot be implemented while there is a risk of the participating farmers and their families being injured or killed by UXO. The current cost of complete clearance of such an area is around US$ 30 million, which could be spread over about three years. The costs could probably be reduced through economies of scale if the programme was planned in a systematic manner, and the specification of the clearance (in terms of what should be cleared and to what depth) could be made in accordance with the way in which the land will be used. Without such an investment a substantial area with high agricultural potential will remain an idle asset and the people in the area will remain in poverty and under continuous threat of food insecurity.

Technical oversight and support

50. With most of the output from the ANR sector coming from smallholders for the foreseeable future, it is essential that farmers are provided with strong technical support, until such time as private sector capacity has developed. The government policy under the new Lao Extension Approach (LEA) is to establish Technical Service Centres at Kum Ban level which would provide both technical support in the form of
extension for appropriate agricultural, livestock and forestry systems as well as services such as veterinary services for livestock, certification services for OA and other specialised agricultural systems, as well as "seed and breed" services for improved varieties of crops and livestock, including fish fingerlings for aquaculture.

51. Government capacity to provide this level of support nationwide is very limited, as the national facilities to train the specialists needed is either limited or non-existent and budgets are insufficient to cover operating costs, even where staff complements have been increased. All the specialist staff currently working in these areas have been trained overseas. The government should therefore seek private sector involvement to provide technical support for crops or commodities and services, from companies that are already operating in the sector, where they can operate profitably and reserve the limited government resources to provide the services in the areas where private sector cannot be persuaded to operate.

52. Service centres established by the government should be provided with business management skills with a view to them becoming self-financing within a limited period and then sold to the managers or to an interested company.

The Proposed Project

1 Objective

53. The project will contribute to increased growth of the ANR sector which will contribute towards improved food security, accelerated poverty reduction, and improved environmental conservation. The immediate project objective is to promote modernisation of the sector by: (i) supporting the preparation of land-use master plans for five Provinces that will establish a framework for prioritising the land-use according to economic sectors and establishing definitive boundaries for land to be reserved as forest for production, protection and conservation. (ii) strengthening the capacity of national and provincial government ANR sector agencies, to undertake strategic development planning, including appraisal and evaluation of development proposals, assessment of appropriate rental values for land and monitoring performance of sector stakeholders. (iii) funding specific investments in the sector that promote the development of representative land zone/management systems to increase output and improve value added chains for selected crops and contribute to poverty reduction by generating income and employment, and creating assets for the poor households and raising considerable revenues for the Government. The project design and monitoring framework is in Appendix 1.

Activities and Outputs

54. The first activity, land-use planning, has two major objectives: the first is to address the major constraint to development of the sector at present, by removing uncertainty over current land-use and identifying land that can be made available for new investors that will not lead to conflicts with current users or reduce land available for food production; the second is to identify areas where there should be restrictions on land-use for economic reasons such as mining or environmental reasons such as protecting important water supply catchments or biodiversity conservation. Thr

55. The second activity is capacity building particularly in the provinces, where it is currently extremely weak, but where primary responsibility for implementation of policy lies. Capacity will be strengthened at provincial level for strategic planning and economic appraisal to improve the quality and performance of public and private sector investment as well as capacity to ensure that sustainable environmental and
participatory social standards are adhered to. Capacity will also be strengthened at
district and kum ban level both for government officials and communities through the
promotion of Growers Associations in association with project investments, to
improve access to technical support, micro-credit and markets for smallholders who
produce most of the sector output.

56. For the third activity the project will develop **sub-projects for investment** to
implement strategies for the development of the six farming systems/land
management zones that characterise the sector in the southern provinces. The sub-
projects will be selected to: a) scale up successful activities that have been piloted by
projects; b) provide public sector investment required to give incentive to technically
and financially feasible proposed private sector investments to support social and
environmental costs; c) support the extension of technically and financially feasible
private sector investments to enable a larger number of smallholders to participate
and benefit from market access created by the investor. The sub-projects will be
designed to include any necessary public sector investment such as roads or
marketing infrastructure, as well as undertaking necessary kum ban and village level
participatory land-use planning and providing capacity building for farmers groups
and involved government officials, as required for sub-project implementation.

57. **Project Scope.** It has been agreed with the Ministry of Agriculture and
Forestry that the project should focus on five provinces in the south. (Savannakhet,
Salavan, Sekong, Attapeu and Champassak). The project will be a sector project
and will support the Ministry to improve coordination of strategic planning and
management of the sector and the creation of a policy and regulatory environment
conducive to steady and sustained growth. It will also support the selected provinces
to improve strategic planning appropriate to the conditions prevailing in each
provinces, improve the quality of decision making through better technical and
economic information and improve implementation of policy and plans through better
use of resources and improved monitoring. The provinces will also be supported to
design and evaluate potential sub-projects for farming systems/land management
zones that will be submitted to the Project Executive Office for approval and then to
implement approved sub-projects that have been approved.

58. **Land-Use Planning.** The National Land Management Authority (NLMA) is
charged with preparing land-use master plans for endorsement by the National
Assembly. This is an urgent task as the master Plans define the land that MAF is
responsible for managing. The Master plans should also define areas that will be
subject to special management restrictions such as National Protected Areas and
critical water supply catchment areas, and will provide a basis for determining the
“national interest” in deciding whether land should be granted for mineral extraction
or conservation or other important use. However, NLMA capacity to undertake this
task is extremely limited and will remain so for the immediate future. In order to reach
a position where MAF can manage the sector effectively the project will support the
preparation of “Draft Provincial Land-use Master Plans” (Draft PLUMPs) that will
prepare the plans covering all areas where there is no conflict between economic
sectors. Since mineral concessions cover around 8% of the land area in the southern
provinces, it is anticipated that the draft PLUMPs will be able to define the land
classification for about 90% of the total provincial area and will be able to highlight
the limited areas where there are potential conflicts of interest. (See AppendixIII)

59. Although NLMA priority is to produce National Land-use Master plans, it is
considered that the scale that it will be necessary to use for national maps will be too
small, and the resolution to low for the definitive identification of the land units. The
project will therefore fund contracts with private sector survey companies to prepare
Draft PLUMPs for the five provinces together with ground truthing of the boundaries with GPS of all areas requiring special management prescriptions, for endorsement by the Provincial Land Commissions. Negotiation and legalisation of the definitive PLUMPs by NLMA and NA will take time, but approval of the draft PLUMPs by the Provincial Land Commissions will enable sector planning to proceed on a sounder basis in areas where there are no conflicting interests.

60. **Capacity Building.** The project will build capacity at national, provincial, district and kum ban levels. At national level the focus will be on support for the development of an inspection capability to monitor the performance and compliance of concessions. The management of a national land use planning and management system, including capacity to evaluate and appraise proposals for concessions and sub-projects to be financed by the project with reporting procedures, information flows, and delegated authorities. The relevant legislation affecting land use needs to be reviewed to harmonise the powers exercised by Ministries and Provinces. (see Appendix III)

61. The provinces’ capacity to digitally handle land-use maps and to create and edit maps showing concession and other important boundaries and exchange such maps with MAF will be strengthened. Provincial Agriculture and Forestry Offices (PAFOs) will also be strengthened to prepare proposals for sub-projects including preparing financial and economic evaluation. PAFOs will also be able to use this capacity to undertake preliminary appraisal of proposals for concessions.

62. At District and Kum ban level the capacity building would be incorporated into sub-project design and would focus on expanding training in participatory land use planning for extension staff, training in the interpretation of Provincial land-use plans, including how to contribute to them. District staff could attend short courses on land use planning at Provincial level provided by the training team and also receive awareness training in the consequences of land use change for those affected and in monitoring and enforcement of land use designations. (see Appendix III)

63. The project will also build capacity of Farmers and Grower’s Associations in technical, marketing, business management and financial skills in association with investments in sub-projects. Where appropriate, the project will support the establishment of District Technical Service Centres with capacity according to the needs of the region where they are located. Such Centres may be established through contracting NGOs or Private companies with relevant experience, who would be expected to develop the Centre to become self financing by the end of the project.

64. **Sub-Projects:** The project will provide funds for the implementation of a number of technically, financially and economically feasible sub-projects. Two initial sub-projects have been developed as representative investments for two of the six farming system/land management zones referred to in Tables 3 and 4 above. The provinces have submitted summaries of priority sub-projects listed in Appendix YYY. These will need to be refined and evaluated in detail and then submitted to the Project Executive Office for approval. Priority will be given to sub-projects that scale-up activities that have been successfully piloted by government, NGOs or private sector over the past few years and to strengthening or widening the scope of, private sector investments that are demonstrably benefitting local communities and promoting sector growth.
Special Features

a. Poverty Reduction and Livelihood Improvement

65. The Government considers a person as poor who does not have access to 2,100 kilocalories per day, which is roughly the equivalent of an income of $10.25 per capita per month in current prices. The rural poverty line is considered 15–20% lower than the urban poverty line. In the target provinces, poverty rates range from 30–40%; about the same as the national average of 39%. Women also suffer from poverty in gender-specific ways. Poverty for women means having a greater work burden, poorer health, lower education levels, less food, and inadequate rest than men. Dependency ratios are high implying that for poor households, large families are part of strategies to deal with poverty. Chronic food shortages are common especially in the 18 Districts in the five provinces that are among the 47 priority poor district nationally: rice shortages for 3–5 months were reported during PRAs. The main causes of food shortages are: (i) reduced access to productive land, (ii) lack of forest resources, and (iii) inadequate income from NTFPs. Land and forest allocations were stated to be unfair to the poor. Unemployment and underemployment rates among the poor households are as high as 50%. The sub-projects will address the primary concerns of the poor, generating employment with cash income, providing sustainable livelihoods, and creating assets in the form of productive plantation land.

b. Environmental Management

66. The Project Preparation noted many examples of serious environmental problems arising from current activities in the sector. These include poor soil management practices within water supply catchment areas, clearance of forest, illegal logging, planting of monocultures on steep slopes. At the present time there are no regulations regarding the management of water supply areas and where there are regulations the provincial and district government staff do not have the capacity or resources to monitor compliance with the regulations by concession holders. This is one topic that will be addressed by the project.

67. Over the past few decades, deforestation has been very severe throughout the country, and illegal logging, shifting cultivation and encroachment are persisting. According to the Assessment of Forest Cover and Land-use about 1.8 million ha of “current forest” have been lost between 1992 and 2002 nationally. In the southern provinces the biggest loss has been in the important “upper mixed deciduous” forest type, amounting to almost 500,000ha during the same period. This destruction of the forest not only represents the loss of a potentially productive asset, but it has also resulted in the emission of substantial quantities of CO₂ that has contributed to global warming and climate change. The project will address the implementation of the strategy for the moderately sloping upland zone where a holistic approach to land-use and management will be adopted using agro-forestry techniques that will rehabilitate tree cover while increasing the output of food and other crops. The sub-project will also seek to mobilise funds from REDD initiative and CDN for

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7 Based on the Lao Expenditure and Consumption Survey III (2001), food poverty line in rural areas was KN80,000/person/month or, $9 at current exchange rate. In the poorest Districts in the five provinces the value of paddy produced by average household is $50 and because of the very low yield (typically 0.5 t/ha) there is severe food deficit. Rural poor make up for this shortfall by harvesting mushrooms, bamboo shoots, fish, and some game from nearby forests.
rehabilitation and reforestation of areas of protection forest and protected forests adjacent to areas being developed for food and fodder production.

**Stakeholder Consultation**

68. During the implementation of the TA 4348–LAO (May 2007 to June 2008) workshops and a number of meetings in provincial, district offices and villages were organized to seek views of these stakeholders.

**Cost Estimates**

69. .to be determined during project appraisal

**Financing Plan**

70. ADB will provide $20 million from its Asian Development Fund resources to finance the project. Additional funds may be included from IFAD and other donors

**Implementation Arrangements**

71. The Ministry of Agriculture and Forestry will be the Executing Agency for the Program as a whole, including the Land-use planning and Capacity Building, but PAFOs and Departments within MAF may be the Implementing Agency for specific sub-components or sub-projects as appropriate.

**Project Management**

72. To meet its objective, the project will establish a Project Management Board (PMB) with an Executive Office (EO) to promote the sector development. The EO will closely coordinate several existing agencies within the Ministry of Agriculture and Forestry and bring together and strengthen existing capacity in land-use planning, mapping, investment appraisal and strategic planning. It will also ensure close cooperation with NLMA. The Chairman of the Project Management Board will be the Vice Minister from the Ministry of Agriculture and Forestry, and the members of the Board will be Director-General of the Technical Departments within MAF and from Departments of other concerned line Ministries. The term Board is used rather than the traditional “Project Coordinating Committee” to signify that the primary function is decision making with regard to implementation rather than discussion and coordination. The Figure 3 below gives the agencies that will be involved in project implementation and the linkages that will be established.
73. The EO in close cooperation with NLMA will have the Draft PLUMPs prepared and ensure that areas that require special management such as NPAs and water supply catchment areas are identified on the ground and on maps and are registered with NLMA to give them legal status. Based on the Draft PLUMPs the EO will prepare detailed development plans for the sector and will also appraise proposals from provinces for sub-project investment in consultation with the concerned technical departments of MAF and make recommendations to the Board for approval.

74. The Project will establish an ANR Sector Development Fund, (ANRSDF) which the Project management Board will be empowered to draw upon for funding project activities and investments. The fund may be used to finance contracts with private sector companies and NGOs for implementing specific project activities. The EO will prepare a model contract format. For general services contracts will normally be subject to competitive bidding, but where a company or NGO is investing its own funds and the project is complementing its activities the payments will be subject to negotiation against clearly specified terms of reference.

75. The project management Board will comprise the following members:
   (i) Vice-Minister of Agriculture and Forestry (Chairman),
   (ii) Director-General Planning Department,
   (iii) Representative from Ministry of Finance,
   (iv) Representative from Ministry of Planning and Investment,
   (v) Representative from Ministry of Industry and Commerce,
   (vi) Representative from Minister of Public Works and Transport,
   (vii) Representative from Ministry of Mines and Energy,
   (viii) Representative from National Land Management Authority,
   (ix) Representative from Water Resources and Environment Authority,
Staffing

76. An internationally recruited CTA will provide support to the Director of the EO for at least the first three years of the project, after which, according to progress the assignment may be reduced to a part-time position with up to six months annually according to needs to be determined at a MTR.

Implementation Period

77. The implementation period will be 5 years (2009–2013). Most of the first year will be spent on land-use planning in the five provinces, during which time each of the five PAFOs will be responsible for developing in detail the sub-projects for submission to the EO. Implementation of the two sub-projects identified during project preparation will begin as soon as possible after the project becomes operational.
APPENDIX I. PROBLEM TREE ANALYSIS

Underdeveloped ANR sector resulting in economic growth and poverty reduction below potential

Foregone Government revenues and enterprise profits
Foregone foreign exchange earnings
Foregone rural livelihood and employment opportunities
Conflicts over land-use rights
Underdeveloped ANR sector input/output markets

Inadequate and ineffective provincial ANR sector development strategies

Lack of institutional coordination
Weak institutional capacity
Inadequate policy & regulatory frameworks
Insufficient data, information, & analysis
Lack of appropriate technology

Diffused land delineation & allocation responsibilities
Ineffective extension delivery mechanism
Inappropriate financing products
Ineffective ANR products marketing support
Inadequate financial resources

Insufficient & inappropriate training
Lack of strategic planning & management
Diffused & inefficient decision-making
Insufficient attention to...

Inadequate provincial ANR sector strategy
Overregulated trade, transit, and customs
Cumbersome tax & licensing procedures
Unconducive investment environment
Unclear contract farming procedures
Inappropriate land allocation procedures
Inadequate financial resources

Inadequate land capability & crop inventory data
Production and yields data for crop species not available
ANR products market data not compiled and published
Incomplete forest-based livelihood data
Inadequate financial resources

Weak research & development
Unawareness of appropriate technology
Low crop productivity
Insufficient technology for value addition
Inadequate financial resources
### APPENDIX II. DESIGN AND MONITORING FRAMEWORK

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<th>Data Sources/Reporting Mechanisms</th>
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| Impact         | - Provincial ANR annual GDP growth exceeds 4% by end of project  
- Proportion of households living below the poverty line in participating provinces is reduced by 75% by 2015 | - National Growth and Poverty Eradication Strategy progress reports  
- Agricultural statistics  
- Concession agreements monitoring | - A: PAFOs are effective in providing support to all types of crop development  
- A: The private sector’s interest in this subsector remains strong |
| Outcome        | - Existing private sector ANR developments in provinces reviewed  
- Operational system for guiding and supporting ANR sector growth in place at the provincial level and functioning by end 2010  
- Five to ten new provincially guided ANR modernization projects which meet sound technical, economic, social and environmental criteria approved and operational by 2014. | - Project Performance Management System (PPMS) reports  
- PAFO reports  
- Project review missions  
- Project completion report | - A: The Government continues to support PAFOs  
- A: International companies find incentives package attractive and it ameliorates international risk assessment for Lao PDR |
| Outputs        | - Land use and suitability inventory completed  
- Implementation of comprehensive participatory land-use planning mechanism for fair and transparent allocation of rural land to households, communities and prospective investors that optimizes economic benefits from land resource use in accordance with guidelines to be published by NLMA  
- Land suitable for sustainable development of crops with high economic potential identified by mid 2010  
- Participatory land use planning mechanism established in core projects  
- Land suitable for development of "nucleus estates" and/or commercially, economically, socially and environmentally sustainable land-lease and contract farming identified and agreements with companies negotiated by end 2010 | - PPMS reports  
- LPA annual reports  
- Project review missions  
- Project completion report | - A: Suitable staff identified and available |

#### 1. Land-use Evaluation and Planning
- Land-use and suitability inventory completed  
- Implementation of comprehensive participatory land-use planning mechanism for fair and transparent allocation of rural land to households, communities and prospective investors that optimizes economic benefits from land resource use in accordance with guidelines to be published by NLMA  
- Land suitable for sustainable development of crops with high economic potential identified by mid 2010  
- Participatory land use planning mechanism established in core projects  
- Land suitable for development of "nucleus estates" and/or commercially, economically, socially and environmentally sustainable land-lease and contract farming identified and agreements with companies negotiated by end 2010

#### 2. Establishment of National and Provincial Agriculture Sector Modernization Units
### Design Summary

- National & Provincial government capacity is developed to guide and monitor ANR sector investment through establishment of agriculture sector modernization units (ASMUs) in MAF and provincial agriculture offices.

### Performance Targets/Indicators

- Provincial ANR sector government staff appointed to AIPUs and capacity strengthened through on-the-job training
- Provincial ANR Sector Development Funds established for support of development activities

### Data Sources/Reporting Mechanisms

- PPMS reports
- PAFO annual reports
- Project review missions
- Project completion report

### Assumptions and Risks

- A: Suitable Lao staff with adequate minimum qualification are available
- R: The Government interferes with the selection process of LPA staff

### 3. Support to ANR Investment

- Existing ANR investments under moratorium reviewed and renegotiated
- Core subprojects designed in detail and implemented
- Additional subprojects identified
- Provincial government contribution to the subprojects identified and funds allocated
- Additional subprojects implemented
- A range of investment activities from agribusiness through contract farming, through commodity plantations, downstream processing and storage, and watershed protection are put into operation.

- Review and renegotiation of existing enterprises undertaken by end 2009
- 2 core subprojects under full implementation by mid 2010
- Three to seven additional Subproject agreements signed by provinces and private sector and/or cooperative entities by end 2010
- Five to ten new agriculture sector enterprises operational by 2014.

### Activities (to be completed based on TA findings)

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APPENDIX III. CAPACITY BUILDING

Land Concessions, and Land Use and ANR Sector Planning:

Introduction

78. The large and growing demand for land presents both problems and opportunities for the Government of Lao PDR. This note proposes capacity building in MAF to help cope with the current problem of land concessions, as an interim solution. Further capacity building in NLMA and Provinces is needed to set up a devolved system for management of foreign direct investment and land use planning. In the longer term, ANR sector planning by the Provinces provides a means of making better use of the opportunities presented by the scope for developing Lao’s natural resources, and the large foreign interest in it.

The demand for land concessions

The problem

79. John Schiller’s Inception Report describes the growing scale and speed at which land is being allocated for plantations in Laos. The project preparation team saw many examples in the five Southern Provinces, both good and bad. For example, a sugar cane plantation in Savannakhet had deprived villagers of land they used, caused siltation of an irrigation dam with the consequence of reduced water for village crops, paid low rents and was producing a poor crop that would be harvested by immigrant labour. In Champassak two large concessions have been granted in the Dong Hua Suo National Protected Area. At the other extreme, a forestry plantation company working in eastern Savannakhet and Salavan acted in full consultation with villagers and District staff to identify available land, trained Lao staff, provided work, improved village access, was demonstrating improved cropping techniques and thereby helping establish settled farming, and was generally welcomed.

80. The phenomenon is not restricted to the South of course. The GOL does not have a complete record of all concessions, but a search of reports in the Vientiane Times found 10 projects in the 18 months from January 2007 with an area of some 200,000 ha in the ANR sector alone, and is probably incomplete. The impression created by press reports is that, over the length and breadth of the country, there are many examples of damaging investments providing little of value to Lao PDR.

81. Other unsatisfactory aspects that have been claimed include: imprecise and unfair contracts, unilateral cancellation of contracts after valuable timber has been extracted, uncompensated damage to smallholders’ crops, designation of stocked forest as ‘degraded’ prior to planting, and very low rents and apparently unnecessary tax breaks. The build up of discontent led the GOL to declare a moratorium on land concessions in May 2007.

82. This problem arises, in part, because decisions are taken without appraisal of the benefits and costs for smallholders, the consequences for food security, poverty reduction, sustainability, gender or ethnic relations, or the environmental impacts. Neither MAF nor the Provinces have the capacity for project appraisal. The Provinces also suffer from limited capacity for land use planning and administration and so are not able to protect smallholders or enforce contract commitments.

83. Without access to complete records, MAF is not able to assess the overall impact on the GOL’s goals for the sector, or take any action needed. Thus, for
example, it seems more than likely that the allocation in a piecemeal way of very large areas for rubber plantations will reduce food security at a time of rising food demand and prices; but the scale of the impact cannot be known unless all the data is brought together. Without this, realistic planning for the sector is impossible.

84. There is also a political aspect. Decisions have been mainly taken at Provincial and District level, but records are not always kept and accountability is unclear. Corruption is suspected, but difficult to prove in the absence of transparency. The problem is caught up in the relations of power between the central and provincial governments and the groups with influence in the Party. A consensus is needed that the process of granting land for development must be managed carefully to ensure that Lao PDR benefits from its natural resources. Otherwise, much of the control of the development of the land will pass into foreign hands, with no assurance that the country will gain economically and not suffer socially and environmentally.

**Land use zoning and land use planning**

85. Uncertainty about the zoning of land for different uses is a complicating factor. There is no authoritative land use map identifying the current allocation of public land for agriculture, forestry, protected areas, mining, hydroelectricity, urban settlements, etc. Ministries exercise powers under various laws made at different times that have not been harmonised; and there is no prescribed procedure for settling conflicts between the sectors that arise from competition for land. So there is no objective means of deciding on the best use of land, or of avoiding wasted investments when land use is changed; when, for example, a plantation is flooded for hydro.

86. The GOL has four principal goals for the ANR sector: commercialisation of agriculture, food security, stabilisation of the forest area, and poverty reduction. For MAF to be able to achieve these goals it has to be able to select which crops and farm systems to encourage in the most suitable locations as being the ones of most value. As the agronomist’s report shows, in addition to the 40 to 50 existing crops there are a further hundred or so with commercial potential. Some of these would undoubtedly offer better returns to the country and contribute more effectively to achieving the four goals than some of the large scale, low value plantation developments being pursued through concessions. To assess them requires an understanding of their agro-ecological requirements, their markets, and the viability and economics of the farm systems for Lao farmers. MAF and the Provinces do not command the range of expertise in agronomy, and do not have the agricultural economists and marketing expertise needed to evaluate the financial feasibilities of new agricultural concession proposals, or to assess the value of new crops and farm systems for farmers. These are essential requirements for land use planning for the ANR sector aimed at realising the four goals.

A staged approach to managing concessions and developing land use planning

87. In the longer term the opportunities offered by Lao’s position at the centre of very large and growing markets can be exploited through ANR sector planning, which provides a means of steering development in desired directions, and of promoting high value investments, as described below. But capacity to do this will take some years to build, and some of the necessary information is not presently available and will have to be collected by research. At the rates at which land was being alienated before the moratorium there could by then be very little ‘free’ land left to plan for. If the ending of the moratorium is not to produce an unmanageable deluge, there will
have to be a holding operation while capacity is built up and a transparent and accountable system installed.

88. A practical approach is to tackle the issues in three stages:

1. An **interim solution** in which MAF deals with agricultural land concessions, supported by TA expertise in agricultural project appraisal.
2. Capacity building in Provinces to enable them to take over responsibility for land use planning and decisions on land concessions. As their capacity to manage and appraise investments, and to administer and plan land use, is increased, Provinces could assume a greater role, while central Ministries would be less involved in particular cases, and their role would be to assist and supervise within a **devolved system of land use planning**.
3. When Provinces have become competent in land use planning and project appraisal, they could be assisted to produce **ANR sector plans**.

At the same time, to help resolve conflicts between sectors and to prepare the ground for sector planning, the GOL would be assisted to produce authoritative land use maps showing zones allocated to the various sectors.

**An Interim Solution**

89. To deal with the urgent issue of land concessions it is proposed that, when the moratorium ends, MAF should carry out the appraisals. For this to work, the GOL would have to rule that Provinces, Districts and the Ministry of Planning and Investment should refer all applications for land concessions for plantations of any size to MAF. Its willingness to do this will be an indication of its seriousness in tackling the issue.

90. To do this work, MAF will require the capacity to appraise land use developments. It has land planning and GIS skills (in the IT centre, FIPD and NAFRI), which it plans to restructure, but lacks expertise in project appraisal generally, particularly in agricultural and forestry economics, and agronomy. It will be necessary to provide a natural resource economist and an agronomist, and the ability to commission and interpret environmental and social assessments. These skills would be brought together in a sector planning and appraisal unit, which would report on proposed concessions and could review existing concessions that are thought to be unsatisfactory.

91. An early task for the economist and agronomist would be to prepare a document specifying the information that all applicants for concessions would be required to submit with their applications. This would provide the information needed for an appraisal; it would include: the method of selecting land, how the affected villages are to be involved, technical feasibility, agro-ecological requirements, expected outputs, markets, local employment, environmental impact, contribution to village development, relevance of gender and ethnic issues, proposed land rent, and scope for in-country processing. Any investor intending a long-term commitment could be expected to have satisfactory answers to these aspects of his project.

92. While carrying out appraisals, the unit would consult the Province for its views; in turn, the Province would collect relevant information about village needs from the District. These should be taken into account in the project appraisal. The unit’s advice and recommendations would be presented to the Minister and the Governor for decision. Both should agree before approval is given. The Province
would then accept responsibility for collecting rents and monitoring compliance (whose costs should be met by the investor).

93. The MAF planning and appraisal unit would need to set up a database of records of applications and decisions. These should be open to inspection by the Government’s auditors.

94. A later task for the TA economist could be to issue guidance on project appraisal for use in Laos. This could be based on one of the official handbooks issued by official aid agencies (World Bank, ADB). It would be valuable to collaborate with other Ministries to produce a guide to be used by all public agencies. The TA agronomist would build up a database on potential crops from published papers and advise NAFRI on selection of crops for research.

95. The capacity building required would be a TA natural resource economist as Chief Technical Adviser, a TA agronomist, training for MAF staff in economics, and a modest budget to buy social and environmental advice. MAF will need a continuing capability in economics and agronomy even if land use and sector planning is later devolved to Provinces, so the TA should be for 5 years as a minimum. Some support for strengthening MAF’s GIS capabilities would also be useful.

Setting up a devolved system of land use planning

Objective

96. The aim is to set up a planning system that allows the GOL to exercise broad control of land use, the Provinces to have the authority to take decisions within the limits set centrally, and which at the same time respects the wishes of the local people affected. The decisions should be realistically based on agro-ecological, economic, and market factors, take account of social and environmental aspects, and be beneficial to the country. The system should require transparency and accountability, and checks on corruption should be built in.

Outline of the system

97. The Provinces, being closer to the action, are better placed than the central government to take account of local concerns and keep in touch with developments. The Government on the other hand is the proper authority to enforce compliance with national priorities and standards of propriety in the management of public resources. This suggests that the overall structure for land use planning should be:

The GOL should set the national conditions for land-use planning and ensure compliance with them.

Provincial governments would draw up and implement land-use plans with technical assistance from the central agencies.

The districts would help villages and Kumbans develop participatory land-use planning and feed the results into the provincial plans.

A similar process would apply to applications for land concessions, which would be made in a prescribed way on a form designed to reveal all the relevant information.
98. To provide transparency and accountability draft Provincial plans would be published and comments from the public invited. Objections, and the Provincial administration’s replies to them, would also be published.

99. This system could take over progressively as Provinces become competent in land use planning and project appraisal. Each Province could proceed along this path at its own pace.

100. Developing this scheme in detail, the results might be set out as follows.

**Government’s role**

101. The GOL has general responsibility for the performance of the ANR sector. If it is to work towards its goals for food security, poverty reduction, commercialisation of agriculture, and protection of the forests, it needs to be able to guide Provinces and Districts to contribute within the resources available, while accepting that most decisions are best made more locally. Its roles would include:

   Laying down the methods to be used by Provinces in the appraisal of developments and concessions that take account of agro-ecological capability, benefits to farmers, social factors, such as gender and ethnic relations and labour inputs to the land, environmental impacts, sustainability and relevance to GOL’s goals; this would specify the extent of Provinces’ delegated powers, reserving decisions on developments of national significance to the GOL.

   Prescribing the terms of a standard contract for concessions that Provinces must use for the contract to be recognised as valid by GOL; this could be based on the contracts agreed by socially responsible concession holders.

   Requiring that villagers be willing parties to the contract and entitled to copies of it, and that its terms are made clear to them.

   Ensuring that the Provinces draw up land-use plans and are equipped to do so.

   Laying down the conditions the plans must meet. These could include: specifying national priorities and needs; respecting customary and cultural traditions; protecting biodiversity; technical parameters so that the plans are all to the same scale and use the same zoning and allocation categories; the requirement for participatory land-use planning at village level, the rights of land users not to be adversely affected by developments or to be fairly compensated, etc.

   Prescribing the processes that must be followed in drawing up, consulting on and approving the plans.

   Providing Provinces with relevant data, maps, plans of major construction, hydro-electric and mining projects, population and other statistics, etc; this will require NLMA to produce an authoritative land use map showing approved land use zones.

   Inspecting the plans to check for compliance with national priorities, etc, and arranging for them to be approved at the appropriate level within the government.

   Legislating to give the approved plans the force of law, so that it becomes an offence to alienate land except through a prescribed procedure.

   Monitoring implementation through regular audits and exercising powers to overturn provincial and district decisions that are not in conformity with the plan.
Laying down procedures for changing the plans that are transparent, and that require changes to respect environmental and social values and be economically beneficial.

102. The GOL has already set up an inter-departmental land-use committee under NMLA, which could be charged with setting up a national land use planning system.

Capacity Building in MAF and NLMA

103. To ensure compliance with its regulations on the granting and conduct of concessions, GOL needs an inspection capability. Ideally, all concessions, including those for mining and hydroelectricity, should be liable to inspection, in which case this would be a function of NLMA. If, in the first instance, it applies only to the ANR sector, MAF could take on the task. The inspection unit’s functions should be publicised and it should be able to receive complaints directly from villages.

104. The GOL would need the capacity to set up and run a national land use planning system, including reporting procedures, information flows, and delegated authorities. The relevant legislation affecting land use needs to be reviewed to harmonise the powers exercised by Ministries and Provinces.

105. To have a clear view of current land uses Provinces need land use master plans (PLUMPs), which show the land allocated to the various sectors within the Province. These would be most economically and effectively produced centrally by a specialist companies under contract. NLMA would let contracts for production of draft master plans for the 5 Provinces. Producing these will require satellite imagery and data collection from Ministries and Provinces; reconciliation as far as possible of conflicting claims; and presentation to GOL and Provinces of maps showing land use zones, with identification of areas whose designation is disputed and has to be decided. The PLUMPs would be provided to other Ministries and agencies, the Provinces, and published as the authoritative land use maps. NLMA needs the capacity to interpret and maintain land use plans, including a budget for subsequent purchase of satellite imagery.

106. Mapping concessions boundaries is also necessary for a GIS information base. At present some concessions boundaries overlap, and some are not clearly demarcated. Some concessions have encroached on existing farmed lands or protected areas. This is a task for the Provinces, but NLMA should ensure that they have an operating plan to implement it. Approved concessions applicants should pay for, or carry out under District supervision, the necessary boundary demarcation.

107. Many public bodies use land use maps. At present there is little sharing of data, and only on an ad hoc basis. Critical records of national importance are not readily accessible and have not been backed up and safeguarded. Base topographic datasets on population distribution, land cover etc need to be up-dated more regularly and the resolution and accuracy of the cartography should be improved. Up-to-date high resolution imagery datasets needs to be purchased on a regular basis to monitor land use change and allow improvements in accuracy in all other cartographic datasets. These problems could be addressed by establishing a National Spatial Data Centre for Land Use to safely store, up-date and ensure access to GIS data and to promote distribution of maps to users. It could run a Government land use data network, using a closed computer link, to keep all users up to date and economise on data capture costs.
108. Mapping products should be distributed in formats that are appropriate for Government staff especially at Provincial and District level. Paper maps need to be printed and distributed. High resolution imagery should be distributed in a format that is usable both to the Provincial and District levels.

109. To be able to plan for the ANR sector as a whole, and to advise provinces on the appraisal of ANR investments, MAF would need to continue to have the appraisal capacity developed under the interim solution. The very large range of crops with commercial potential identified in the agronomist's report suggests that there would be value in a national centre to evaluate and promote selected agribusiness developments. The MAF Planning Unit could be developed into such a national centre, by adding the capacity to assess markets; or this function could be located in NAFRI (which would also need the capacity to assess commercial viability as it is weak in agronomy and lacks agricultural economics and marketing expertise).

110. The capacity building required at GOL level would thus be:

i. Equip MAF to appraise and monitor natural resource investments, guide Provinces on investment appraisal and promote agribusiness.

ii. Help MAF/NLMA to set up an inspection capability for concessions.

iii. Equip NLMA to acquire and keep up-to-date nationwide maps, and to provide Provinces with accurate land use maps showing land cover and sectoral zones.

iv. Help NLMA design and install the national land use planning system, including reporting procedures, information flows, and delegated authorities.

v. Review and propose amendments to harmonise relevant legislation.

vi. Training for GOL staff in land use planning, GIS and economics. There is an opportunity here to build capacity within Laos by organising GIS training courses in the regional technical colleges, beginning with the college in Vientiane where the Land Titling Programme has already been financing a surveying course for some years.

111. The ADB grant could provide:

i. An economist TA with experience of natural resource assessment as Chief Technical Advisor to MAF, and a part-time agronomist TA, for appraisal of agricultural investments, as already provided for under the interim solution, plus a budget to obtain marketing advice.

ii. A contribution to the operating costs of the inspection unit staffed by MAF and/or NLMA.

iii. A land use mapping TA with extensive experience of GIS, based in NLMA, to guide and manage the letting of contracts for PLUMPs, help organise training for staff at NLMA and LMAs, arrange supply of IT and mapping equipment, and advise on purchase of satellite imagery. He could help set up a National Spatial Data Centre for land use planning and design a programme for improving base cartographic data.

iv. Finance for a contract to produce PLUMPs.

v. Finance for NLMA GIS equipment and software, data storage cabinets, and purchase of satellite imagery and paper and reproduction machinery for hard copy maps for distribution to Provinces, Districts and villages.

vi. A TA to help design and install the national land use planning system. He could also review the existing statutes affecting land and draft amendments to give effect to the proposed system. A TA with experience of a well-
established land use planning system, such as operates in developed
countries, but able to modify it to suit local conditions, would be suitable.

vii. Finance to help MAF restructure its GIS units.
viii. Finance for training of GOL staff in land use planning, GIS, data storage and
economics and grants for young students to train in GIS at technical
colleges.

The role of the Provinces

112. Poor decision taking by Provinces underlies the unsatisfactory land
developments that led the GOL to declare a moratorium. Nevertheless, provided they
can acquire the capacity to make better decisions and be required or persuaded to
implement them, they should have the key roles, which would be:

- Drawing up land-use plans that satisfy and the conditions laid down by the
government.
- Setting up and running a transparent procedure for changing land use
designations, including applications for land concessions, in accordance with
the Government's regulations, recording approved changes, publishing them,
and notifying them for inspection by NLMA and relevant Ministries.
- Maintaining a record of concessions and ensuring that their boundaries are
accurately demarcated.
- Publishing draft plans, receiving comments, taking account of them and
replying to them.
- Presenting the draft plans to the Government for approval and amending them
as necessary in consultation with NLMA, MAF and other Ministries.
- Publishing the approved plans at provincial and district level.
- Using the plans to identify promising developments and, as competence
increases, making sector development plans.
- Taking action to implement the plans; for example, through seeking out 'best
practice' partners for FDI, ensuring compliance with logging regulations,
assessing land claims and issuing titles, etc.
- Monitoring land-use changes, both approved and illegal, and acting where
necessary to remedy illegal changes.
- Operating a procedure that informs those affected by land developments and
re-settlement of their rights and of the avenues open for them to raise concerns
and the related grievance redress procedure.

113. It should be expected that the smaller of the southern Provinces would make
slower progress towards the capacity to carry out these functions.

Capacity Building at Provincial level

114. The Provincial LMA or a planning unit based on it, answerable to the
Governor to give it the authority to co-ordinate other services, would be keepers of
the master plans. They need a modest capacity in land use planning, including GIS,
in order to keep them up-to-date and monitor changes. Given the record of failure to
sustain GIS capacity in the past, it would be prudent to begin by equipping one
Province and using it as a base to extend to the others. Many concession boundaries
and the boundaries of protected areas have not been mapped accurately, so Provinces need the capacity to collect field survey data.

115. Provinces need to build the capacity to communicate with the public about land use plans and proposed land developments. Many villages (even more remote ones) have radios, and this seems to be a key channel for communication. Information access could be backed up by a Communications Programme with the assistance of NGOs.

116. If they are to take over from MAF decisions on concessions, the Provinces need the capacity to appraise applications for their economic, environmental and social consequences, and their agricultural feasibility. It may be that the smaller Provinces will prefer to rely on MAF for this work.

117. The capacity building at provincial level that would be needed is then:

i. A land use planning unit within the Provincial Governor’s office, comprising a land-use planner with basic GIS technology, two or three staff trained in land demarcation, and a natural resource economist, with access to advice from an agronomist. The unit would be responsible for communicating with the public. The smaller Provinces could share a LUP unit unless they continue to use the MAF capability.

ii. Training for local staff to take over the functions.

iii. Short courses for provincial staff in land use planning and project appraisal to raise awareness.

118. The ADB grant could provide:

i. A land use planning/GIS TA in one Province with GIS equipment and a budget for paper maps.

ii. A budget to help with boundary demarcation by PAFOs and/or LMAs.

iii. An economist TA, assisted by a part-time agronomist TA, based in the south to carry out appraisals and guide each Province as it develops its capacity to plan and appraise ANR developments. They would help find suitable staff (2/3 per Province) and organise training.

iv. A land use training team based in the south to provide on-the-job training for each Province, showing how in practice those responsible for each sector can come together to work up an integrated plan and how to communicate with the public.

v. Finance for training in land use planning and economics.

The role of the districts

119. Much of the discontent surrounding land concessions arises because villagers’ interests are not being adequately protected. To improve the value of concessions to villages, District staff will have to re-orientate from what seems to be the current perception of their task - delivering an area of land to meet an imposed target - to being the smallholders’ friend. Their jobs would include:

Helping villages and kumbans prepare participatory land use plans and feeding the results into the Provincial land use plan.

Checking that the draft plan prepared by the Province accurately reflects physical conditions on the ground.
Informing the Province of District needs.

Checking also that village individual and communal land use rights are defined and demarcated, and included in draft plans.

Where the plan proposes new developments, or a concession is sought, consulting those affected, informing them of their rights not be affected adversely, starting participatory land use planning at Kumban or village level to identify land used and needed by the village and the land that is available for development, and reporting the results to the Province.

After a development or concession has been formally approved by the Province, supervising its implementation.

Checking on compliance with approved plans by developers and reporting infractions to the Province.

Where villages are to be re-settled, drawing up a plan for land allocation, consulting on it, and submitting it to the Province for approval.

Supervising approved re-settlements.

The capacity building required at district level would then be:

i. Training in participatory land use planning for extension staff, which is already underway through NAFES, PAFOs and Districts, but would need to be expanded.

ii. Training in the interpretation of Provincial land-use plans, including how to contribute to them. District staff could attend short courses on land use planning at Provincial level provided by the training team.

iii. Awareness training in the consequences of land use change for those affected.

iv. Training in the monitoring and enforcement of land use designations.

The ADB grant could provide:

i. Finance to expand the Lao Extension Approach to participatory land use planning.

ii. Finance for training costs.

ANR Sector Planning

An ANR sector Plan would identify the developments in the Provinces over the next 5-10 years that would best achieve the GOL’s goals. It brings together GIS databases on land cover, current and planned land uses, soil capability, climate, hydrology, crop and livestock agronomy, communications, market developments and, in Lao, sadly, UXO. Possible agricultural developments are appraised to produce a list of preferred investments at suitable locations. These are then offered to ‘best practice’ companies, who would be expected to contribute to village development and capacity building, pay realistic rents and develop in-country processing, while respecting environmental and social requirements. In this way ANR sector planning can be used to identify and rank options for development, and thereby provides a way of selecting high value investments to be promoted. It can also inform research.

This sophisticated technique is far beyond the capacity of MAF, let alone the Provinces, so it would have to be a TA-driven process for at least 5, probably 10, years. However, there is very high demand for development land in the sub region;
the GOL could expect competition to secure concessions; and it would be in a position to negotiate favourable terms to the considerable benefit of Lao PDR. The potential pay-off makes it worth support.

124. The economist and agronomist TAs could begin to develop ANR sector planning during their 5-year contracts. They would need to build up a substantial database of information on the sector, filling gaps in the data requirements. So while there would be no need for more TA, additional support might be needed to develop all the data sets.

Provisional costs

The MAF planning and appraisal unit
a. TA natural resource economist as Chief Technical Adviser to MAF for 5 years at $150K per annum: $750K.
b. TA agronomist for 4 months a year for 5 years at $50 per annum: $250K.
c. Budget for social and environmental advice at $2K per year: $10K
d. Budget for marketing advice at $5K per annum for years 3-5: $15K.
e. Training for 5 MAF staff in project appraisal at $2K each: $10K.
f. Finance to help implement the restructuring plan for MAF GIS units: $10K

Subtotal: $1418K

The national land use planning system
a. Contract(s) for master plans at $40K (Ian?) per province: $200K
b. A land use mapping/GIS TA for 2 years at $125 per year: $250K
c. NLMA IT equipment, including National Spatial Data Centre (Ian?): $10K
d. Annual data update for 3 years at $5K (Ian?) per annum: $15K
e. Land use planning TA at NLMA for 1 year at $125 per annum: $125K.
f. Training for 10 GOL staff in land use planning, GIS, data storage at $2K each: $20K.
g. Grants for training 10 students per year in GIS for 5 years at $2K each: $100K.
h. Subsidy to the operating costs of an inspection unit for concessions at $10K per annum for 5 years: $50K.

Subtotal: $670K

Provincial and District land use and sector planning
a. A TA two-man training team for land use planning/GIS based in the south for 1 year at $125K each per annum: $250K
b. Provincial Planning unit IT equipment at $5K (Ian?) per province for 2 Provinces to start: $10K
c. Economist TA for PAFOs for 3 years at $125 per annum: $375K
d. Agronomist TA for PAFOs for 4 months a year for 3 years at $50K per annum: $150K.
e. Data acquisition, boundary marking, using LMA/PAFO staff or contracts, for 100,000 ha at $0.5 per ha: $50K
f. Land use/GIS training for 5 PAFO and 10 LMA staff at $1K each: $15K
g. Economics training for 12 staff at $2K each: $24K
h. Travel, per diems, transport for 4 Provincial TAs at $10K per annum each: $100K
i. Training for District staff in participatory land use planning: $50K

Subtotal: £1249K                          Total: $3337K
125. To this would be added a contingency of 10% and project management costs of 10%, bringing the broad-brush total to $4.0million.

**NAFES**

126. For the agriculture and natural resources sector to get more from the economic opportunities offered by the large markets in neighbouring countries, the extension services will have to become more market-orientated and more responsive to the demands and needs of farmers. The former requires the extension service to collect, maintain and disseminate information on markets; to be able to assess the profitability for farmers in different circumstances of different crops, including the risks; and to be able to design model projects that show how a new crop can be established, grown, harvested and sold. The latter requires the ability to see the opportunities from the point of view of the farmer, taking account of his needs and aspirations. The developments should also be designed to conserve biodiversity and respect social and cultural traditions as well as enhancing the position of disadvantaged groups.

127. The capacity building needed is therefore:

- Training in agricultural economics.
- Instruction in how to acquire and assess the reliability of data on markets.
- Training in using agronomic information available from public and private sources.
- Training in project management, including financial management.
- Training in the appreciation of Laos exceptional Biodiversity.
- Training designed to enhance understanding of the value of the country's cultural diversity.
- Social awareness training that conveys the values of equal rights for women.

**Agricultural Colleges**

128. MAF now has an agreed strategy for reforming the agricultural colleges. It follows on from a long period of consultation with all the stakeholders and was blessed by the minister at a meeting in Vientiane in February. The executive summary attached shows it to be all encompassing, rather a wish list, and not sharply focused or specific. Nevertheless, the most practical way forward for the ADB project is to build on it so as to maintain the momentum for reform.

129. The agricultural colleges are not producing graduates with the basic training needed by the extension service, which as noted above should move towards a market orientated and demand responsive approach to the development of the sector. They are also producing far more graduates than can be absorbed by the extension services or by the very small private sector. A substantial fraction of their graduates have to find employment outside the sector. At the same time, other needs for agriculture and forestry training are not being served. There is very little training available are farmers who wish to equip themselves to diversify crops or take advantage of opportunities for cash cropping and contract farming. In summary, the agricultural colleges are producing graduates not well equipped to serve the extension services or a private sector, nor to take up jobs in outside the sector, and they are not meeting other needs.

130. MAF and the colleges do not routinely carry out training needs assessments for the sector's demand for graduates. Such an assessment would show that the content of the curriculum should be adjusted towards market-orientated agriculture and the numbers of students reduced towards the likely demands over the next 10
years or so. It would also show that there are other opportunities and needs that the colleges could meet. Following up these assessments would lead to a more diverse pattern of instruction by the colleges. A smaller number of graduates would be trained in the skills needed by the extension service and the private sector. A programme of shorter courses for practising farmers would aim to respond directly to their current needs for training. The ADB project could help to set up arrangements for carrying out routine training needs assessments and drawing implications from them for the colleges’ teaching.

131. It could also help revise the curriculum. The revised curriculum would require additional skills in the teaching staff for economics, enterprise management, biodiversity assessment and social issues. The project could provide these directly through TA, and finance the training of the current staff.

132. The colleges are very short of money. There is too little to adequately house and feed the students and pay the staff a living wage and nothing at all to provide for them to develop their skills. The government is not, and will not soon be, in a position to increase spending on the colleges, so that the solution we have to come from their own efforts. They need a plan that moves them progressively towards greater financial security. Such a plan could include: reducing the numbers of full-time students towards the demand; increasing fees; seeking scholarships for poor students from donors; developing cash earning activities which would be practical examples of the work the students will do when they graduate; and providing short-term courses for fees. The ADB project could help draw up this plan and provide finance for setting up mini-businesses. It could also offer scholarships for poor students and initial subsidies for short-term courses aimed at practising farmers.

133. In summary, the capacity building would have the following elements:

- A TA to carry out a needs assessment for trained personnel in the agricultural and NR sector and to build the methods into MAF. The assessment would draw conclusions for the colleges and the universities on numbers and subjects needed.
- A TA charged with helping the agricultural colleges reform their teaching. This TA would revise the curriculum, help find suitable teaching staff, and control a budget for teacher training. It would be practical to begin with one college as a pilot, and then extend the results to the others.
- A budget to pay for additional teaching staff for about 5 years, for necessary equipment (IT etc), and provide scholarships, start-up finance for cash-earning projects and short courses for farmers.

134. The project implementation team would help the colleges recruit other donors for infrastructure improvements, make partnerships with other educational institutions in the region, and generally keep up the momentum.
APPENDIX IV. TRADE AND INVESTMENT

The following is the Executive Summary from the report prepared by Montague Lord, which is available as a separate document.

1 Introduction

Lao PDR’s agricultural and natural resource (ANR) sector is undergoing an unprecedented transformation. Moreover, the abundance of natural resources and favorable policy and regulatory environment under the Government’s regional and global commitments are facilitating the sector’s transition to a modern commercial-based system offering value addition gains to producers. For the full benefits to be achieved, however, agriculture must be made more productive so as to generate widespread sustainable income and employment growth, and also improvements must occur in the governance and management of the ANR sector and its natural resource base.

The ANR sector is driving much of the country’s transformation since agriculture accounts for nearly half of the value added of the economy and agrarian-based households represent nearly 80 percent of all of the country’s households. One of the most successful stories for exports has been coffee, which now accounts for about half of the country’s recorded agricultural export earnings. Non-staple crops like sugarcane, peanuts and soybean have also experienced significant expansions. In the informal and unregulated trade with neighboring countries, flows of glutinous rice from southern Lao PDR into Thailand are large. There is also an abundance of Lao fruits and vegetable produce in markets throughout the Thai province of Isaan, as well as in Vietnam, and large numbers of cattle move into both Thailand and Vietnam.

This Annex focuses on trade and investment related-activities of the ANR Sector Development Program described in the Main Report. The Program aims to contribute to the sector’s growth and development through improved food security, accelerated poverty reduction, and better environmental conservation. The immediate objective is to promote modernization of the sector by (i) supporting the preparation of land-use master plans for southern provinces, (ii) strengthening the capacity of national and provincial government agencies, and (iii) funding specific investments in the sector. The report begins with a brief review in Chapter 1 of the ANR sector’s trade and investment-related activities, which are elaborated upon in the first five annexes to this report. Chapter 2 then presents a structured overview of the ANR Sector Program covering its vision, objectives, scope and strategy. Within that context, a strategy for trade and investment is proposed in Section 2.1, under which an action plan roadmap is set forth that adopts existing value chain models and other available tools to identify specific key ANR product-related activities likely to enjoy a long-term comparative advantage in the domestic, regional and world markets. Based on that strategic framework, Chapter 3 provides a detailed analysis of product commercialization and export and domestic market opportunities, as well as the associated product development support that would be needed in each of the identified activities. Based on the proposed trade and investment roadmap and selected ANR product-related activities, Chapter 4 then identifies different forms of needed technical assistance, each of which is designed in the context of the Government’s priority areas for reforms and external assistance.

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8 See “Lao PDR Agriculture and Natural Resources: Proposed Sector Development Program”. Draft report prepared by Alastair Fraser under the ADB TA 4843 Agriculture and Natural Resources Sector Needs Assessment, May 2008.
2 Program Objectives, Scope and Strategy

The ANR Sector Development Program has been designed in the context of the National Growth Poverty Eradication Strategy (NGPES) and Lao PDR’s long-term national development goal to achieve sustained and equitable economic growth and social development, while safeguarding the country’s social, cultural, economic and political identity. The overall strategy and operational goals for the ANR sector is based on the NGPES’ findings about the sector’s needs, namely, that (a) agriculture has to be made more productive so as to generate both sustainable income and employment; and (b) the sector’s governance and management of the natural resource base has to be improved upon for the Government to effectively contribute to the development process.

To that end, the two-fold strategy for the Program consists of (i) management of FDI in agribusiness and (ii) outreach improvement to the upland communities. The Program targets the five southern provinces of Champassak, Salavan and Sekong, Attapeu and Savannakhet. They are characterized by a fast-growing and largely unregulated FDI-driven boom in the commercialization of agricultural and forestry and a stationary smallholder sector that remains handicapped by poor infrastructure, long distances to markets and generally inadequate services. Specific projects aim to compensate for the unfavorable competitive position faced by ANR sector-related businesses in those provinces.

For trade the medium term strategy supporting the overall ANR Sector Program consists of a five-fold approach defined under the Government’s National Validation Workshop and adopted in the Action Matrix of the Diagnostic Trade Integration Study (DTIS). Those five components cover (i) export competitiveness, (ii) trade facilitation, (iii) business environment, (iv) trade-related capacity building, and (v) trade opportunities for the poor. The Action Matrix targets agriculture and other sectors in an effort to boost exports through productivity improvements in traditional products and the encouragement of non-traditional activities. Implementation progress has been slow, however, and there is therefore considerable scope for the ANR Sector Program to support initiatives that would help to enhance the competitiveness of specific types of activities in the targeted provinces. Areas where the ANR Sector Development Program could provide critical trade and investment-related support are the following:

- Support the provincial level implementation of national trade facilitation programs and projects under the multi-donor Trade Development Facility (TDF), as well as unilateral donor-supported programs;
- Improve the business environment through (a) provincial and local level implementation assistance of broad-based Sanitary and Phytosanitary (SPS) measures being carried out at the national level, (b) introduction in the targeted provinces of business development services (BDS) centers for micro and small enterprises (MSEs), and (c) improvements in the monitoring and control of foreign direct investment (FDI) in the targeted provinces;
- Provide capacity building to local government and enterprises in the targeted provinces, specifically in preparing the provinces for WTO compliance measures, upgrading the trade-related capacities of local officials, and supporting research in value chain analysis for particular industries; and

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9 These provinces comprise 42 upland and lowland districts, and they contain 12 of the 47 country-wide ‘Priority Poverty Districts’ by the National Growth and Poverty Eradication Strategy (NGPES) and 10 of the 31 districts defined as “Poor” by the NGPES at the national level.
Develop trade opportunities for the poor by providing road network to better connect towns and villages to domestic and neighboring markets, and by developing a pro-poor trade strategy focusing on the delivery of capacity-building support at the enterprise and sector levels, an area where the ADB has extensive institutional knowledge and experience that it could bring to bear on both national pro-poor trade and provincial-level measures in specific value chains linking MSEs to markets.

3 Commercial Opportunities
There is a wide range of commercial production activities particularly suited for the targeted southern provinces in both existing and new crop production systems. The methodology used to identifying those opportunities has adopted the following analytical sequence: (i) identification of possible production activities using a set of criteria that includes suitability of the products for the local communities and for commercialization in the target areas, their potential for generating a high value-added contribution, promoting a private sector-driven expansion, and the likely commercial success of those activities; (ii) analysis of the medium to long-term market performances of the identified products, in terms of commercially viable products having export market potential and domestic market activities aimed at substituting the large amount of food products imported into the country; and (iii) assessment of the medium-term market prospects of the identified products.

Chart 1 summarizes the results of the analysis for the export-oriented activities, based on the following performance-based classification of commercially viable products:

- **World Market Import Growth**, measured by the income elasticity of import demand, and divided into high, moderate and low-growth product markets. Several products have had especially favorable foreign market growth, notably avocados, ginger, chili, spices, palm oil, coffee, sugarcane and coconuts.

- **Domestic Production Opportunities**, measured by the suitability for local communities and commercialization in the target areas, especially value chains, consistency with Agro-Ecosystem areas, and with potential for high value-added contribution driven by private sector initiatives. Notable products include avocados, ginger, chili, spices, palm oil, coffee, peaches, cinnamon, nutmeg, cardamom, peppers, rubber, bananas, and tea.

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10 The following classification was adopted: high growth markets are those having income elasticities of more than 1.5; moderate growth product markets are those having income elasticities between 1.0 and 1.5; and low growth product markets are those with income elasticities of less than 1.0.
Market Prospects, measured over the medium to long-term, are favorable for avocados, ginger, chili, spices, nutmeg, cardigan, peppers, sugarcane, cashew, kiwi, and pomelos.

4 Product Development Support Requirements

There are a number of potential product-specific development plans for the southern provinces whose design and implementation could support the type of trade and investment activities envisioned under the ANR Sector Development Program. Three product groups have been examined: coffee, fruits and vegetables, and forestry products.

Coffee – The analysis points to a range of activities in the coffee industry covering the development of market penetration strategies, enhancement of supply chains, public investment on extension services and rural infrastructure, promotion of differentiated products, betterment of the one-stop service unit, and improved information systems, quality standards, governance and finance. Recommendations for possible interventions in each of these areas are detailed in the report.

Fruits and Vegetables – Commercialization of fruits and vegetables could play an important part in Lao PDR’s poverty reduction strategy, as there are large opportunities in both the domestic market and the external regional and global markets in both fresh and processed products. Before these opportunities can be exploited, however, a range of obstacles need to be overcome. In trade and investment, one possible sequence of interventions to improve conditions would include (a) off-season production activities, (b) improvement of quality and adoption of standards, (c) promotion of high value-added export products, (d) improved supply chain efficiency and effectiveness, (e) development of organizational representations, (f) creation of food safety standards, and (g) the design and implementation of market penetration strategies. Recommendations for possible interventions in each of these areas are detailed in the report.

Forestry Products – As Lao PDR’s leading export group, wood and wood product diversification into value-added activities have a large potential. Notable products being developed for the export market are paper and paper products in the form of containers and packaging materials, labels, cartons, boxes and cases of corrugated paperboard, cigarette and toilet paper, and newsprint rolls and sheets. Wooden furniture is being exported but its full potential has yet to be developed. In neighboring Vietnam, the wooden furniture industry is the largest in all of Asia, but its growth has been stymied by its over-reliance on imported wood. Lao could initially develop product lines requiring low skills in the furniture-making industry for the mass market and, once established, it could move to high-end products for niche markets using family-sized production units. Moving a significant part of the sector’s exports into downstream processing of value-added products would require a broad range of interventions, including (a) business development services, (b) marketing strategies, (c) environmental management, (d) appropriate trade policies, (e) trade facilitation, and (f) pro-active market penetration. Recommendations for possible interventions in each of these areas are detailed in the report.

5 Key Areas of Technical Support

The proposed technical assistance (TA) for trade and investment-related activities of the ANR Sector Program targets the Government’s five priority areas for reforms and external assistance: (i) export competitiveness, (ii) trade facilitation, (iii) business environment; and (iv) trade-related capacity building. Technical assistance for each of the following specific areas of support is detailed in the report:

- Design of a competitive tariff structure for ANR sector processing activities
ADB TA 4843 Agriculture and Natural Resources Sector Needs Assessment

- Promotion of integrated regional development projects
- Develop value chains as vehicles for micro and small enterprise development
- Implementation of SPS measures at the provincial and local levels
- Enhance the understanding of ‘trade and the environment’ at the national and provincial levels

Together, the proposed activities target product diversification and value addition gains through productivity improvements, which are expected to lead to a better trading environment, with simplified bureaucratic procedures in customs and other areas; an improved legal and regulatory framework; enhancements in the capacity of line ministries and agencies involved in the trade sector; an improved private sector’s capacity to compete in the international market; a more effective participation in bilateral and multilateral negotiations; a coherent trade development framework that is consistent with sustainable development and the environment; and the increased competitiveness of Lao PDR products that contribute to poverty alleviation.
APPENDIX V. CONTRACT FARMING

The following is the main report prepared by Tony Zola and the full report with attachments is available separately.

A Preliminary Assessment of Contract Farming Arrangements and Plantations in the Agriculture and Natural Resources Sector of Lao PDR by Tony Zola

1 Introduction and Background

The southern region is strategically located in two “development triangles”, namely the Vietnam-

Economic Report to the 8th Party Congress by Deputy Prime Minister & President of the Committee for Planning and Investment, Dr Thongloun Sisoulith

March 2006

1. The current rapid expansion of contract farming and plantation- and concession-based agricultural development in Laos is largely foreign-driven (mainly by investors from neighboring countries) and affects all areas of the country. Although the lowland areas have been the principal target of investment to date, pressure in upland areas also is increasing. The administrative haste accompanying the accelerated processing of these investments has generated several governance and land management issues, linked to the transparency of land allocation and other approval procedures; about long-term environmental sustainability; and, about the distribution of benefits both domestically and between Laos and the investing countries.

2. The Contract Farming and Plantations specialist (Mr. Anthony M. Zola) was engaged by the Asian Development Bank (ADB) for intermittent inputs over 60 days between 28 January and 30 April 2008 to undertake an assessment of contract farming arrangements and plantations in the agriculture and natural resources (ANR) sector, concentrating on the southern region of Lao PDR. The terms of reference (TOR) for the consultant are presented as Attachment 1. The assessment was undertaken with support from the ADB in collaboration with the Ministry of Agriculture and Forestry (MAF) as part of a macro-level needs assessment for the ANR sector. The outcome of the assessment is expected to be a project that would support (i) institutional capacity strengthening for MAF at the central, provincial, and district levels to improve management of agriculture lands and natural resources in the agriculture sector; (ii) one or more core sub-projects to serve as models that demonstrate improved management of human, capital, and land resources in the
ADB TA 4843 Agriculture and Natural Resources Sector Needs Assessment

ANR sector; and, (iii) funds for allocation by MAF and ADB to support provincial and district level projects that lead to improved management of agriculture and natural resources.

3. In this context and reflecting the consultant’s terms of reference provided by the ADB, this report will focus on the following topics:
   – A summary typology of a range of foreign/regional investments in the ANR sector of different types in southern Lao PDR.
   – A description of emerging trends based on an analysis of these investments.
   – A summary of the current situation with respect to contract farming and concession-based agriculture in terms of its likely overall scale and relative impact on ANR in the medium-term (e.g., in terms of aggregate and proportional land areas and population involved, effect on national balance of payments etc), and the implications for national poverty reduction objectives and for national and sector natural resource use.
   – Expected ANR sector governance implications of the current and likely future investments in the absence of procedural/policy changes.
   – Proposed principles for good practice for provincial and central authorities towards ANR investments in future.
   – Proposed policy, procedural, and investment requirements to promote good practice and strengthen MAF planning and management of foreign investments in the medium-term.

4. The consultant’s specific recommendations are summarized in the form of a ‘Foreign Investment Management Strategy for the ANR Sector’ document appended to this main report (see Appendix 1).

2 Methodology

5. The methodology used by the consultant to identify a range of foreign / regional investments in contract farming and plantation concessions in the ANR sector and the governance implications of those investments consisted of systematic consultations with provincial and district agriculture and forestry officials on a province by province basis in southern Lao PDR. Visits to a selection of the target provinces were made on 4-9 February; 15-21 March; and, 1-11 April 2008. Detailed schedules for each of the field trips to southern Laos are presented as Attachment 2. In addition to government officials, meetings were held with farmers, representatives of producer groups and private enterprises, and NGOs. A list of persons met is presented as Attachment 3. In the course of the field consultations, the consultant asked each provincial and district agriculture and forestry office to brief him on the following points:
   – The status of contract farming and plantation concessions in their administrative area;
   – How each investor obtained permission to operate in the administrative area concerned;
   – The procedures used to obtain each concessions in the administrative area concerned and how those procedures have changed (if at all); and,
   – Contentious issues emerging from contract farming arrangements and / or plantation concession operations.

6. The description of emerging trends is based on an analysis of the following factors for each investment:
- **Agricultural activity**: The food and agricultural production activities of each investment:
  - produced under contract farming or other similar arrangements;
  - production of niche products for domestic or crossborder markets;
  - issues related to plantation / concession operations; and,
  - role of government in business operations.

- **Location**: Production operations in lowland, sloped lands, and upland or highland areas; linkages to markets via road access to towns offering diversified markets; and, opportunities for domestic and / or crossborder industrial processing facilities.

- **Marketing arrangements**: Production fresh produce for trade or sale in domestic, crossborder, and/or overseas markets.

- **Producer awareness**: The level of awareness of producers to: (i) the benefits of crop diversification, improved post-harvest handling, and/or contract farming; or, (ii) the potential of for linkages to local value-added processing.

- **Technology**: The level of technology being used by producers; including the integration of local wisdom (indigenous technical knowledge-ITK) to cultivate crops and to undertake community-based value-added post-harvest handling and/or processing.

7. For investment situations selected by the consultant (none were recommended or selected by MAF representatives when requested during a meeting in Vientiane on 7 April 2008), more in-depth research was conducted, with visits to cultivation sites and company offices; and, analysis undertaken to document the history and main characteristics of each situation. These ‘case studies’ are presented as foreign / regional investment profiles, presenting the information that was made available by the investor’s representatives. In some cases, information was privileged information and was not made available. Each profile presents (i) the process of investment approval; (ii) differences between provinces and ANR agencies in the application of such processes; (iii) environmental impacts and likely environmental sustainability – including any issues related to loss of resources by local communities; (iv) distribution of benefits to farmers and contractors/enterprise owners; and, (v) extent of value adding and/or technology transfer that may be occurring.

- The ‘case study’ investment situations include (i) the experiences of the market management group at the wholesale / primary market at Pakxong District, Champasack Province, supported by the ADB-financed Smallholder Development Project; (ii) the Mitr Lao Sugar Company plantation concession operations in Savannakhet Province; and, (iii) the activities of the coffee producers group at Ban Vang Gnao, Lao Ngam District, Saravane Province, on the Bolovens Plateau.

- Regarding examining corn production for export in Xayaboury Province: The consultant did not visit Xayaboury Province as part of this ADB assignment. Instead, a summary of findings from a four day visit to Xayaboury Province, including the corn growing areas of the southern districts, is presented as [Attachment 4](#).

- A summary of the lessons learned are presented in section 3.1 below. Recommendations for improving the ADB supported Smallholder Development Project is presented as [Attachment 5](#).

3 **Summary typology of foreign/regional and domestic investments in the ANR sector in southern Lao PDR**

8. Based upon an examination of the types of foreign/regional and domestic investments in the ANR sector in southern Lao PDR, four modalities were identified, namely: a wholesale (or primary) market model operating with domestic investment;
plantations established on land concessions granted by the GOL; a variation of the plantation concession model, referred to as the concession share-coppers model; a producers association model; and, an independent farmer group model. Examples of each model are presented on Table 1.

9. The information on Table 1 is organized to show the following: investments by contract farming arrangement or plantation/concession-type, land allocated, date and size of investment, country of investment origin and/or produce destination, type of crops grown, investment province/physical location, land characteristics – especially uplands/lowlands, scale and type of investing enterprise (quasi- or full-SOE, private etc).

10. Some 66 companies have been allocated 201,888 ha of land in the form of concessions (larger than 100 ha) in the four southern provinces of Attapeu, Champasack, Saravane, and Sekong (this study also includes Savannakhet Province), the investment models presented on Table 1 were selected by applying two or more of the following criteria:
   - The investment model may be suitable for replication elsewhere in Southern Laos or other regions;
   - A concession is 100 ha or larger;
   - The investor is active at the site and agreed to meet with the consultant;\(^{11}\)
   - The investment model either was known to have contract farming operations or had the potential to operate contract farming; and,
   - It was recommended that the consultant visit the project by PAFO and DAFO personnel.

4 Description of common foreign / regional investments in the ANR sector in Southern Lao PDR

11. **Wholesale Market:** The concept of the ‘wholesale market’ (also referred to as a ‘primary market’ in ADB documents or *talat kang*, in Lao) emerged from the ADB supported Smallholder Development Project, which has plans to establish an additional five such markets in the project’s target areas (cost: US$150,000 each). By definition, a wholesale market is a market that primarily sells to traders such as small shopkeepers and agro-processors, rather than to members of the public, although members of the public are not necessarily excluded. These markets will be complemented by a market information system (MIS) implemented by MAF and the Ministry of Industry and Commerce (MOIC); as well as training, workshops, trade fairs, and other supporting activities, to establish viable and sustainable commercial markets for agricultural inputs and farm commodities. All six project-supported markets are expected to be operational by 30 June 2008. As planned, the completed market facilities will be handed over to the district authorities and a management contract will be drawn up between the district government and a nearby farmer group. Under this contract, the market management group (MMG) will lease space to farmers, retailers and wholesalers and collect a monthly rental fee. This fee will be used for: (i) the operation and maintenance costs; (ii) paying lease charges to the district government; and, (iii) cover the MMG cost of operating these markets.

\(^{11}\) It should be noted that some concessionaires or their representatives refused to meet with the consultant for an assortment of reasons, namely: Jhai Coffee Foundation Cooperative. Representatives of other enterprises were not available at the site: e.g., Pakxong Highland, Ou Phu Ko Company, Laos-Vietnam Friendship Rubber Co., Ltd (LVF).
5 Case Study: Pakxong District Wholesale Market, Champasack Province

12. In Pakxong District, Champasack Province, the wholesale market concept has operated since 2006 as a result of implementation of the Thai Government’s Ayerwaddi - Chao Phraya - Mekong Economic Cooperation Strategy (ACMECS); a Thai initiative for promoting contract farming in neighboring countries with the specific aim of providing raw materials to Thai agroindustries. To date, ten Lao companies and four Thai companies that have traditionally traded at the Champasack (Lao PDR) – Ubon Ratchathani (Thailand) border (at Vang Tao) have registered with Thai and Lao authorities to purchase produce at the Pakxong wholesale market, which has been operational since June 2007. The Pakxong wholesale market facility will be completed by May 2008.
Table 1: Summary typology of selected foreign/regional investments in the ANR sector in Southern Lao PDR

<table>
<thead>
<tr>
<th>Type of Investment / Name &amp; Nationality of Investor / Approval Date</th>
<th>Location: District &amp; Province</th>
<th>Investment (US$)</th>
<th>Contract farming (CF) arrangement &amp; current number of farmers</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wholesale Market</td>
<td>Pakxong Wholesale Market</td>
<td>Pakxong, Champasack</td>
<td>US$150,000 for market infrastructure</td>
<td>CF system: 2+3; no written contracts</td>
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<td></td>
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<td>Trust between Thai buyers &amp; Lao farmers</td>
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<td>851 families in 23 producer groups</td>
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<td>Lao Government investment authorized in June 2007</td>
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<td></td>
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<td>Crops traded: cabbage, Chinese cabbage, bananas</td>
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<td></td>
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<td>Crops planned: castor beans, maize, ginger</td>
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<td></td>
<td>Joint Venture</td>
<td>Thateng District, Sekong</td>
<td>60-70 mil baht (US$1.88-2.19 mil)</td>
<td>No contract farming; no plans for contract farming</td>
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<td></td>
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<td>Labor: 70 agriculture technicians &amp; 352 daily farm &amp; factory laborers</td>
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<td></td>
<td>Taniyama Siam-Advance Agro, Thailand-Japan joint venture</td>
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<td>No contract farming; plans for contract farming in the future</td>
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<td></td>
<td>Private sector investment</td>
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<td>Labor: 100 Vietnamese</td>
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<td>Taniyama Siam took over the Advance Agro investment in May 2007</td>
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<td></td>
<td>100 ha concession is for 30 years</td>
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<td></td>
<td>Local officials are joint venture partners</td>
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<td></td>
<td>Plantation Concession</td>
<td>Thateng, Sekong</td>
<td>US$10 million capital investment; registered</td>
<td></td>
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<tr>
<td></td>
<td>Laos-Vietnam Friendship Rubber Co., Ltd (LVF), Vietnam</td>
<td>5,000 ha land concession approved in Sekong Province for rubber</td>
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</tr>
<tr>
<td></td>
<td>Binh Dinh Pharmaceutical and Medical Equipment Company (BIDIPHAR) &amp; CBF Pharma Company (a Lao-Vietnamese)</td>
<td>Media states that an additional 3,000 ha land concession has been granted for cassava; also in Sekong</td>
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</table>
joint-venture)

- Full SOE investment from Bin Dinh Province, Vietnam
- Approval in 2006 for 50 years

**Plantation Concession**

**Pakxong Highland**, a subsidiary of Thai Charoen Corporation Group (TCC), Thailand
- Private investment
- Acquired the land concession in the late 1990s; for 30 years
- Pakxong, Champasack
- 3,000 ha land concession
- Crops: potatoes, macadamia nuts, coffee, fast-growing trees, biofuel crops (cassava, oil palm, sugar cane)
- Pakxong Highland, a subsidiary of Thai Charoen Corporation Group (TCC) (owned by Mr. Charoen Sirivadhanabhakdi, a Thai beverage magnate)
- TCC Group acquired the land concession in the late 1990s, from Asia Tech (a Thai company that was granted a 12,000 ha land concession in the early 1990s, but failed to develop the land)
- The plantation is located on the Bolovens Plateaux; 1,300 amsl

**Mitr Lao Sugar**, Thailand
- Private investment
- Project began in February 2005
- Land concession is for 40 years with a 20 year extension allowable
- Company operates a nucleus estate with a contract farming program for interested farmers
- Xayboury & Champon districts, Savannakhet
- 10,000 ha
- Sugar cane
- Xayboury Sugar Company to expand plantations, 22 September 2006

- 660 contract farmers on 2,048 ha with written contracts & fixed buying price; 2+3*
- Contract farming & renting land from farmers for an additional 15,000 ha with written contracts; 1+4*
- Company provides training at all stages of crop production
- Plantations are located on lowlands

- Information not available

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### Plantation Concession

**Dak Lak Rubber Co.**, Daklak Province, Vietnam
- Provincial SOE
- Land concessions were approved in 2004 for 50 years
  - Bachiang District, Champasack & Lao Ngam District, Saravane
  - 10,000 ha land concession in Bachiang for rubber
  - 7,000 ha land concession in Saravane for rubber, cassava, & cashews
  - Crops: rubber, cashew, coffee, and cocoa
  - No contract farming
  - 100+ daily workers at each location
  - Wage: 20,000 kip / day (US$2.30)

**Ou Phu Ko Co.**, Vietnam
- Land concession was approved in 2005 for 30 years
  - Lao Ngam District, Saravane
  - 1,000 ha land concession
  - Cassava
  - Contract farming for cassava; 2+3
  - Provides inputs on credit to farmers
  - Daily wage for plantation workers: 20,000 kip / day (US$2.30)

**KoLao Company; Korean/ Lao joint venture**
- Private investment from Korea
- Project began in October 2007
- Land concession for 30 years
  - 5 districts in Champasack Province:
    1. Mouang Khong, 300 ha
    2. Pathounphone, 300 ha
    3. Champasack, 2,200 ha
  - 2.2-2.4 million kip / ha
  - 1-3 ha per farm family; 1+4*
  - Farmer contracts are for 1 year; farmers earn 2.2-
  - Processing factory to make bio-diesel will be constructed near Pakse.
  - Also has 20,000 ha in Vientiane Province & applying for land concessions in Bolikhamsai, Khammouane, and Saravane

**Plantation Concession**
- Dak Lak Rubber Co., Daklak Province, Vietnam
- Provincial SOE
- Land concessions were approved in 2004 for 50 years
  - Bachiang District, Champasack & Lao Ngam District, Saravane
  - 10,000 ha land concession in Bachiang for rubber
  - 7,000 ha land concession in Saravane for rubber, cassava, & cashews
  - Crops: rubber, cashew, coffee, and cocoa
- No contract farming
- 100+ daily workers at each location
- Wage: 20,000 kip / day (US$2.30)

**Ou Phu Ko Co., Vietnam**
- Land concession was approved in 2005 for 30 years
  - Lao Ngam District, Saravane
  - 1,000 ha land concession
  - Cassava
  - Contract farming for cassava; 2+3
  - Provides inputs on credit to farmers
  - Daily wage for plantation workers: 20,000 kip / day (US$2.30)
  - The company has established a cassava flour milling factory in Lao Ngam District, Saravane
  - Plantation and factory is located on sloped lands adjacent to the Bolovens Plateaux, 600-800 amsl

*Note: Contract farming is generally described as having five elements: land, labor, inputs, extension, and markets. In ‘2+3’ schemes, farmers provide land and labor, with investors providing the rest. In ‘1+4’ schemes, farmers provide land only.*

Note: Baht / US$ exchange rate used is 32.00 Thai baht = US$1.00; Kip US$ exchange rate used is 8,700 kip = US$1.00.

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13 Note: Several large concession project have not been included on Table 1, including the Birla Group (50,000 ha concession) and Stora Enso (21,000 ha); both in Savannakhet Province. Time limitations made it impossible to visit these sites.


4. Soukhouma, 5,000 ha
5. Moulapamok, 11,500 ha

Total = approximately 20,000 ha
• Jatropha for biofuel for domestic use & export

2.4 million kip / ha (US$253-276) / year
• 20,000 ha has potential to engage 10,000 laborers
• 143 technician level people working on this project

Producers Association Model
• Association des Groupements de Producteurs de Café du Plateau des Bolovens (AGPC)
• Lao association registered with MAF
• Investors: development partnership between Lao farmers, GOL, and Agence Française de Développement (AFD)
• Original French Government supported project began in 1990; AGPC was organized in November 2006 as part of the Point d’Application des Boloven (PAB)

• Membership is from 3 districts of Champasack, Saravane, & Sekong provinces
• Arabica coffee area belonging to members = 3,300 ha
• Robusta coffee area belonging to members = 16,000 ha

AGPC membership fees:
• 100,000 kip / producer group / year
• 20,000 kip / producer / year

Written contracts between AGPC & members for specific volume of coffee & fixed price

Current membership:
• 51 producer groups (2,725 families)

Target membership:
• 84 coffee producing villages; 1 producer group per village

Independent Farmer Group Model
• Ban Vang Gnao Coffee Producers Group
• Lao Ngam District, Saravane Province

AGPC fees:
• 72 members
• In 2007, had

Part of the AFD supported Point d’Application des Boloven (PAB) du
• Lao coffee producers
• Farmers have been producing coffee since 1970s
• Oxfam (Australia) initiated a quality coffee & fair trade coffee project in the village in 2003; introduced processing & marketing
• PAB project initiated advanced processing in 2005.

• Arabica coffee
• Upland robusta coffee

• 100,000 kip / producer group /year
• 20,000 kip/ producer/year

Project investment:
• US$15,000 for the revolving fund;
• US$10,000 for the wet mill & collective process;
• Lao technician = 20% of $480 / mo.

written contracts with Jhai Coffee Foundation Cooperative (JCFC) & a Lao-Chinese trader brought in by the PAB project

Programme de Capitalisation pour l’Appui à la politique de Développement Rural (PCADR)
• Farmers group now roasts, packages, & markets coffee under its own brand ‘Ban Vang Gnao Quality Coffee’
• The producers group is planning to get certified as ‘fair trade’ coffee with the assistance of foreign NGOs
• The village is located on sloped lands adjacent to the Bolovens Plateaux, 1,000-1,100 amsl
Before the wholesale market concept was operational, farmers were obligated to transport their produce (mostly cabbage and bananas) to the Lao-Thai border at Vang Tao-Chong Mek, a distance of more than 100 km from the Pakxong District town. Farmers had no advance knowledge of the price they would receive for their produce, nor were they sure that they would be able to sell their crops. Often they were obligated to ‘dump’ their produce.

The Pakxong MMG was established to administer the wholesale market. It is registered with Pakxong District officials. To cover the operational costs of the market, a schedule of fees has been established as follows:

<table>
<thead>
<tr>
<th>Wholesale Market User</th>
<th>Fees Paid</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Farmer</strong>: fee for sanitary maintenance of market facility &amp; tax waiver certificate</td>
<td>• Delivery fee for a 2-3 ton truck = 3,000 kip</td>
</tr>
<tr>
<td><strong>Trader</strong>: fees for market administration, central fund for production promotion, &amp; commodity movement tax (paid to the District Finance Office)</td>
<td>• Delivery fee for a 5-7 ton truck = 5,000 kip</td>
</tr>
<tr>
<td></td>
<td>Total fee: 14 kip / kg, broken down as follows:</td>
</tr>
<tr>
<td></td>
<td>• Administration costs = 7.79 kip / kg</td>
</tr>
<tr>
<td></td>
<td>• Production promotion fund = 5.00 kip / kg</td>
</tr>
<tr>
<td></td>
<td>• Commodity movement tax = 1.25 kip / kg</td>
</tr>
</tbody>
</table>

Through the wholesale market the MMG will provide the following services:
- Provide a local primary market venue for smallholder farmers on the Bolovens Plateaux; saving farmers the 100 km (each way) trip to the Lao-Thai border;
- Issue the “ASEAN Integration of Preference” (AISP) Form to Thai traders; that allows the tax free movement of produce from Laos to Thailand;
- Certification of weights and measures; later to include inspection and certification of quality;
- Provide a sanitary area for traders and farmers to trade;
- Booths for Lao and Thai traders to purchase produce from farmers;
- Identification, screening, and registering of Thai companies (and enterprises of other nationalities) interested in purchasing produce from producer groups in Pakxong District (and neighboring districts); and,
- Support for DAFO staff to promote crop production in response to the needs of traders, using the production promotion fund.

13. Trading joint ventures between Lao and Thai traders have been established enabling Thai traders to operate more easily through the Pakxong wholesale market. In the past, Lao traders and transporters operated as middlemen for the Thai traders based at the border at Chong Mek. These relationships have been formalized and four joint venture companies are now registered at the district level. The Lao partners take responsibility for the administrative paperwork required by district officials and for transporting the raw materials to the Thai border. The Thai traders, working out of the same booth (at the wholesale market) as their Lao partners, handle the purchasing, weighing, measuring, grading, and packing of the produce; as well as all financial transactions, including cash payments and allocation of credit (in kind; if any) to producers.

14. Informal contract farming is taking place through the wholesale market facility. Thai traders who have purchased produce from Lao farmers at the Lao-Thai border for many years continue to trade with the same farmers through the wholesale market. DAFO and District Industry and Commerce Office (DICO) staff report that Thai traders provide credit
in kind to up to 30 percent of the Lao farmers trading at the wholesale market, in the form of seeds, chemical fertilizer, and pesticides. There are no written contracts but the arrangements are organized on trust between the two parties that has developed over many years of trading.

15. Linked to Pakxong District wholesale market and also supported by the Smallholder Development Project, DAFO has organized 23 producer groups currently producing coffee, cabbage, Chinese cabbage, and bananas that utilize the wholesale market. Other crops that can be marketed through this facility in the 2008-2009 season include castor beans, maize, and ginger.

16. DAFO and DICO staff pointed out the weaknesses of the wholesale market system as it functions at present:
- The role of Lao traders has changed. Lao entrepreneurs are no longer traders but act as shipping agents for the Thai traders.
- When market prices fall (in Thailand), the Lao traders have insufficient cash to intervene and pay a previously agreed minimum price for farmers’ produce.
- A producer revolving fund is needed to purchase seed and fertilizer in bulk at lower prices that can be passed on to Lao farmers.
- MMG staff lack transportation to follow up on production promotion funds and provide administrative tasks related to operating the wholesale market.
- The wholesale market lack cool storage facilities for fresh produce to enable price hedging.
- The MMG lacks the knowledge and capacity to undertake certification of produce (for SPS, bio-safety, organic certification, fair trade certification, etc.) being sold to Thai traders.
- Not all producers and producer groups are trading with Thai traders through the wholesale market. AISP certificates were issued for 7,000 tons of produce shipped to Thailand in 2007; whereas, as of November 2007, 12,000 tons of produce was shipped to Thailand from Pakxong District (figures are based on collection of district commodity movement tax at Kilometer 28, on Route 16E, between Pakxong and Paksé).

17. Benefits from wholesale market operations include the following:
- Exports to Thailand from Pakxong District have increased (no figures were available).
- The provincial officials at Ubon Ratchathani assist with negotiations with Thai companies that trade at the wholesale market when requested by Lao authorities.
- Thai trading companies tend to cheat less, particularly since the MMG is responsible for administering standards for weights and measures at the wholesale market.

18. **Concessions:** In the context of Lao PDR, the definition of a land concession is likely to consist of three features, namely:
- The land used for the concession is ‘state land,’ over which the state has authority;

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The area for a concession is relatively large (particularly when compared to leased land); and,

The concession agreement stipulates handing over certain land use rights for a specific period of time in exchange for a fixed fee and under well defined terms and conditions.

19. By applying this definition, the Government of Lao PDR (GOL) is implementing the policy measure of accelerating the transformation of land and property into capital. In this way it is aiming to synchronize Lao economic development with that of the market economic systems of its Association of Southeast Asian Nations (ASEAN) neighbors.

20. Large-scale land concessions consisting of areas over 1,000 hectares are found predominantly in central and southern Laos, including Khammouane, Savannakhet, and Champasack provinces. Chinese, Korean, Indian, Japanese, Malaysian, Swedish, Thai, Vietnamese, and companies of other nationalities have received concessions to establish plantations to cultivate rubber, sugar cane, cassava, Jatropha, and industrial trees. Some of the concessions on the Bolovens Plateaux in Champasack Province were granted in the early 1990s and have changed hands several times; others have been abandoned; and, still others have been wholly or partially withdrawn (for lack of any investment activity by the concessionaire) and leased out a second (or third) time. Many of the concessions in Southern Laos are currently used to grow coffee, flowers, rubber, cassava, oil palm, sugar cane, fas-growing trees, and vegetables for export primarily to Thailand and Vietnam. Other concessions are used for growing vegetables for export to Japan; and, for processing non-timber forest products (NTFPs) for export to China.

21. Data provided by provincial agriculture and forestry officials in Attapeu, Champasack, Saravane, Savannakhet, and Sekong provinces, investments in the ANR sector in southern Laos are made principally by investors and enterprises from three principal source countries: China, Thailand and Vietnam. Although penetration by Chinese investors is most strongly felt in northern Laos, generally in the form of contract farming arrangements and concessions for rubber, sugar cane, tea, and vegetable production, several Chinese firms and Lao-Chinese joint ventures also have established a presence in the south.

– Most frequently Chinese investments are for producing cassava, rubber, fast-growing trees (Eucalyptus, Acacia), and Jatropha.

– Thai concessionaires are producing many of the same crops as the Chinese, in addition to sugar cane and oil palm. However, to meet the needs of the increasingly refined Thai consumers and European and Japanese markets, Thai firms are diversifying and expanding into higher value products including potatoes (for chips/crisps), Arabica coffee, and macadamia nuts.

– Vietnamese land concessions for plantations on are among the largest in the southern region. Investments are concentrated in rubber and cassava plantations.

– Investors from India, Japan, Korea, Malaysia, Sweden, and the United States are developing concessions for biofuel crops and fast-growing trees.

17 Economic Report to the 8th Party Congress by Deputy Prime Minister & President of the Committee for Planning and Investment, Dr Thongloun Sisoulith March 2006.
Concessions operated by Lao investors tend to be small when compared to those operated by foreigners and focus on coffee, vegetables, livestock raising, fast-growing trees, and fruit trees.

22. In addition to using authorized concession land, some investors rent land adjacent to the concession owned by farmers or other land owners (who could be government officials, as in the case of Taniyama Siam in Sekong Province). Research by the consultant in Sekong Province confirmed Hanssen’s findings\(^\text{18}\) that some companies (e.g., LVF) convince communities to cede their land for compensation. In all cases, people in nearby villages are hired as laborers; the wage being offered in Thateng District, Sekong Province in April 2008 was 20,000 kip (approximately US$2.30) per day for field labor.

23. Table 2 presents a summary of the concessions granted on the Bolovens Plateaux in Pakxong District, Champasack Province, which may be indicative of the agricultural investments in other districts on the Plateaux.

As a rule (and as practiced in Thailand), an estimated 40 percent of the raw materials required by agro-processing facilities (or to meet export orders of fresh fruit and vegetables) is produced on a nucleus estate operated on company-owned lands or on concession lands. The remaining portion is usually purchased from middlemen with quotas, who purchase from producers, or directly from farmers under contract to the agro-processing facility. Based on discussions with DAFO staff in Pakxong District, Champasack Province, only a small number of the concessions operate as nucleus estates with outreach programs (for credit and technical advice) to farmers in nearby villages (see Table 2).

Table 2: Investments in the ANR Sector in Pakxong District, Champasack Province as of 15 March 2008

*Types of investments and agricultural activities are indicative of other districts on the Bolovens Plateaux*

<table>
<thead>
<tr>
<th>Type of Investment</th>
<th>Number</th>
<th>Agricultural Activities</th>
<th>Total Area (ha)</th>
<th>Range (ha)</th>
<th>Average Area (ha)</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Concessions Approved</td>
<td>75</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Large: &gt; 1,000 ha</td>
<td>2</td>
<td>Fast-growing trees, potatoes, coffee, cacao</td>
<td>19,277</td>
<td>7 – 3,101</td>
<td>275</td>
<td>Pakxong Highland (Thailand) = 3,101 ha</td>
</tr>
<tr>
<td>• Medium: &gt; 100 ha, &lt; 1000 ha</td>
<td>51</td>
<td>Coffee, cattle raising, sun hemp, vegetables, fruit trees, flowers, maize, potatoes, rubber</td>
<td>13,790</td>
<td>100 - 817</td>
<td>260</td>
<td>Mee Ting Co. (Vietnam) = 1,531 ha</td>
</tr>
<tr>
<td>• Small: &lt; 100 ha</td>
<td>21</td>
<td>Coffee, vegetables, ginger, maize, livestock raising, brick making, guest house, resort</td>
<td>855</td>
<td>7 - 90</td>
<td>41</td>
<td></td>
</tr>
</tbody>
</table>

Among which are included the following:
- Nucleus Plantation (estimated)
  - Coffee, vegetables, maize
    (estimate)
- Independent Farmer Groups (registered with Pakxong DAFO)
  - Coffee, potatoes, ginger, fruit trees, forest trees, maize, flowers, livestock
    | 23     | 2,487 | 7 - 300 | 108 | Since not all concessionaires were interviewed during the visits to Pakxong, exact data on area is not available. |
24. In communities impacted by concessions that were visited in the course of the assignment, villagers interviewed indicated that (i) they had been compensated for the loss of land ceded to concessionaire; (ii) they were pleased to have an opportunity for employment anytime that they required additional income; and, (iii) the concessionaire had contributed to community development through construction of a road, school, community center, football field, or some other infrastructure. None of the communities reported any form of contract farming or technology transfer (other than training received as a worker on the plantation).

25. Concession fees have been stipulated in regulations drafted to administer land concessions. The regulations establish a possible range for concession fees, from US$2.00 to $9.00 per ha per year. As interpreted by the Ministry of Finance several years ago, the figure of $6.00 per ha per year was used as an average figure. This figure is considered low when compared with concession fees in neighboring countries: Stora-Enso, a Scandinavian forestry firm, is charged US$70 per ha per year for land in Yunnan Province, China; forestry enterprises in Vietnam are charged US$40 per ha per year for concession land; and, land concession fees in Thailand (for degraded national forest reserve lands) are US$20 per ha per year.19

26. Concession Production Management Model: One variation of the plantation concession model is a land concession in which farmers are contracted to undertake cultivation on the concessionaire’s land. In this case, the KoLao Group (Korea) received a concession for 20,000 ha of land in Champasack Province (and Vientiane Province) to produce Jatropha as a raw material for processing into bio-diesel fuel. The company will construct a bio-diesel processing factor near Pakse for the production of fuel for use in Laos and for export to Korea. The concessions are located in five districts in Champasack, in contiguous areas of from 300 to several thousand hectares (see Table 1).

– Villagers are hired on contract to clear, prepare, and cultivate 1-3 ha of land for cultivating Jatropha. Each farm family receives 2.2-2.4 million kip (approximately US$253-$276) per hectare for the work to be completed within one year. Contracts are signed year by year and workers are selected from villages based upon the number of workers in the family. A worker is given a US$1.00 bonus for each additional worker he is able to bring to the plantation. When the Jatropha is ripe for harvesting, after 12-18 months, villagers will be hired (under a separate contract) to collect the raw materials for the company.

– The philosophy behind this approach to labor management is that workers that provide a high level of quality care to their assigned plots will be rewarded by the company. The value of this reward has not yet been determined. It is presumed that the reward will provide sufficient incentive for the workers to provide improved care to their assigned plots.

6 Case Study: Mitr Lao Sugar Co., Xayboury District, Savannakhet Province

27. The Mitr Lao Sugar Company’s investment application was approved by the GOL in February 2005. The company, a wholly owned unit of the Mitr Phol Sugar Company of Thailand, was granted a land concession of 10,000 ha for 40 years, with

19 Personal communications with Dr. Alastair Fraser, forestry consultant regarding the fees in China and Vietnam; and, with Mr. Sansonthi Boonyothayan, Sakon Nakhon Provincial Agriculture and Cooperatives Officer, Sakon Nakhon, Thailand; both on 22 April 2008.
a concession fee of US$6.00 per ha per year (with an option to extend for an additional 20 years) to grow sugar cane. Its original request for 25,000 ha was not approved, but it was authorized to establish contract farming arrangements with farmers in Xayboury and Champon districts, Savannakhet Province, on an additional 15,000 ha using the ‘2+3’ formula (see above). Operations began in Savannakhet Province in 2006 with the establishment of 100 ha of sugar cane trials.

– In August 2007, the company announced that 10 percent of the Mitr Lao Company would be sold to Tate & Lyle, a British food ingredients company for £2 million (US$4 million). Mitr Lao Sugar plans to invest a total of US$116 million to produce sugar from sugar cane grown on its plantations and by contract farming, and construct and operate a new sugar mill in Xayboury District. The mill will have an initial capacity of 5,000 tons rising to 10,000 tons of cane per day. Lao PDR will be eligible to export sugar duty free into the EU under the Everything But Arms initiative, effect from 1 July 2009. Raw sugar shipped to the EU by Mitr Lao Sugar will be refined by Tate & Lyle.

– Although the land concession fee is US$6.00 per ha per year, managers at the Mitr Lao Company stated that the transaction costs of doing business in Laos had resulted in a concession rental fee equivalent to US$50 per ha per year. These transaction costs include the cost of payments for land surveys, public infrastructure requested by the government and villagers (including village schools, roads, weirs, and pumps along the Mekong River), various study visits to Thailand, as well as other special requests from the GOL.

28. The Mitr Lao Company operates its concession as a nucleus estate. It initially adopted the GOL’s ‘2+3’ formula for contract farming with villagers in Xayboury and Champon districts, in Savannakhet Province, and was planning to expand to Xaybouthong and Mahaxay districts in neighboring Khammouane Province using the same approach. In practice, the company has signed written contracts with 660 contract farmers and provides 100 percent of the investment costs without collateral. Although government officials are present when contracts are signed, the GOL will not witness or otherwise acknowledge the agreement between the company and the farmers.

– The criteria applied by the company when selecting contract farmers includes the following:
  – The producer has documents (a tax receipt) showing he has the legal right to occupy the land;
  – The producer must cultivate a minimum of one ha;
  – The land for cultivating sugar cane should have access to water for irrigation if necessary
  – The land cannot be further than 20 km from the Mitr Lao processing factory (but in fact this criterion has been modified so that farmers as far as 50 km from the factory can be contracted)
  – The farmer must demonstrate a commitment to producing a quality product.

– Using the ‘2+3’ approach, the company provides 3,845 Thai baht (approximately US$120) per ha of credit to each contract farmer consisting of the following:
  – Land preparation
  – Chemical fertilizer
  – Cost of labor for weeding
  – Other labor costs

– In addition, the company provides training to contract farmers at every stage of cane production as well as market access. The company also loans agricultural equipment to more progressive contract farmers for planting and harvesting in areas with labor shortages. The equipment is on loan to the farmers who can purchase the equipment, paying on an installment basis.
29. The best performing contract farmers are producing 100 tons of cane per ha compared to others who are producing only 20-30 tons (The average yield in Thailand is 50 tons per ha, which is about 20 percent lower than the average world yield; Australia has an average yield of 90 tons per ha). Mitr Lao sees the potential for achieving higher cane yields in Laos than in Thailand and is thus attracted to producing in Laos.

- Many contract farmers have experienced significant production losses due to the natural grazing of cattle and buffalo. An estimated 10 million baht (some US$312,000) worth of cane was lost to livestock; an additional 50 ha was lost to wild fires lit by farmers burning off their paddy fields. In addition, the yields of many contract farmers are low due to the refusal of farmers to weed their cane crops (even though funding is provided for the weeding). Farmers want to be paid an additional fee for weeding their own crops.

- In 2007-2008, the company has achieved only 45 percent of its target for cane production through contract farmers. It is seeking the GOL’s assistance in the formation of producer groups, particularly in areas where cane cultivation is scattered. However, the GOL has not committed to providing the requested assistance, saying only that the farmers cannot be convinced to participate in the contract farming program.

30. As a result of the situation described above, Mitr Lao management has initiated discussions with the GOL to adopt the ‘1+4’ formula for producing the sugar cane required by their new factory. Under this method, farmers would rent out their land to the company and be paid as laborers to produce sugar cane that belongs to the company. To date, the company has signed rental contracts for 128 ha of land in Xayboury District for a period of from 10 to 12 years; at a fee of US$6.00 per ha per year.

31. **Joint ventures**: Provincial officials report that the formation of joint venture companies is generally an arrangement that allows foreign investors to obtain some level of control over land to be used for production. Officials in both northern and southern Laos report that many Chinese, Lao, and Vietnamese individuals have formed joint ventures for cultivating rubber and cassava and for processing latex. Often these joint venture companies are not registered with provincial officials. Most frequently the foreign partners guarantee the market for the produce, but not the price. The Lao partner benefits from a share of the income generated, while serving as a front for the project and handling all official paperwork. The foreign partner benefits from accessing a secure source of raw materials, but is usually required to provide all capital investment and to pay (sometimes import) laborers to produce the crop.

32. Another form of joint venture is a public-private sector partnership between the State (i.e., State controlled organizations, State supported individuals) and foreign (or domestic) companies. Hanssen emphasizes that: “Land concessions granted under

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20 Discussions with provincial officials in Champasack Province during April 2008; in Luang Namtha and Oudomxay provinces on 3-5 March 2007; and, with officials in Khammouane, Savannakhet and Champasack provinces in the course of undertaking subsequent assignments for the ADB and World Bank between 2002 and 2005.

these conditions are even more prone to direct revenues not being paid or not being paid sufficiently, because the State-related parties now have a direct interest in maximizing profits of the company, rather than paying correct fees to the State. Also it is much more difficult to ensure that profits realized flow into State coffers. An examination of this claim is beyond the scope of this assessment, however given that: “Provincial authorities are encouraged by the authorities at national level to seek their own income to supplement revenues received from State coffers. Provinces may be forced to use income from land concessions to finance their running costs (e.g. make up for payroll deficiencies), and thus have a direct financial interest in granting land concessions.”22

33. In this context, the consultant did find that the Advance Agro (Thailand) 100 ha land concession in Thateng District, Sekong Province, granted in the late 1990s, had been left undeveloped due to the financial problems of this Thai company. By the time that Taniyama Siam (a Thai-Japanese joint venture) joined with Advance Agro and invested the US$2 million needed to develop the concession in 2007, and cultivate okra for export to Japan, an adjacent concessionaire, the LVF Company (Vietnam), had encroached on 38 ha of the Advance Agro concession. Since the Japanese managers insisted that the 62 ha remaining was insufficient to produce the volume of okra required to fill a small container, an additional 20 ha was rented from local officials. It remained unclear how the officials had obtained the 20 ha; but, it was clear that they were partners in the Taniyama Siam – Advance Agro project.

34. **Producer / marketing groups**: Village-based farmer marketing groups have been formed in an increasing number of locations throughout the country to facilitate production, marketing, and contract farming.

7 Summary of lessons learned from the Smallholder Development Project

35. The ADB supported Smallholder Development Project has as one of its principal outputs the organization of farmer producer marketing groups that will increase their bargaining power in domestic and foreign markets. These groups also can serve as a channel to strengthen and re-enforce the Lao Extension Approach (LEA). Such groups can facilitate relations and economically empower smallholder farmers in their negotiations with private sector companies seeking a supply of food and agricultural products and attempting to establish contract farming arrangements. As of October 2007, 119 producer marketing groups had been formed and contract farming operations had been initiated at a few sites in the four provinces and 16 districts covered by the project.

36. A summary of the lessons learned from project implementation to date include the following points:

- The project was not well designed. It lacked sensitivity to local conditions and the overall inexperience of officials and producers to contend with unfamiliar and (in the case of contract farming) complex market forces.
- Rather than starting small, with simple models and demonstrations of contract farming and producing for private firms, PAFO and DAFO personnel were left to their own impulses to deal with a large number of crops, requiring complex marketing arrangements, and no technical assistance in the field to provide guidance.

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22 Hanssen, op. cit., p. 10.
The incentives for PAFO and DAFO personnel to fully commit themselves to implementing a successful contract farming program were both insufficient and inappropriate.

In the context of Lao PDR, contract farming arrangements are largely based on trust: trust that government officials will introduce farmers to dependable agricultural commodity traders, agro-processors, and agribusiness enterprises; and, trust between producers and traders. In a society that lacks a legal tradition, contract farming cannot be based on legalities.

Given this environment, the project is failing on all accounts: it is not bringing producers and firms together; nor do farmers understand contracts and contract farming any better; nor is there any legal recourse to discipline either farmers or traders who violate contract farming arrangements.

8 Working with producer marketing groups

37. The CP Group from Thailand has launched a corn promotion program in lowland areas of Khammouane Province, south-central Laos. The intervention will organize farmers into field maize producer groups for the CP Group in several villages covering an area of 4,800 ha beginning in the 2008 wet season. The intervention has been organized with the assistance of the provincial agriculture office in neighboring Nakhon Phanom Province, northeast Thailand as part of the ACMECS contract farming initiative. Similar initiatives are planned by CP in Oudomxay and Xayaboury provinces in northern Laos. Management at the village level is left in the hands of local producer group leaders, who are usually lead farmers known and respected by the community. The firms benefit from this arrangement by not having to deal directly with individual farmers and having harvesting and transport organized by local representatives of the farmers.

38. The organization of marketing groups has not always succeeded. A case in point is Ban Na Yang, a Tai Lue ethnic village in Nam Bok District, Luang Prabang Province, where several different Chinese and Lao-Chinese joint venture firms have promoted white sesame, corn, groundnuts, and leaf mustard (vegetable) for export to China. Each of these initiatives was organized using farmer marketing groups and has failed; usually because the contract farming company did not return to purchase the produce even when the firms provided seed and small quantities of chemical fertilizer on credit.

39. Farmers in Ban Nong Soung, Pakxong District, Champasack Province interviewed on the Bolovens Plateaux on 15 March 2008, also reported that the Oxfam supported coffee production project had failed to purchase coffee from them after a project technician promoted the crop to the villagers. As currently understood, Oxfam is working in collaboration with the Japanese firm Alter-Eco to encourage farmers to produce organic coffee for sale under the framework of the Fair Trade regime. In the case of Ban Non Soung, Oxfam provided the farmers with equipment and supplies to produce the coffee, as well as technical assistance and training. They were contracted (verbally) to produced five tons of upland robusta coffee. According to the group leader in this village, producers kept their part of the deal and produced

23 Discussions with the Provincial Agriculture and Cooperatives Officer, Nakhon Phanom Province, Thailand, on 26-27 April and 26 May 2007, at the Lam Nam Oon Irrigation Project, Sakon Nakhon Province, Thailand.

24 Farmers were interviewed on 3 March 2007.
the requisite quantity of a high quality (cleaned and sun dried) robusta bean, but the Oxfam project failed to purchase the product.

40. The experience in Ban Na Yang and Ban Nong Soung notwithstanding, with appropriate orientation, guidance, supervision, and mentoring, farmer groups can be highly successful. The coffee producers group at Ban Vang Gnao, Lao Ngam District, Saravane Province is presented as a case study of one such successful producer marketing group.

9 Case Study: Ban Vang Gnao Coffee Producers Group --- An Independent Farmer Group Model

41. The 72 farmers who are members of the Ban Vang Gnao Coffee Producers Group have been cultivating coffee since the 1970s. They grow both Arabica (typical) and upland robusta coffee varieties. Before 2003, they were simply individual growers selling their coffee to traders who appeared seasonally and offered them the market price at that time for their green coffee. As farmers, they had no knowledge of quality coffee, or the concept of moving up the coffee value chain. Oxfam Australia, an international non-government organization (INGO) that has socioeconomic development projects in Saravane Province, began visiting the village in 2003. It was Oxfam that introduced modern coffee cultivation technology, as well as simple post-harvest handling and processing techniques to improve the quality of the coffee. Oxfam also began the promotion of quality coffee from Ban Vang Gnao in Paksé and Vientiane.

42. The French Government also has supported the introduction of improved coffee production technologies on the Bolovens Plateaux since the early 1990s. In 2005, through the AFD supported Point d’Application des Boloven (PAB) du Programme de Capitalisation pour l’Appui à la politique de Développement Rural (PCADR) initiatives, the PAB coffee improvement program, working out of Paksé and Lao Ngam districts, initiated the full washing, roasting, grinding, and packaging of Ban Vang Gnao quality coffee. With an investment in processing infrastructure of about US$10,000, accompanied by a village revolving fund to support the coffee production operations of about $15,000, the Ban Vang Gnao coffee producers group is now selling its high quality coffee at a premium price and marketing it under its own brand. The PAB project has plans to obtain a geographic indicator (GI) for coffee sourced on the Bolovens Plateaux to establish an ‘origin’ for the coffee. The group receives technical support from a DAFO technician who has been trained as a coffee production and processing specialist.

43. In addition to selling under its own brand name, the Ban Vang Gnao group has signed written contracts with the Jhai Coffee Foundation Cooperative (JCFC) that markets its coffee in Laos as ‘Lao Mountain Coffee;’ and, with other local and foreign traders. With the assistance of a New Zealand NGO, the group is aiming to obtain organic certification for their coffee; and, with help from Oxfam Australia, Ban Vang Gnao is seeking certification as ‘fair trade’ coffee.

44. The farmers have benefited significantly by moving up the coffee value chain. By adopting improved production technologies, farmers have increased the productivity of their coffee trees, a farm asset. By processing their raw coffee, they are able to add value to their asset and create wealth, thus breaking the vicious cycle of poverty. Although the group lacks direct links to international marketing networks, they have learned much from their mentors and technical assistance advisors. Working as a group, they have been empowered and are in a better position to negotiate with buyers than they were when they were selling as individual growers.
10 Producer associations:

45. It is likely that the privately initiated and funded Houa Phanh Province Biofuel Association and French Government supported Association des Groupements de Producteurs de Café du Plateau des Bolovens (AGPC) (coffee producers association) are unique as (provincial level) commodity associations in Lao PDR. Both associations were granted official permission to work with smallholder farmers to organize a market for separate agricultural commodities for processing in Laos. The AGPC in Champasack is an attempt to bring discipline to the domestic marketing of coffee that is subject to volatility in response to the international coffee market. The Biofuel Association in Houa Phanh is an attempt to create and control a market for a crop for which farmers had little use in the past. Both associations were registered only recently. Both are dependent on the strength of producer groups; the commitment of members of the association; and, support from their financial backers. Both are indigenous Lao organizations – organized by Lao; managed by Lao; working with and for Lao farmers --- supported by development partners and working with crops that are in high demand in world markets: i.e., quality coffee and Jatropha, a biofuel crop. Yet, both associations are new on a highly dynamic international stage. They can easily fail if they are not quickly and securely integrated into global value chains.

46. The association in Houa Phanh Province was registered with provincial authorities in 2006. Its members have organized the contract farming of Jatropha and obtained the sole right to purchase and market that crop in the province. The association has adopted a set of principles and by-laws that establish the terms and conditions of contract farming, roles and responsibilities of each party, and the penalties to be imposed in case of evasion. Since 1994, a similar arrangement has operated successfully for benzoin production in Houa Phanh Province with the benzoin concession being controlled by one European firm. It is now being replicated for Jatropha for the benefit of members of a Lao association and farmers throughout the province.

- To discuss lessons learned from previous contract farming and agricultural product marketing experience, provincial officials organized a workshop of key stakeholders (including provincial administrators and technicians, as well as tax, police, and customs officials, district chiefs, and lead farmers). They adopted principles and by-laws for the association based on a consensus of these key stakeholders. A provincial decree was signed by the governor and circulated among provincial and district officials explaining the purpose and operations of the association.
- The association has a 300 ha concession that serves as a nucleus plantation to produce Jatropha. Fines are imposed on sellers and buyers who do not obtain the permission of the association to trade Jatropha. Farmers are able to produce sufficient quantities of Jatropha for their own and community use, but sales of surplus must be to a registered member of the association.
- For other traders to access a supply of Jatropha, they are required to form joint ventures with members of the association. The association works in partnership with the province to produce biofuel for local use; promoting contract farming of Jatropha, contributing to poverty alleviation; and, generating tax income for the province through a rental fee for the land concession and an export tax if selected crops and biofuel are transported outside of Houa Phanh province.
- The Bio-fuel Association is planning to establish a Jatropha processing and biofuel refining facility in Houa Phanh with interested traders being able to own 25 percent of the unit. Both French and Korean investors have taken a stake in the facility. The markets for the refined biofuel include local consumers (for hand
tractor, diesel engine-operated pumps, and electric generators) as well as nearby China and Viet Nam.

47. The AGPC similarly is a new association comprised of 51 groups of coffee producers in three districts from Champasack and Saravane provinces, and two villages in Sekong Province, on the Bolovens Plateaux. The association is registered with MAF and recognized by the governors of Champasack, Saravane, and Sekong provinces. The principal focus of the association is to produce and market high quality coffee originating from the Bolovens Plateaux.

- In addition to its current support from the ADF financed PAB and PCADR projects, the AGPC collects a membership fee of 100,000 kip per year from each member group. Producers who are members of a village-based group pay a membership fee of 20,000 kip per year. Using funds from the membership fee and profits earned from the sale of coffee in high-value markets, the AGPC aims to be self-sufficient once ADF financing ceases.
- To secure a market for quality coffee, the AGPC signs contracts with buyers season by season. The goal is to sell all AGPC coffee in Europe, while the Chinese market is seen as a secondary outlet.
- The AGPC operates through a network of village representatives and officers of each member group. These units are supported by 14 coffee technicians paid by the association (currently supported by the PAB project).

48. In the longer-term, the AGPC aims to resolve the two most serious problems: securing markets for quality Lao coffee; and, identifying sources of credit for use by its members. It also hopes to be able to negotiate higher prices for its members by ensuring volumes and guaranteeing the quality of coffee being sold through the association.

49. Currently, the services provided by the association include:

- Surveying the production of coffee each season to determine the volume that members can be expected to provide for marketing through the association;
- Regulating the quality of coffee being provided to buyers by groups and their members;
- Negotiating prices and signing contracts with buyers on behalf of AGPC members;
- Monitoring international coffee prices and marketing trends and disseminating this information to members; and,
- Linking farmers to technical advice and advanced coffee production and processing techniques.

50. Although the institutional capacity and strength of such commodity associations has yet to be adequately tested, provincial authorities and investors keenly interest in having them play a greater role in coordinating with farmers.
APPENDIX VI. AGRONOMY

The following is a summary of the Agronomy Report prepared by Keith Chapman. Some Tables and Maps have been omitted, but can be referred to in the full report.

1 Approach

The following activities have been investigated sequentially:

- Land Use Master Plan development done jointly with the GIS Specialist and to some extent the Marketing Specialist and Contract Farming/Agribusiness Specialist.
- Define existing and potential areas for tree crops.
- Define existing and potential areas for cash crops.
- Define existing and potential areas for horticulture/vegetable crops.
- Define small and medium agro-industries.
- Identify investment development options for commodities based on land use and field verification on available lands for:
  - Improving performance of existing crops and systems.
  - Expanding production of existing cropping systems.
  - Establishment of new crops/crop systems. (Major focus for core sub-project) input
  - Bio-fuels and Non Timber Forest Products (NTFP’s).
  - Agro-industry development.
  - Evaluation of Options with high potential investment subprojects for full financial analysis and funding. (All costings have been provided for the Economist)

2 Analytical Framework

The project team in collaboration with Lao MAF personnel developed an Analytical Framework below for addressing Agriculture and Natural Resources and reflecting the GOL priorities for development and the interacting agencies.

3 Criteria for Selecting Core Sub-Projects

This Agronomy input/report focuses on the GOL priority of Commercial Production (GDP Growth) for crops including plantation farming and contract farming approaches with the aim to establish an approach methodology and criteria for commercial production of new crops and improving existing commercial crop production systems using Champasaak province as the example model approach. The reasons for selecting Champasaak for a commercial production model core sub-project were:

- It has the most opportunities for potential commercialisation of high value-added industrial and horticultural crops based on the agro-ecology, soils, topography and water supply, as well as lowland and upland rainfed rice based systems and irrigated rice based systems. Chapmasaak has all key AEZ’s for development represented.
Champasaak has established plantation concession developments, large areas of smallholder coffee and plantation coffee, NTFP production and protected and plantation forest areas as well as NBCA areas. In addition it has concession models (rubber and coffee etc.,) which are not fairly distributing benefits to Lao and Lao farmers and reasonable compensation to disrupted villages and farmers.

Champasaak has excellent road links/access to Viet Nam, Thailand and Cambodia for exports to those and overseas markets and by virtue of the diverse natural resources has the most opportunities for high value-added commercialisation.

Champasaak districts have the most data on current land use, updated in 2006, the recent satellite imagery and agroecological and topographic data needed, including a deal of information on concessions for development and what areas of land may be available for expanding or diversifying existing farm enterprises or developing new commercial production agricultural, livestock, aquaculture or forest based enterprises.

Champasaak has more recent marketing studies done on horticultural crops (Vernon, 2005) and studies on industrial crops for development (Chapman, 2001), both to be updated by this PPTA. The province already exports some of these high value products.

Champasaak already has production of cash crops such as maize, soybean, cassava, peanuts, for contract farming enterprises.

4 The Approach Methodology

In collaboration with the project GIS specialist and NAFRI, PAFO and DAFO staff, in Champasaak, develop and update with recent satellite imagery and existing land use definition by NAFRI and update and overlay recent concessions for plantations, mining and reservoirs in a series of maps. From these images try to identify locations suitable for commercial development models.

Examine and evaluate the land use selection criteria methodology used for definition of areas defined as suitable for future development of particular crops as a guide to selection of suitable sites for the model sub-project.

Identify and record existing agro-industry enterprises such as coffee processing, seed production, tea processing etc., present in the province.

Using the Decision Tree given in Figure 2 below identify crops for commercially successful development. This exercise will draw on available marketing information and recent studies and the Marketing Specialist’s findings.

Consult with PAFO officials as to the priority districts and sub-districts for interventions and the priority crop/s for sub-project development and identify best locations— as summarised in table above.

Help identify future sub-projects for commercial development during project implementation.

5 Criteria for Crop/Commodity Selection

The basis for selection is the commodity chosen must be one for which Lao has a comparative advantage and preferably one to which maximum value can be added in-country.

The commodities chosen must fit the Agro-Ecological Zones identified and the technology is available to ensure their successful commercialisation.

The chosen commodities should be able to fit into existing farm systems with minimum disruption to livelihoods of existing rural dwellers and land must be available which conforms with national land use criteria, while being suited to the crop requirements.
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The commodities chosen, must have the characteristics suited to commercial farming development and lend themselves to fair contract farming, farmer association or nucleus estate models. The enterprise unit may be a commercial agribusiness company, NGO, facilitated farmer group etc., with the marketing expertise and must have essential sanitary/phyto-sanitary standards capabilities to tap international markets.

The product/products must be market driven with backward linkages to enterprises and smallholder farmers.

Products for promotion should be of relatively high value and with low labour intensive demands and able to provide good returns to both labour and capital.

Ideally the commodities chosen should have the opportunity to:

- Generate significant income/export earnings generation in both existing and new markets especially in the fast growing economies of S-SE Asia and China.
- The capability to substitute for imports
- Sustainable value-added opportunities
- Potential to enhance domestic output quality and niche products
- Characters which allow consistent delivery to their point of consumption at a consistent definable price and quality
- Can be produced in sufficient quantity to permit the formation of a stable and acceptable market price and attendant customer loyalty
- Commodities which have value added potential that stays in-country via opportunities to:
  - Grow and produce organically certified products or ones that can be “Fair Trade” certified.
  - Grow and make value-added products.
  - Have low unit volume to high value ratio.
  - Can be sold to increase foreign exchange
  - Have year round off-season availability.
  - Good demand in supermarkets and other outlets such as tourist centres, hotels etc.
  - Generate small-scale processing options.
  - Develop SME producer run collection and distribution schemes.
  - Use contract farming or other models mentioned above.

- Commodities which will lend themselves to:
  - Improved, market-oriented, product quality
  - Bulk marketing via SME-based collection creation.
  - Improved access to market intelligence and price information.

Based on consultations with the provinces and the team the following priorities were identified and kindly summarised in Table 1 below, by the Social Analyst.
## Table 1. Provincial Priorities for Core Sub-Projects

<table>
<thead>
<tr>
<th>No.</th>
<th>Proposed District</th>
<th>Activity</th>
<th>Location</th>
<th>Ethnicity of Proposed Districts</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>1</strong></td>
<td><strong>Forest Conservation &amp; Livelihood Improvement</strong></td>
<td><strong>A Developing Livelihood Alternatives to Forest Resources</strong></td>
<td>1</td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td><strong>ii</strong> Livestock raising</td>
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<td></td>
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<td><strong>iii</strong> Rice gene improvement</td>
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<td></td>
<td></td>
<td><strong>iv</strong> Rice trials with farmers</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td><strong>v</strong> Improved small-scale irrigation</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td><strong>vi</strong> Fish pond programme</td>
</tr>
<tr>
<td></td>
<td><strong>B Forest Boundary Demarcation Programme</strong></td>
<td><strong>i Surveying and boundary marking &amp; Land Use Planning</strong></td>
<td></td>
<td><strong>ii</strong> Buffer zone community management &amp; land allocation programme</td>
</tr>
<tr>
<td></td>
<td><strong>C Technical Support &amp; Training</strong></td>
<td><strong>i Technical skills centre upgrade &amp; construction</strong></td>
<td></td>
<td><strong>ii</strong> Development of training programmes in alternative livelihoods</td>
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<td></td>
<td><strong>iii</strong> Skills development for farmers &amp; extension staff, including LUP</td>
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<td></td>
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<td></td>
<td><strong>iv</strong> Information &amp; database management</td>
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<tr>
<td><strong>2</strong></td>
<td><strong>Smallholder Development</strong></td>
<td><strong>A Livestock Raising</strong></td>
<td>2</td>
<td><strong>Dakcheung</strong></td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>i</strong> Livestock banks</td>
<td></td>
<td><strong>ii</strong> Village-level animal health programmes</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td><strong>iii</strong> Improved small-scale livestock marketing</td>
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<tr>
<td></td>
<td><strong>B Coffee Development</strong></td>
<td><strong>i Development of village/kumbaan level coffee marketing associations</strong></td>
<td></td>
<td><strong>ii</strong> Promotion of district coffee marketing</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td><strong>iii</strong> Improved coffee bean raising, training for farmers &amp; extension staff in improved techniques</td>
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<td></td>
<td></td>
<td><strong>iv</strong> Establish Agricultural &amp; Forestry Extension Stations at kumbaan level</td>
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<tr>
<td></td>
<td><strong>C Fisheries</strong></td>
<td><strong>i Fingerling raising</strong></td>
<td></td>
<td><strong>ii</strong> Train villagers and extension staff in improved fish-raising techniques</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td><strong>iii</strong> Develop fish marketing outlets</td>
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<tr>
<td><strong>3</strong></td>
<td><strong>Promoting high value industrial crops and products</strong></td>
<td><strong>A Year 1: Develop a replicable high value crop marketing model, based on 1 crop &amp; 1 location</strong></td>
<td>3</td>
<td><strong>Paksong</strong></td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>i</strong> Develop macadamia nut production and farming model</td>
<td></td>
<td><strong>ii</strong> Enhance farmer skills improvement (specific to crop and production method)</td>
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<td></td>
<td></td>
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<td></td>
<td><strong>iii</strong> Enhance technical capacity of support and quality of crop/product</td>
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<td></td>
<td><strong>iv</strong> Ensure value addition for farmers by village-level small scale processing</td>
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<td></td>
<td><strong>v</strong> Develop marketing structure and farmer associations.</td>
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<td></td>
<td><strong>B Years 2-4: Replicate the production &amp; marketing model for other locations and other location-specific products</strong></td>
<td><strong>i Introduce year by year, alternative high value crops and products, including:</strong></td>
<td></td>
<td><strong>Lower elevations: rice</strong></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td><strong>Foothills: cassava, rubber, oil palm</strong></td>
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<td><strong>Higher elevations: macadamia, black pepper, avocado</strong></td>
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<td></td>
<td></td>
<td><strong>Forest: cardamom</strong></td>
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<td></td>
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<td></td>
<td><strong>Livestock: cattle, fish</strong></td>
</tr>
</tbody>
</table>
Coffee Note

Ongoing support to the very valuable coffee industry of Lao based on the Bolovens Plateaux is considered a very high priority area too for ongoing support to development and realisation of an expanded high quality Arabica and Robusta coffee industries. The development support put in to date by AfD and the technical support by FAO needs to be built on further for at least another 5-6 years, given that another 4,500ha of coffee is likely to be planted on the Bolovens in the next 1-2 years. Coffee development and high quality commercialisation is another area for possible sub-project support.

Other Priorities in addition to the above priorities, derived from PAFO staff meetings and with some DAFO representatives present are given below.

Salavane:
- Technical Service Centres establishment.
- Livestock development in two districts.
- Irrigation extension for cropping in three locations.
- Economic plantation of trees.
- Conservation assistance in three locations.

Xekong:
- Support to expanding vegetable production.
- Support to increasing rice production.
- Development of off-season rice cropping and enterprises.
- Support for a veterinary services network.
- Pig farming development.
- Technical Services Centres development.
- Promotion of NTFP’s and capacity building.
- Capacity building of staff.

Attepeu:
- Extension of irrigation schemes and some rehabilitation of existing schemes.
- Rattan development.
- Livestock development.
- Aquaculture and fish farming.
- Coffee development and better access to coffee areas.
- Fruit and nut tree development including macadamia.
- Vegetable production expansion.
- Processing of wood products.
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- Charcoal production.

**Champasaak:**

Based on the above criteria for Champasaak, and in consultation with PAFO, MAF and discussions with DAFO officials in Paxong district of Champasaak the crops priorities for each of the AEZ's are given in the Table 1 above. The AEZ's are given in the map Figure 4 below.

AEZ1. Southern Lowlands Plains and Terraces-Rice-Value adding and improving productivity and the rice based farm systems. (Other options are for sugarcane, corn, peanuts, mung bean, vegetables and fruits, cassava etc.).

AEZ 2. Footslopes of Bolovens Plateaux, up to 600 m.a.s.l.,-Rubber and possibly Oil Palm (with irrigation) and a possible range of fruits, vegetables and existing robusta coffee and other industrial crops as defined in Tables 3 and 4 below.

AEZ 4.-Highlands of the Bolovens Plateaux- Macadamia Nut initially and possibly Avocado and Specialty value added Black Pepper integrated into existing coffee farm systems as other future crops such as well as larger plantings. (N.B. Do not interplant macadamias with avocados because of Phytophthora root and trunk rot diseases). Off-season Cabbage, and other Vegetables for AEZ 4 and fruits for AEZ's 1, 2 and 4. and (See Eddie Vernon’s Report extracts below) and Table 3 and 4 below prepared by the author.

The next step was to identify, based on data collected, a model sub-project for commercially successful development. (Meets GOL Priority-Commercial Production GDP Growth). Macadamia Nut was chosen as the commodity for the sub-project model in full consultation with PAFO in Pakse. It meets all of the selection criteria options above and below for commodity and site and AEZ and can readily be integrated into the existing coffee based farm systems of the higher parts of the Bolovens Plateaux. The ideal range would be from 1000 m.a.s.l., and above although macadamia could be grown commercially down to around 900 m.a.s.l., or less using adapted varieties. However, at lower altitudes rainfall is less and irrigation may be needed..

N.B.

In all provinces there is an urgent need for farm systems agricultural economists capable of undertaking economic cost models (gross margins, IRR’s, cash flows, break –even calculations, returns to labour and capital etc., ) for commodities and enterprises and evaluating financial feasibilities of new agricultural concession proposals, along with conducting farming system studies to enhance existing farm systems profitability. Such skilled persons are needed to interact with land use planners and entrepreneurs/investors to assist fair, profit sharing, commercial development in provinces and districts. In addition they would provide advice to PAFO and DAFO staff to help farmers make better enterprise decisions and choices.

There is also an urgent need to train NAFRI and MAF staff on a climate, water supply, slope approaches to land use suitability for a given crop in a given location, with soil playing a far less important role than at present approach. The important aspects of soils are not the classifications but rather the ability to identify soils with good physical characteristics and to avoid adverse soils and those that are shallow, too light or too heavy and with poor drainage, rocks, salinity etc. The current soil based approach is overdone especially in the light of the errors in soil maps found in Lao. Furthermore for high value crops soils can afford to be manipulated chemically and sometimes physically to meet a crops needs unlike a low value crop like rice or cassava etc.

Appendix II contains the Macadamia/Coffee Farm System Sub Project Concept details..'
6 **Criteria for Selecting a Sub-Project Location**

AEZ characteristics ideally suited to the crop chosen, namely Macadamia nut.

- Accessibility (all weather roads and not isolated)
- Priority district- namely Paxong
- Available infrastructure (electricity and ready access to water)
- Literacy, education/understanding of farmers sufficient to ensure successful implementation
- Entry points for different ethnic groups
- Capacity of technology transfer personnel/extension or other technical agency, NGO, Project etc to link with the location chosen and smallholders
- Availability of reliable data and ease of data collection
- Enthusiasm of farmers to adopt
- Availability of labour to manage new interventions
- Availability of water supply for certain crops and all agro-processing/value-adding operations
- Essential agricultural inputs/materials readily available

In addition it is necessary to avoid existing mining exploration lease areas and agricultural and industrial concessions approved or applied for, as far as known, and determine the status of UXO occurrence from GIS information etc. Avoid areas where clearance costs may be excessive.

**N. B.** Labour availability is a key constraint in developing larger plantation concessions with high labour requirement crops such as rubber, sugarcane, coffee, etc. E.g., for rubber grown in a concession plantation model, a minimum of 1.5 persons are needed as labour for each hectare of rubber. For the 50,000 ha planned for Bachiang district of Champasaak and Lao Ngam district of Salavane some 75,000 labourers are needed. These areas have nothing even approaching this labour needs, that can be provided by Lao workers, even if they wanted to tap rubber. One plan by a Vietnamese company is to bring in Vietnamese people to do the work. With families of an average of 4 people this means that 300,000 Vietnamese would settle in these districts. These labourers would be in addition to the hundreds or more of Vietnamese already working on coffee plantations. GOL would need to assess the social impacts of this imported labour on the culture of Lao people. In addition is the displacement of people often with minimum or no compensation from their lands to give them up for plantation concessions.

7 **Safeguard criteria**

Safeguard Criteria for subproject selection were suggested in the Inception Meeting and to PAFO’s Viz.:

- No locations to be selected where resettlement has recently occurred (in the last 3 years) or will occur in the near future.
- No locations to be selected which will be adversely affected by other sectoral activities, e.g. hydropower.
- Where infrastructure may require land acquisition, the resettlement framework agreed between ADB and GoL will apply.
- Where activities occur which may affect and/or include ethnic minorities, the ethnic minority development framework agreed between ADB and GoL will apply. This will include relevant and specific actions to ensure that free, prior and informed consent will first be obtained, that men and
women from different ethnic minorities are able to benefit equally from project inputs, and will not be adversely affected.

Core subproject selection should be guided by technical feasibility, community acceptability, location suitability, and market potential. Sekong and Salavane provinces added potential for poverty alleviation to these criteria.

Livelihood and safeguard studies including gender surveys must be conducted in areas where each sub-project is to be located.

8 Land Use

As given earlier above in the ToR the following points were nominated for attention:

- Define existing and potential areas for tree crops.
- Define existing and potential areas for cash crops.
- Define existing and potential areas for horticulture/vegetable crops.
- Define small and medium agro-industries.

Existing official GOL statistical data on crop area, yield and production cover some but not all cash crops. The statistics contain little to no information on industrial tree crops, fruit and nut crops and vegetables, except for a select few.

In terms of working on the points defined above unless data can be collected from site visits it is virtually impossible to define existing and potential areas available for possible agricultural crop production in the future.

For all districts of Champasaak, including Paxong district, the focus for the macadamia/coffee project, NAFRI in collaboration with PAFO and Paxong district DAFO staff in 2007, gathered in field visits to the 9 Kumbans of Paxong detailed existing land use data. In addition the studies assessed the possible expansion of land use for various purposes by 2020, as shown below.

<table>
<thead>
<tr>
<th>Description</th>
<th>Current Land Use (ha)</th>
<th>Current Land Use (%)</th>
<th>Predicted Land Use by 2020 (ha)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Forests</td>
<td>206,667</td>
<td>58.18</td>
<td>185,732</td>
</tr>
<tr>
<td>Agricultural Land</td>
<td>103,974</td>
<td>29.27</td>
<td>124,113</td>
</tr>
<tr>
<td>Grasslands</td>
<td>31,940</td>
<td>8.99</td>
<td>31,940</td>
</tr>
<tr>
<td>Construction Areas</td>
<td>8,282</td>
<td>2.33</td>
<td>9,077</td>
</tr>
<tr>
<td>Other Areas Wetlands/Water</td>
<td>4,373</td>
<td>1.23</td>
<td>4,373</td>
</tr>
<tr>
<td>Total Area</td>
<td>355,235</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Essentially the predicted potential agricultural land use by 2020 will come from forest areas. In 2007 the studies showed that there are in Paxong district some 56, 637 ha of degraded forest land that could possibly be diverted to agricultural land use, depending on the slope of the lands and the amount of adverse soils.
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conditions such as rock, wet areas, shallow soils, high aluminium soils etc. Such action would reduce forest cover to 150,030 ha or 42.23% of the total district area of 355,235 ha, a reduction of 15.95%.

It is not clear if the data collected cover existing concessions and concession applications for coffee, rubber, vegetables, mining, fruits etc.

Data for coffee are clearly inaccurate showing current coffee land use at some 14, 500 ha. Coffee production areas in Lao in 2007 covered some 45,000 ha with a majority 99% in the south and the majority on the Bolovens Plateaux and in Paxong district from 400 m.a.s.l., to 1400m.a.s.l., Sallee et al 2007.

The studies also predict what areas of land would be available for each crop type by 2020. However, the methodology chosen for predicting such land use is clearly far too restrictive and is based to a large extent on soils, without considering opportunity land use options for any given location. For example to indicate that land available for fruit trees is only 109 ha and vegetables only 830 ha is totally misleading. The planning process does not recognise that for example fruit trees and vegetables of different species can be grown from Pakse to Paxong and altitudes above, based on altitude, soils, water availability, slope and market demand. Opportunity options are clearly not considered in the land planning process. E.G., Land classified for industrial tree crops, such as rubber has the opportunity to produce a huge range of alternative cash, vegetable, fruit and other industrial crops with far higher net returns per ha than rubber. Such options are not being taken into account at present in the land use planning process for any given location.

In defining areas for future agricultural land use the problem is that the classifications for land use are dominated by soils and not climate, which is the first determinant of what crop will grow where. Soils are only a tertiary consideration after climate and slope. For many higher value industrial and horticultural crops the key considerations for these crops are deep, well drained soils of light to medium texture with absence of rocks, water-logging, salinity, alkalinity, aluminium toxicity or acid sulphate conditions etc., Fertility is of less importance and pH can be readily, affordably corrected as the crops are of high value, unlike low value food crops such as rice, cassava, etc. Also we know from a number of sources that the existing soil maps for Paxong are inaccurate, which makes a soil based approach totally inappropriate.

In short while the NAFRI/PAFO/District Approach to land use and future land use planning has many shortcomings at present as indicated above with examples.

Another supporting approach is to digitize existing areas of land visible on satellite imagery, where obviously some agricultural activity is taking place such as coffee or commercial timber production, vegetable production etc., e.g., for areas above 900 m.a.s.l., on the Bolovens Plateaux AEZ for coffee and other tree crops and vegetables, tea, or other industrial crops. Then the rest of the area, not obviously covered by good forest cover, especially degraded forest areas, might be roughly defined as potentially suitable for agricultural development, provided the slopes are less then 35%. This assumes that the soils are all suitable for cropping or tree plantations or fruits and coffee tea etc., which is not the case for all areas, due to rock outcrops, shallow skeletal soil formations, soaks or small swamps etc., which must be identified by site visits. As an example this approach prepared in collaboration with the GIS specialist is shown in the maps below. Known concessions and concessions that appear to be applications, as collected by the GIS specialist, are shown.

9 Criteria for Selection of Crops with Good Commercial Potential for the Southern Lao Provinces of Champasaak, Xekong, Attepeu, Salavane

Table 2 below presents official Lao-PDR crop production statistics of crops for which data are recorded. Data demonstrate the existing crop production and farm systems, to which must be added a range of other fruit and vegetable and spice products, industrial crops including rubber, coconut and others for which official data are not published. To complete the complete farm and livelihood systems in the south of Lao livestock, timber and non-timber forest products must be added along with bio-fuels.
Table 3 presents official Lao statistical data on cropping for the southern provinces of Lao. Again as mentioned above lots of data are not available on other fruit and vegetable and spice products, industrial crops including rubber, coconut and others. Also, to complete the complete farm and livelihood systems data in the south of Lao livestock, timber and non-timber forest products must be added along with bio-fuels.

Tables 4 and 5 below gives a Potential List of Crops with Good Commercial Potential for Possible Commercial Development in Southern Lao-PDR. This list which includes cash/industrial crops fruits and vegetables derived from Chapman, .......... is not exhaustive as there are many other vegetables, medicinal plants, herbs, and native fragrant flowers that could be added along with other native utilised species by individual Lao households. The first major criteria for selection of fruits, vegetables and industrial crops is based on temperatures, over which there is no control in the field except where greenhouses are used for high value products. Figure 3 above summarises the selection criteria and the methodology is given in detail in Chapman, ...1997, 2003.

Temperature, rainfall, evaporation and water supply along with soils, aspect and slope are key Agro-ecological criteria in the determination of which crops have the potential for commercialisation in a given location.

The technical expertise available along with the crop selection criteria given earlier above plus the market and inputs etc. determine final choices of crops for successful commercial development in a given location as noted in Fig 3 and the methodology papers of Chapman above.

The exercise then becomes one of finding land suitable for development in the target areas that satisfy the given crop criteria and social criteria and compliance safeguards.

10 Agriculture Sub-sector Review of Food Crops, Cash Crops, Horticulture and Industrial Crops, including Non Timber Forest Products.

The emphasis of this input was to identify and develop a commercialisation core sub-project example. The input thus only covers the Commercial Production Goal and does not cover the other three goals of GOL, namely Poverty Alleviation, Food Security Reduction of Shifting Cultivation, or Forestry Food and Cash crops as indicated in the Terms of Reference.

At a late stage in the consultancy the Agronomist was asked to do a review of the food crops sub-sector and cash crops sub-sector for Lao, emphasising sector performance problems and opportunities. Such a review was impossible to undertake within the time constraints of the inputs on this PPTA and should constitute a separate input of several weeks to do the review in relation to food security and poverty alleviation, taking account of the impacts of reduction in shifting cultivation. The review could either be done now or as a separate activity for when the project begins. It is essential as mentioned above that a complete review of this sub-sector is done as a number of the target provinces notably Champasaak, Attepeu and Xekong have highlighted improvement in these food/cash crop systems as priorities.

Champasaak (310,370MT) was the number two province after Savannakhet (585,635MT) for total paddy (rainfed and dry season) production in 2006. Table 2. However, average yield per hectare in Champasaak was 3.12 MT/ha compared to Savannakhet with 3.7MT/ha. Improved rice production and improved yields, via better management and improved seed were clearly emphasised as a provincial priority by Champasaak province during the provincial discussions and by the Phonengam Rice Research and Seed Production Station near Pakse. Clearly rice production improvement and seed must be addressed as a very high priority, for not only Champasaak, but for the whole of the country, since IRRI estimates that Lao will have a rice deficit of 1.3m MT by 2020, unless production is dramatically accelerated. (John Schiller pers comm., formerly IRRI, Lao).
Thus a rice improvement core sub-project would be a priority intervention in the project after inception.

Table 2. Whole country Rainy Season Crop Production Lao-PDR 2006

<table>
<thead>
<tr>
<th>Type Crop</th>
<th>Planted area (ha)</th>
<th>Harvested area (ha.)</th>
<th>Yield (MT/ha)</th>
<th>Production (MT)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coffee</td>
<td>55,465</td>
<td>43,140</td>
<td>0.59</td>
<td>25,250</td>
</tr>
<tr>
<td>Cardamom</td>
<td>6,965</td>
<td>5,670</td>
<td>0.35</td>
<td>2,010</td>
</tr>
<tr>
<td>Tea</td>
<td>545</td>
<td>490</td>
<td>1.22</td>
<td>600</td>
</tr>
<tr>
<td>Castor bark</td>
<td>75</td>
<td>75</td>
<td>3.20</td>
<td>240</td>
</tr>
<tr>
<td>Mulberry</td>
<td>215</td>
<td>215</td>
<td>2.49</td>
<td>535</td>
</tr>
<tr>
<td>Mulberry bark</td>
<td>945</td>
<td>945</td>
<td>1.17</td>
<td>1,110</td>
</tr>
<tr>
<td>Maize</td>
<td>85,390</td>
<td>85,390</td>
<td>4.18</td>
<td>57,205</td>
</tr>
<tr>
<td>Sweet corn</td>
<td>13,415</td>
<td>13,415</td>
<td>2.5</td>
<td>33,595</td>
</tr>
<tr>
<td>Soybean</td>
<td>6,720</td>
<td>6,720</td>
<td>1.32</td>
<td>8,900</td>
</tr>
<tr>
<td>Mungbean</td>
<td>955</td>
<td>955</td>
<td>1.09</td>
<td>1,040</td>
</tr>
<tr>
<td>Peanut</td>
<td>13,090</td>
<td>13,090</td>
<td>1.48</td>
<td>19,310</td>
</tr>
<tr>
<td>Black bean</td>
<td>430</td>
<td>430</td>
<td>1.33</td>
<td>570</td>
</tr>
<tr>
<td>Job's tear</td>
<td>10,620</td>
<td>10,620</td>
<td>2.4</td>
<td>25,450</td>
</tr>
<tr>
<td>Tobacco</td>
<td>1,385</td>
<td>1,385</td>
<td>4.1</td>
<td>5,680</td>
</tr>
<tr>
<td>Cotton</td>
<td>1,930</td>
<td>1,930</td>
<td>0.88</td>
<td>1,690</td>
</tr>
<tr>
<td>Sesame</td>
<td>15,420</td>
<td>15,420</td>
<td>0.96</td>
<td>14,840</td>
</tr>
<tr>
<td>Sugar cane</td>
<td>6,075</td>
<td>6,070</td>
<td>35.99</td>
<td>218,430</td>
</tr>
<tr>
<td>Starchy roots</td>
<td>24,375</td>
<td>24,375</td>
<td>9.97</td>
<td>242,980</td>
</tr>
<tr>
<td>Cassava</td>
<td>16,880</td>
<td>16,880</td>
<td>10.34</td>
<td>174,490</td>
</tr>
<tr>
<td>Sweet Potatoes</td>
<td>1,060</td>
<td>1,060</td>
<td>7.86</td>
<td>8,330</td>
</tr>
<tr>
<td>Potatoes</td>
<td>170</td>
<td>170</td>
<td>2418</td>
<td>4,110</td>
</tr>
<tr>
<td>Yam bean</td>
<td>80</td>
<td>80</td>
<td>1388</td>
<td>1,110</td>
</tr>
<tr>
<td>Taro</td>
<td>6,185</td>
<td>6,185</td>
<td>888</td>
<td>54,940</td>
</tr>
<tr>
<td>Vegetables</td>
<td>31,550</td>
<td>31,550</td>
<td>881</td>
<td>278,000</td>
</tr>
<tr>
<td>Leafy Stem Vegetables</td>
<td>14,320</td>
<td>14,320</td>
<td>877</td>
<td>125,640</td>
</tr>
<tr>
<td>Root, Bulb and leguminous Fruit</td>
<td>3,005</td>
<td>3,005</td>
<td>853</td>
<td>25,630</td>
</tr>
<tr>
<td>Fruitbearing &amp; leguminous Fruit</td>
<td>14,225</td>
<td>14,225</td>
<td>891</td>
<td>126,730</td>
</tr>
<tr>
<td>Fruit</td>
<td>28,585</td>
<td>24,825</td>
<td>1093</td>
<td>271,305</td>
</tr>
<tr>
<td>Fruit Tree</td>
<td>15,660</td>
<td>12,190</td>
<td>874</td>
<td>106,600</td>
</tr>
<tr>
<td>Banana</td>
<td>9,925</td>
<td>9,645</td>
<td>1258</td>
<td>121,340</td>
</tr>
<tr>
<td>Pineapple</td>
<td>1,860</td>
<td>1,850</td>
<td>1485</td>
<td>27,470</td>
</tr>
<tr>
<td>Papaya</td>
<td>365</td>
<td>365</td>
<td>1448</td>
<td>5,285</td>
</tr>
<tr>
<td>Water melon</td>
<td>545</td>
<td>545</td>
<td>1461</td>
<td>7,960</td>
</tr>
<tr>
<td>Cantaloupe and other melons</td>
<td>230</td>
<td>230</td>
<td>1152</td>
<td>2,650</td>
</tr>
</tbody>
</table>

Source: Agriculture Statistics Lao-PDR 2006 MAF. Dept. of Planning

The southern region total rice paddy (rainfed and dry season) is second in production, after the central region and has only around 7.5% of the total upland rainfed paddy production with the northern region producing around 77.6%.

For the other food crops in the 4 southern provinces, production of cassava, starchy roots and sugarcane are low in comparison with other regions of Lao, while the south produces the most mung bean.
For the oil crops the southern region produces the most peanuts and the least soybean and sesame compared to the central and northern regions.

In the other crops group the southern region produces the most coffee, 99% of Lao production, and the most tobacco, the most cotton, and the least vegetables, pineapple, and watermelon.
### Table 3. Crop production statistics by province for the southern provinces of Lao-PDR

#### Champasak Province

<table>
<thead>
<tr>
<th>Name of the crop</th>
<th>Planted Area (Ha)</th>
<th>Harvest Areas</th>
<th>Yield (T/Ha)</th>
<th>Production (Ton)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Food Crops</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rice paddy</td>
<td>99.236 94.470 94.630</td>
<td>94.936 88.640 94.480</td>
<td>3.21 3.45 3.29</td>
<td>304.510 305.990 310.370</td>
</tr>
<tr>
<td>Lowland rainfed paddy</td>
<td>90.660 91.370 92.230</td>
<td>86.360 85.540 92.080</td>
<td>3.13 3.42 3.26</td>
<td>270.600 292.600 299.770</td>
</tr>
<tr>
<td>Upland rainfed paddy</td>
<td>1.350  -  -</td>
<td>1.350  -  -</td>
<td>1.93  -  -</td>
<td>2.600  -  -</td>
</tr>
<tr>
<td>Maize</td>
<td>-  -  -</td>
<td>1.097 3.190 1.600</td>
<td>2.31 3.37 3.15</td>
<td>2.530 10.750 5.040</td>
</tr>
<tr>
<td>Cassava</td>
<td>-  -  -</td>
<td>-  -  -</td>
<td>-  -  -</td>
<td>-  -  -</td>
</tr>
<tr>
<td>Starchy Roots</td>
<td>-  -  -</td>
<td>993 865 1.185 7.45 11.29 12.13 7.400 9.770 14.370</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sugar cane</td>
<td>-  -  -</td>
<td>510 30 90 23.92 43.33 22.78 12.200 1.300 2.050</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mungbean</td>
<td>-  -  -</td>
<td>916 1.455 1.015 0.95 1.16 1.41 870 1.685 1.435</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Oil Crops</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Soybean</td>
<td>-  -  -</td>
<td>644 520 1.180 0.86 1.32 1.50 552 685 1.765</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Peanut</td>
<td>-  -  -</td>
<td>1.640 1.920 2.770 0.87 1.46 1.53 1.419 2.810 4.250</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sesame</td>
<td>-  -  -</td>
<td>-  -  -</td>
<td>-  -  -</td>
<td>-  -  -</td>
</tr>
<tr>
<td>Other Crops</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Coffee</td>
<td>-  -  -</td>
<td>22.285 25.100 25.700 0.61 0.58 0.59 13.550 14.610 15.250</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tea</td>
<td>-  -  -</td>
<td>394 200 200 0.30 0.30 0.25 118 60 50</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tobacco</td>
<td>-  -  -</td>
<td>170 380 250 5.00 5.66 4.20 850 2.150 1.050</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cotton</td>
<td>-  -  -</td>
<td>320 - 200 0.91 200 0.75 290 - 150</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vegetable</td>
<td>-  -  -</td>
<td>6.603 11.350 7.255 6.52 8.36 10.57 43.080 94.890 76.670</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pineapple</td>
<td>-  -  -</td>
<td>250 720 200 12.00 13.19 15.25 3.000 9.500 3.050</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Water melon</td>
<td>-  -  -</td>
<td>220 185 470 11.82 14.11 22.34 2.600 2.610 10.500</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### Attapeu Province

<table>
<thead>
<tr>
<th>Name of the crop</th>
<th>Planted Area (Ha)</th>
<th>Harvest Areas</th>
<th>Yield (T/Ha)</th>
<th>Production (Ton)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Food Crops</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rice paddy</td>
<td>18.068 20.545 21.965</td>
<td>15.963 17.865 16.910</td>
<td>2.48 3.21 2.50</td>
<td>39.560 57.370 42.250</td>
</tr>
<tr>
<td>Dry season paddy</td>
<td>298 375 500 293 375 500</td>
<td>3.45 3.52 3.90</td>
<td>1.010 1.320 1.950</td>
<td></td>
</tr>
<tr>
<td>Upland rainfed paddy</td>
<td>970 1.920 1.705 970 1.920 1.240 1.78 1.74 2.22 1.730 3.350 2.750</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Maize</td>
<td>-  -  -</td>
<td>520 735 465 2.40 3.70 2.55 1.250 2.720 1.185</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cassava</td>
<td>-  -  -</td>
<td>100 20 - 5.70 7.50 - 570 150 -</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Starchy Roots</td>
<td>-  -  -</td>
<td>367 20 350 8.09 7.50 5.00 2.970 150 1.750</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Name of the crop</td>
<td>Planted Area (Ha)</td>
<td>Harvest Areas</td>
<td>Yield (T/Ha)</td>
<td>Production (Ton)</td>
</tr>
<tr>
<td>------------------</td>
<td>------------------</td>
<td>---------------</td>
<td>--------------</td>
<td>------------------</td>
</tr>
<tr>
<td><strong>Food Crops</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rice paddy</td>
<td>71.023 72.475 71.020</td>
<td>69.923 70.001 67.210</td>
<td>3.27 3.52 3.39</td>
<td>228.610 246.260 227.840</td>
</tr>
<tr>
<td>Dry season paddy</td>
<td>4.543 4.130 3.400</td>
<td>4.543 4.126 3.400</td>
<td>4.50 4.30 5.03</td>
<td>20.460 17.760 17.100</td>
</tr>
<tr>
<td>Upland rainfed paddy</td>
<td>6.580 6.300 5.000</td>
<td>6.580 6.300 5.000</td>
<td>1.92 2.22 1.70</td>
<td>12.650 14.000 8.500</td>
</tr>
<tr>
<td>Maize</td>
<td>-</td>
<td>1.960 1.445 2.150</td>
<td>2.16 3.55 2.65</td>
<td>4.230 5.130 5.700</td>
</tr>
<tr>
<td>Cassava</td>
<td>-</td>
<td>992 5.300 1.935</td>
<td>7.26 7.50 8.60</td>
<td>7.200 39.765 16.650</td>
</tr>
<tr>
<td>Starchy Roots</td>
<td>-</td>
<td>1.761 5.710 2.515</td>
<td>6.64 7.64 8.08</td>
<td>11.700 43.650 20.320</td>
</tr>
<tr>
<td>Sugar cane</td>
<td>-</td>
<td>10 150 200</td>
<td>25.00 39.00 23.20</td>
<td>250 5.850 4.640</td>
</tr>
<tr>
<td>Mungbean</td>
<td>-</td>
<td>70 0 40</td>
<td>0.86 - 1.13</td>
<td>60 - 45</td>
</tr>
<tr>
<td><strong>Oil Crops</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Soybean</td>
<td>-</td>
<td>130 105 270</td>
<td>0.81 1.19 1.15</td>
<td>105 125 310</td>
</tr>
<tr>
<td>Peanut</td>
<td>-</td>
<td>5.193 5.390 5.675</td>
<td>0.84 1.56 1.46</td>
<td>4.388 8.390 8.260</td>
</tr>
<tr>
<td>Sesame</td>
<td>-</td>
<td>300 50 10</td>
<td>0.93 0.80 1.00</td>
<td>280 40 10</td>
</tr>
<tr>
<td><strong>Other Crops</strong></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Coffee</td>
<td>-</td>
<td>11.528 13.100 13.250</td>
<td>0.62 0.60 0.56</td>
<td>7.200 7.830 7.400</td>
</tr>
<tr>
<td>Tea</td>
<td>-</td>
<td>- - -</td>
<td>- - -</td>
<td>- - -</td>
</tr>
<tr>
<td>Tobacco</td>
<td>-</td>
<td>590 385 990</td>
<td>5.00 4.91 4.44</td>
<td>2.950 1.890 4.400</td>
</tr>
<tr>
<td>Cotton</td>
<td>-</td>
<td>923 845 840</td>
<td>0.91 0.98 1.01</td>
<td>840 830 845</td>
</tr>
<tr>
<td>Vegetable</td>
<td>-</td>
<td>4.256 5.920 6.765</td>
<td>6.67 8.41 7.67</td>
<td>28.400 49.785 51.900</td>
</tr>
<tr>
<td>Pineapple</td>
<td>-</td>
<td>35 10 -</td>
<td>12.00 14.00 -</td>
<td>420 140 -</td>
</tr>
<tr>
<td>Name of the crop</td>
<td>Planted Area (Ha)</td>
<td>Harvest Areas</td>
<td>Yield (T/Ha)</td>
<td>Production (Ton)</td>
</tr>
<tr>
<td>------------------</td>
<td>------------------</td>
<td>---------------</td>
<td>--------------</td>
<td>-----------------</td>
</tr>
<tr>
<td>Dry season paddy</td>
<td>260 368 400</td>
<td>260 368 400</td>
<td>4.19 3.99 3.68</td>
<td>1.090 1.470 1.470</td>
</tr>
<tr>
<td>Upland rainfed paddy</td>
<td>3.940 2.250 1.870</td>
<td>1.855 2.250 1.83</td>
<td>1.86 2.00 1.68</td>
<td>3.450 4.500 3.090</td>
</tr>
<tr>
<td>Maize</td>
<td>-</td>
<td>428 735 690</td>
<td>2.55 3.61 3.20</td>
<td>1.090 2.650 2.210</td>
</tr>
<tr>
<td>Cassava</td>
<td>-</td>
<td>360 5 435</td>
<td>6.94 6.00 10.34</td>
<td>2.500 30 4.500</td>
</tr>
<tr>
<td>Starchy Roots</td>
<td>-</td>
<td>840 805 1.165</td>
<td>7.20 8.68 8.70</td>
<td>6.050 6.990 10.140</td>
</tr>
<tr>
<td>Sugar cane</td>
<td>-</td>
<td>147 30 120</td>
<td>23.13 50.00 18.33</td>
<td>3.400 1.500 2.200</td>
</tr>
<tr>
<td>Mung bean</td>
<td>-</td>
<td>11 15 5</td>
<td>0.64 1.33 1.00</td>
<td>7 20 5</td>
</tr>
<tr>
<td>Soybean</td>
<td>-</td>
<td>4 20 40</td>
<td>0.75 1.00 1.38</td>
<td>3 20 55</td>
</tr>
<tr>
<td>Peanut</td>
<td>-</td>
<td>115 120 195</td>
<td>0.87 1.42 1.62</td>
<td>100 170 315</td>
</tr>
<tr>
<td>Sesame</td>
<td>-</td>
<td>60 15 25</td>
<td>0.75 0.67 0.80</td>
<td>45 10 20</td>
</tr>
<tr>
<td>Coffee</td>
<td>-</td>
<td>3.372 3.865 3.840</td>
<td>0.62 0.57 0.60</td>
<td>2.100 2.200 2.300</td>
</tr>
<tr>
<td>Tea</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Tobacco</td>
<td>-</td>
<td>161 70 60</td>
<td>4.78 4.57 3.58</td>
<td>770 320 215</td>
</tr>
<tr>
<td>Cotton</td>
<td>-</td>
<td>25 25 15</td>
<td>0.80 0.80 0.67</td>
<td>20 20 10</td>
</tr>
<tr>
<td>Vegetable</td>
<td>-</td>
<td>1.121 880 640</td>
<td>7.27 9.34 7.06</td>
<td>8.150 8.220 4.520</td>
</tr>
<tr>
<td>Pineapple</td>
<td>-</td>
<td>74 30 30</td>
<td>12.03 17.00 17.00</td>
<td>890 510 510</td>
</tr>
<tr>
<td>Water melon</td>
<td>-</td>
<td>3 - 5</td>
<td>11.67 - 14.00</td>
<td>35 - 70</td>
</tr>
</tbody>
</table>
For fruits and vegetables a recent 2005 review was drawn upon for this sector overview, with updated comments. Tables 4 and 5 below.

For industrial crops, which include many cash crops (as defined by GOL in statistics), the basis for the overview was a 2001 study by the author, updated on this assignment. Table 4 below.

For NTFP's these are to some extent included with industrial crops with some addressed separately, but again require specialist inputs to provide a more complete up-dated assessment and should be included in project tasks to undertake after project inception.

Some perceptions and recommendations are provided on Bio-fuels in a note at the end of the Industrial Crops Review.

As indicated in Tables 4 and 5 above are the potential fruit, vegetable, and industrial crops, including some cash crops and NTFP's, based on mean minimum temperatures for the coolest month, which is the first excluder in determining what crops will grow where. In the industrial crops overview section below the methodology for matching plants to land and selection of the crops for commercially successful development.

11 Fruits and Vegetables Overview

The official GOL statistics for fruits and vegetables and the break-up into fruits and vegetables by crop is very incomplete, which makes the review task very difficult.

More recently, Vernon in 2005 undertook a comprehensive marketing study for FAO on fruits and vegetables in Lao, Key recommendations from the study are quoted as follows along with priority crops for development.

Marketing of Fruits and Vegetables

Recommendations for Fruit

It is recommended that on-farm demonstrations be conducted targeting the following fruits (as agreed in a participatory discussions with farmers) and marketing strategies:given below, after Tables 4 and 5.

Fruit Marketing Strategies:

<table>
<thead>
<tr>
<th>Import substitution</th>
<th>Off-season production</th>
<th>local processing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Durian</td>
<td>Lime</td>
<td>Durian</td>
</tr>
<tr>
<td>Mandarin - Rambutan</td>
<td>Pineapple</td>
<td>Mango</td>
</tr>
<tr>
<td>Longan</td>
<td></td>
<td>Strawberry-</td>
</tr>
<tr>
<td>Lychee</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mango</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mangosteen</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sweet Tamarind</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pumello</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sapodilla</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Orange</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Guava</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Jujube</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Marketing strategies will change in the longer term. For instance, if the Lao farmers are able to satisfy the needs of the local market and if traders find prices in other markets, such as China for example, more attractive then a marketing strategy of import substitution may change to one of export development.

**Recommendations for Vegetables**

Generally speaking, technical interventions aimed at say improving productivity or quality should be aimed major vegetables (i.e. in terms of market share) rather than minor vegetables. So from this point of view the following top 10 vegetables would be worth targeting.

- # Egg Plant Makeua
- # Tomato Mak Len
- # Mustard Pak Kat Som
- # Cucumber Mak Taeng
- # Cabbage, round white Kalampee
- # Spring Onion Hom Bua Bai
- # Chilli, Small Mak Phet Noi
- # Lettuce Salad
- # Chinese Cabbage Pak Kat Khao/Nyao
- #10 Morning Glory Pak Boung

Assist farmers to increase the size of their vegetables and to reduce the level of defects and blemished in order to match those vegetables imported from Thailand.

**Develop off-season production of the following vegetables:**

- Spring onions: shortage in rainy season
- Coriander: shortage from April to September
- Chinese kale: shortage in rainy season
- Tomatoes, especially the larger plum types, but also “olive” types
- (However cherry tomatoes all are produced within the Vientiane plain).
- Green beans: shortage in rainy season
- Large white radish: shortage in rainy season
- “Prik Yuak” chillies (larger pale yellow-green variety): shortage in rainy season
- Cucumber: shortage in rainy season, especially August and September.
- Chinese cabbage: shortage from December to February
- Chili: shortage in August & September
- Large Onion: shortage in August & September
- Mint: shortage in August & September
- Eggplant: shortage from September to November
- Chinese lettuce(?): shortage from March to May
- Lettuce: shortage from June to August
- Dill: prices are higher in rainy season

Adopt a strategy of product diversification and develop the production of “new” vegetables (for local markets and perhaps also for export). Initial markets may be very small, therefore production should begin with small areas and markets tested/developed before expanding. Possible products include:
• Red cabbage
• Red oak leaf lettuce, Butterhead lettuce, Baby cos lettuce, Red cos lettuce
• Mizuno
• Italian parsley
• Pepper basil
• Green coral, Red coral
• Rocket
• Tachsoy
• Salad cross
• Carragio
• Prese
• Red honey tomato
• Salad red leaf
• Red radish
• Yellow tomatoes, Beefsteak tomatoes
• Gherkins (for pickling)
• Yellow and purple sweet peppers
• Edible flowers (such as nasturtiums)
• Broccoli
• Snow peas
• Herbs (such as oregano, rosemary, and parsley)
• Baby carrots
• Parsnips
• Kohlrabi
• Large celery
• Leeks
• Globe artichokes
• Runner beans
• Broad beans
• Green Romanesco cauliflower
• Japanese pumpkin
• Courgettes/Zucchini
• Different types of melons to those normally grown in Lao PDR
• Seedless watermelon
• Yellow fleshed watermelon
• Yellow skinned watermelon with red flesh

Develop export markets:

Help farmers in Paksong District to develop exports to Thailand of higher value vegetables that prefer cooler conditions, particularly during the hot rainy season of the lowlands of Thailand. Examples:
• Sweet pepper
• Snow pea
• Celery
• Cauliflower
• Broccoli
• Coriander
• Asparagus
• Zucchini
• Salad vegetables such as those listed above (i.e. Red oak leaf, etc)
If soils are suitable (i.e. sandy), then there is potential to export carrots to Thailand. Thailand is importing several thousands tonnes of carrots per year from Australia (and some of these are being re-exported to Lao PDR).

Help farmers in Luang Prabang Province to produce tropical vegetables in the dry season for export to China. Examples include:

- Cucumbers
- Chilli
- Eggplant
- Yard long bean
- Watermelon
- Melons
- Pumpkins

**Recommendations for Vegetable Seeds**

- Do not co-operate with the HHRC vegetable seed production.
- Focus on production of fruits and vegetables; do not be distracted by vegetable seed opportunities.
- Farmers wishing to develop commercial vegetable production, particularly those intending to compete with Thai imports or those wanting to export should be willing to invest in the best seed available from reputable seed companies.
- DED should be encouraged to try and develop seed production for export by cooperating with seed companies in Thailand or with traders having links to buyers in China.

**Problems and Opportunities:**

The opportunities for fruit and vegetable production in Lao are very diverse, but for investment in commercial fruit and vegetable production the commercial agribusiness mechanisms need to be put in place either by contract farming or other agribusiness models such as nucleus estates with out-growers/ producers linked to markets and or processors etc. Also, for targeted products listed above a re-examination of the markets needs to be updated. Future fruit and vegetable production must be market driven to ensure success, especially with perishable fresh products.

Of the fruits listed by Vernon above, persimmon offers niche export target markets as both processed and fresh products, along with mango, macadamia exported as processed value-added export products to niche markets. Avocado as a domestic market product and for export. All are high priced products in nearby and distant markets. Mandarin is another product that could substitute well for some imports along with all the other fruits mentioned above by Vernon (2005).

Expansion of banana production is another opportunity area for further development for export.

Organic key vegetables for export either as fresh or processed products are another niche for Lao and one Japanese company has already begun exports of organic roselle, asparagus and okra. Off-season cabbage exports to Thailand are an opportunity already begun for Lao from the Boloven’s Plateaux, but illegal border taxes are disrupting this market already.
Lao’s major disadvantage is that it is a land-locked country, and as such will always have problems exporting most fresh fruits and vegetables to distant markets, given the often short post harvest life and perishability, and the lack of coordinated supply chains, which will often need cool chain management right to the consumer. However, over time these constraints may fade away as China, Viet Nam and Thailand demand for fresh fruit and vegetable products cannot be met at attractive prices at home. In the interim period high value niche markets, import substitution and processing to make products more durable in the supply chain should be the criteria for selecting fruits and vegetables for promotion along with links to entrepreneurs for marketing.

12 Industrial Crops Including Some Cash Crops and Non Timber Forest Products Overview

In 2001 a study was done for Lao by the author (Chapman, 2001) as an overview of Industrial Crops for Lao. The information presented below has been updated from the original, by the author, for this document.

N.B. In this overview the methodology for matching plants to land and the selection on crops for commercially successful development are summarised. Detailed methodology is given in Chapman…. The methodology applies equally well to industrial crops and fruits and vegetables as well as some cash crops and NTFP’s.

Industrial crops of commerce and of major importance in Lao are coffee, oil seeds, cassava, tobacco, sugarcane, coconut and tea. There are many others, like NTFP’s that are quite significant income earners and others which are relatively minor in terms of cash crops at present, but perform an important role in the income generation and to some extent nutrition. Another group are crops for which good future opportunities exist, such as macadamia and multipurpose sweet sorghum among others, such as organic tea, and spices, medicinal and aromatic plants and NTFP’s commercialisation.

Industrial Crops and Spices are attractive in isolated areas often found in Lao, because many of these crops after harvest are processed in a simple way into a product which is much less perishable and easily transportable without decay and loss, than many fruit and vegetable crops. Potentially there are a number of crops that will grow in highland/upland areas. Lowland areas limited in Lao and most are already being utilised mainly for food crops such as irrigated and rainfed paddy, and food legumes, including oil seeds and vegetables and some fruit crops and should for the most part continue to used this way as demand for food crops increases as population increases and quality of livelihoods improves.

The following crops were identified by Chapman (1998) for the highlands of Lao, using limited climatic data (extrapolated for varying altitudes) and interrogation of the FAO/ECOCROP1 database. Minimum temperatures for the coolest month were chosen as the exclucer for selection of potential crops, after Chapman (1996). For convenience the potential crops have been grouped according to altitude range, which covers most of the potentially arable areas, in Table 5, below. The methodology for crop selection is given below for Industrial Crops and Spices. It follows the same methodology summarised in Figure 3. page 9 above.
### Table 6. Potential Industrial Crops and Spice Crops for Different Altitudes in Lao PDR (Chapman, 1998)

<table>
<thead>
<tr>
<th>POTENTIAL INDUSTRIAL CROPS FOR DIFFERENT ALTITUDES (m.a.s.l.) IN LAO PDR</th>
<th>POTENTIAL SPICE CROPS FOR DIFFERENT ALTITUDES (m.a.s.l.) IN LAO PDR</th>
</tr>
</thead>
<tbody>
<tr>
<td>200-500 m.a.s.l.</td>
<td>500-1000 m.a.s.l.</td>
</tr>
<tr>
<td><strong>Cassava</strong></td>
<td><strong>Cassava</strong></td>
</tr>
<tr>
<td><strong>Kenaf</strong></td>
<td><strong>Kenaf</strong></td>
</tr>
<tr>
<td><strong>Cashew</strong></td>
<td><strong>Macadamia</strong></td>
</tr>
<tr>
<td><strong>Cassava</strong></td>
<td><strong>Cassava</strong></td>
</tr>
<tr>
<td><strong>Kenaf</strong></td>
<td><strong>Kenaf</strong></td>
</tr>
<tr>
<td><strong>Coffee robusta</strong></td>
<td><strong>Coffee robusta</strong></td>
</tr>
<tr>
<td><strong>Roselle</strong></td>
<td><strong>Roselle</strong></td>
</tr>
<tr>
<td><strong>Arrowroot</strong></td>
<td><strong>Arrowroot</strong></td>
</tr>
<tr>
<td><strong>Betel Palm</strong></td>
<td><strong>Betel Palm</strong></td>
</tr>
<tr>
<td><strong>Sugar cane</strong></td>
<td><strong>Sugar cane</strong></td>
</tr>
<tr>
<td><strong>Ramie</strong></td>
<td><strong>Ramie</strong></td>
</tr>
<tr>
<td><strong>Melaleuca alternifolia Tea Tree</strong></td>
<td><strong>Yellow Quinine Vanilla Vanilla</strong></td>
</tr>
<tr>
<td><strong>Peppermint Nutmeg</strong></td>
<td><strong>Cinnamon Saigon (Cassia) Cinnamon</strong></td>
</tr>
<tr>
<td><strong>Peppermint Chichory Garlic Garlic Garlic</strong></td>
<td><strong>Candy nut</strong></td>
</tr>
<tr>
<td><strong>Chamomile Tamarind Tamarind</strong></td>
<td><strong>Oil Palm</strong></td>
</tr>
<tr>
<td><strong>Apple Mint Saigon (Cassia) Cinnamon</strong></td>
<td><strong>Kapok</strong></td>
</tr>
<tr>
<td><strong>Spearmint Spearmint Chinese (Cassia) Cinnamon</strong></td>
<td><strong>Nutmeg</strong></td>
</tr>
<tr>
<td><strong>Sterculia pexa Sterculia pexa</strong></td>
<td><strong>Pili Nut</strong></td>
</tr>
<tr>
<td><strong>Tobacco Tobacco</strong></td>
<td><strong>Tobacco</strong></td>
</tr>
<tr>
<td><strong>Chinese Tea Chinese Tea</strong></td>
<td><strong>Assam Tea</strong></td>
</tr>
<tr>
<td><strong>Neem Neem</strong></td>
<td><strong>Kapok</strong></td>
</tr>
<tr>
<td><strong>Duboisia Duboisia</strong></td>
<td><strong>Swamp or Paperbark Tea Tree</strong></td>
</tr>
<tr>
<td>**<strong>Cold Tolerant Oil Palm</strong></td>
<td>**<strong>Cold Tolerant Oil Palm</strong></td>
</tr>
<tr>
<td><strong>Tung Oil Tree</strong></td>
<td><strong>Tung Oil Tree</strong></td>
</tr>
<tr>
<td><strong>Palmyrah Palm</strong></td>
<td><strong>Palmyrah Palm</strong></td>
</tr>
<tr>
<td><strong>Sa Paper Mulberry</strong></td>
<td><strong>Sa Paper Mulberry</strong></td>
</tr>
</tbody>
</table>

* Industrial Crops include Spices—the separation is simply for clarity.

** Minimum Temperature limit approx. 10-12 Deg. C., and Altitude limit about 900 m.a.s.l. in Southern Lao, and about 600 m.a.s.l. in Northern Lao. See Maps on temperatures.
Methodology Summary of Matching Plants to Land and Identification of Crops for Commercially Successful Development

Introduction

The methodology given below while applied to industrial crops in this case is equally applicable to horticultural, cash crops and food crops as listed in Tables 4, 5 and 6 above. The methodology would also apply to agro-forestry timber species.

Again the whole process of matching plants to land and identification of crops for commercially successful development is summarised in Figure 3, below and Chapman, 1995……

Agro-ecological Constraints

Climate not soils is the key excluder and primary determinant of what crop will grow where. Soils are a tertiary consideration after climate and slope of lands. With natural forests the perspective is very different as certain types of forest develop in given areas because of soils and climate and terrain to some extent, but with crops we can pick the best locations based on climate and slope first and then exclude certain adverse soil types and alter others both physically and chemically and with management, to suit the crop, depending on the value of the crop. For low value crops like rice or cassava there are few options but to choose among the suitable soils to crop. However, for high value industrial crops and horticultural crops it is economical to modify the soils to suit a crop within certain limits. Maps below show AEZ’s, annual rainfall and and length of growing seasons previously determined for Lao

Temperature

Temperature is the first major constraint or screen for crop selection as it cannot be manipulated over large areas in the field. Temperature is thus a major determinant in governing crop selection at any given location.

In the highlands of SE Asia temperatures may fluctuate wildly, especially in areas that topographically are ruggedly mountainous with steep narrow valleys in between such as we find in Laos, Thailand and Vietnam, (Chapman 1996). Thus while altitude does give a guide to potential crops the implementer must be aware of the ponding of cold air on valley floors at night that may reduce temperatures by as much as 10-12 Deg. C compared with sites on the hillsides close to the same altitude. Currently, there are no probability data available on reliability of temperatures in a given area, so the best advice is to avoid areas where cold air ponds for temperature sensitive crops. The IRRI Lao used an extrapolation methodology for temperatures and produced maps of mean, mean minimum and mean maximum monthly temperatures for the whole of Lao.

In this ADB project design work the GIS specialist has utilised the climatic information compiled by IRRI and NAFRI to produce maps on mean monthly minimum temperature for the coldest month and mean maximum temperature for the hottest month for Lao so that such maps could be used as a first screen for deciding what crops will grow where.

With some crops including macadamias, avocados maximum temperatures must also be taken into account as mean maximum temperatures above 34 Deg C, severely restrict growth and performance of trees, including fruit set.
Light

From the limited data available from Luang Prabang and an area nearby Xam Neua, Solar Radiation is, in the cool dry season is less than half the 75 megajoules per sq.m. per day needed for C3 plants (most crops, except C4 plants such as sugarcane sorghums and others, and pineapple a CAM plant), as suggested by Monteith (1977). For the production season from early April to the end of October the levels are commonly at 48-54 megajoules per sq.m. per month. Thus there are limitations of Solar Radiation on the performance of C3 plants and CAM plants such as pineapple. However, there will be bigger limitations on C4 plants as the photosynthesis in these plants does not maximise even in full sunlight. Thus growing of sugarcane and sorghums in the north of Lao and on the high plateaux, will severely limit potential yields.

The lower Solar Radiation levels will be beneficial for tea and coffee, which prefer semi-shade conditions. However, the values in general are much higher than those of similar high altitude areas near to the equator, such as Indonesia, where year-round values may be as low as 36-52 megajoules per sq.m. per month, due to heavy cloud cover. For southern Lao on the Boloven’s Plateaux, there will be some solar radiation limitations at high altitudes because of cloud cover.

Rainfall and Evapo transpiration and Relative Humidity

Maps 1, 2, 3 are reproduced from the FAO/LAO PDR, Promoting Sustainable Rural Development Working Paper 1, Agricultural Development and Resource Development, and present data on Annual Rainfall, Agro-Climatology Units and Provisional Agro-ecological Zones, while Map 4 shows the provinces, along with FAO/SPFS proposed project sites. These maps need to be updated with more recent data and NAFRI are in the process of undertaking this work. (See below). Rainfall and water supply along with other climatic parameters of temperature, light and sometimes relative humidity are primary determinants of what crops can be grown where. High relative humidity is very important for crops such as oil palm and mangosteen, and to a less extent durian. Oil palm simply closes the stomata in leaves under dry low relative humidity conditions so all growth virtually ceases. Other crops such as lychee shed flowers under dry low relative humidity conditions so fruit set and yields may be much reduced.

The Length of Growing Period (LGP) is defined as the number of days when precipitation is equal to or greater than 0.5 Et (Evapotranspiration). Most of the upland and highland areas are represented by Units A and B on Map 2, along with some areas in Unit D. (Chapman, 1995 describes how to determine water requirements and water deficits to be replaced by irrigation for crops a given area based on rainfall and evapo-transpiration data, where 0.8 Et is used for higher value crops).

Currently, there is no firm indication of rainfall reliability in Lao, as available data do not go back far enough in time. However, we do know of years with massively excessive rainfall in places such as Houah Phanh and drought occurrences in Luang Prabang, Vientiane, Savannakhet.

Champasaak etc. How this variability is likely to affect industrial crops is uncertain. Death in most of the crops due to drought is unlikely, if they are perennials. The critical year is the establishment year for perennials and in general all such crops should not be planted until well into the wet season (May/June/June to ensure survival. The author has seen previous heavy losses of coffee production in both
Robusta and Arabica due to drought. Reduced growth and production are the likely outcomes from established perennial, industrial crops in response to drought.

In summary, although water deficits must be considered as a constraint to production of perennial industrial crops they are not as critical as for vegetables and high value fruits, which need to be irrigated to ensure success dependent on location.

**N.B.** The Lao-IRRI Upland Project at Luang Prabang, linked up with the Lao Integrated Upland Agriculture Research Project of NAFRI and ACIAR/University of Queensland, has digitised the climatic data and soils etc., for Lao to produce GIS map printouts of minimum temperatures for the coldest month, rainfall etc., to help more clearly define the AEZ’s of Lao. The project work also attempted to get a measure of climatic probabilities, but the data available are limited. IRRI produced a Climatic Data CDROM summarising the work. Back in 2001, the author suggested that these data could be linked to the Aclimatisation Tool (ACT Tool) developed by Dr. John Corbett and CIMMYT, in Africa, to link with minimum crop data sets, to define what crop will grow where and with what expected success, and print out the results in GIS format, with overlays of soils, topography, natural features, demography, infrastructure, provincial boundaries etc., as desired. The ACT database shell can be interrogated to identify “Isoclimes” for cropping using known best areas for production, from trials, to determine other areas close to these in terms of productivity.

**Slope**

*Lao is a very mountainous country, with some very good plateaux, but smaller areas of lowlands and lots of very steep country in the highlands.* The Slope Classes used here are those specified by the Lao Swedish Forestry Program’s Land Use Planning Sub-Program in their Manual on Land Use Planning and Land Allocation Ed.1. 1997. The principle is that the less the slope the greater the range of Land Use Options and as slope increases the less the options and the options offered are those that cause less erosion and runoff of rainfall.

In general steep lands are well suited to the perennial tree crops including Industrials, Fruits and Nuts and Tree Crops, and Forest trees but less well suited to the non-tree group. Conservation measures and practices will have to be used with all industrial crops and spices, except possibly such cops as Cardamom, and Styx and other NTFP’s which are collected from the forest or planted in areas with a forest canopy cover. The conservation structures used, should only consist of shallow contour furrows or vegetative contour strips or combinations of these as they are far less costly than contour bunds and bench terraces.

<table>
<thead>
<tr>
<th>Slope Range</th>
<th>Land Use Options</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-12 percent</td>
<td>Paddy, terraced paddy, pasture (for livestock), fish ponds, short and long term fruit trees and tree crops and commercial field crops with conservation measures and practices.</td>
</tr>
<tr>
<td>13-36 percent</td>
<td>Terraced paddy, short and long term fruit trees, commercial value trees, tree crops, commercial field crops with conservation measures and practices.</td>
</tr>
<tr>
<td>37-45 percent</td>
<td>Commercial value trees, tree crops and field crops (if necessary) with conservation measures and practices.</td>
</tr>
<tr>
<td>&gt; 45 percent</td>
<td>Commercial trees and conservation of natural forest.</td>
</tr>
</tbody>
</table>
A map was prepared by the GIS Specialist for the Bolovens Plateaux in Paxong district for the 900-1400 m.a.s.l., (Arabica coffee, macadamia and other tree crop areas including fruits and also vegetables, as an example of trying to roughly define areas of land that are currently utilised by crops and forests and those with slopes of less than 35% which are more suited to cropping and potentially available for development. This approach does not allow for defining areas unsuited to cropping such as rock outcrops, skeletal soils, waterlogged soaks etc., but it does offer a big picture view of existing land use and potential land for future cropping. Ground truthing is still needed to define poor soil areas, such as rock, waterlogged areas, skeletal soils etc., unsuited to any cropping and linked back into GIS maps.

Soils

Soils are often used as the primary determinant of what crop can be grown where and have been used, wrongly, as the basis for many land use classifications around the world. In fact the primary determinants are temperature in particular, climate, water supply and slope of lands that determine what crops should be grown where. Temperature

In general, the soils in many of the areas of Lao, will not provide major constraints to the development of Industrial/Spice crops. Many of the soil groups are deep and medium textured silty to silty clay loams and loams. Fertility levels are often very good in their natural state, but where slash/burn cycles are short, fertility has declined in some cases very seriously. Better soils can be chosen and in most cases and the poor soils avoided. There are often smaller areas around and above 1500 m and these tend to be the poor soil grassland areas with poor growing Pinus species and are not considered as suitable for industrial crop production. Other areas to be avoided are stony outcrops, shallow soil areas, swampy soaks (except for certain crops), laterite outcrops, and areas too close to free lime limestone outcrops where Calcium induced Iron deficiency in crops commonly occurs. Banana and Bamboo are good indicator crops of these latter areas as Bamboo grows very poorly in high pH soils, and Banana exhibits spectacular yellow foliage due to Iron deficiency. In summary, soils in many parts of the highlands and lowlands of Lao will not provide a major constraint to Industrial crop expansion. As many industrial crops are of high value, fertilisers, dolomite or lime can readily be added to improve fertility without jeopardising returns, but rather enhancing profitability.

Aspect

Aspect can be very important for crops on sloping mountainous land. Some crops need to have a warm facing southern slope in the N. Hemisphere, while others will need a cool slope, maybe to meet a chilling requirement as a pre-requisite for flowering. Such matters must be given close consideration prior to selecting areas for development.

Wind Protection

Winds on higher slopes can be very strong at times and this may be a major consideration for a tree crops e.g., cashew, lychee, macadamia etc., where the trees can be easily blown over in the first few years of establishment. Sloping lands are very difficult to effectively protect with windbreaks so the sites chosen should as far as practical be protected when wind sensitive species are planted.

Note: The above Agro-ecological constraints essentially determine what industrial crops with good commercial potential for development will grow where. Observations
made to date about the approach methodology, currently used in Lao, suggest the need for an urgent major overall of the approach methodology used to determine suitability for given crops to given regions. Such approaches should be dominated by climate and slope and water supply considerations with soils to play a lesser later broader screen of the chosen region or location.

Staff in MAF/NAFRI need to be trained in such approaches to provide more realistic land use suitability suggestions to farmers and investors.

Technical Issues-Constraints/Opportunities

Next the technical issues and constraints/opportunities have to be defined for determining what industrial crop with good commercial can be grown, commercially and successfully. Some technical issues can be resolved with simple technology transfer extension, better varieties, better management with minor modifications, while others need adaptive/applied research. Key extension points are then needed along with demonstrations/trials to ensure success (Chapman, 1998). With a many industrial crops turnkey technologies can be brought in by investors who market the product and ideally link back to the smallholders from a nucleus estate type model. See Figure 3 to see how these constraints/opportunities fit into the decision tree process, along with matching the crops into existing farming systems.

Socio-economic Criteria/Constraints

There are a whole range of socio-economic criteria ranging from gross margin returns, markets, to infrastructure, road access, water and power access, access to inputs, transport, perishability, credit, inputs etc., links to processing, kinks to agribusiness, crop net financial returns etc., which must be taken into account to determine the likely success or failure of a given crop in a given location. Chapman, 1998 and Chapman 1997 present many more details, including the links to agro-industry at village or company level and agribusiness investment. See also Figure 3 above

N.B Key considerations is this final decision making process are the ability of people to do research and develop markets for a candidate crop and do simple gross margin calculations, cash flows and break-even points and IRR’s to calculate the financial feasibility of a new crop enterprise and compile an outline business plan for a number of crop options to decide the best returns to labour and capital for farmers or agribusinesses. In Lao at present in MAF there is an absence of such farm system economist advisers to undertake such studies often in collaboration with farmers and agribusiness. These problems need to be urgently addressed by the proposed interventions of the ADB project and incorporated into the design.

14 General Comments Overview on Prospects for Development of Specific Industrial and Spice Crops in Lao PDR including Problems and Opportunities

Cassava, Cashew, Cacao, Coconut, Sugarcane, Betel, Coffee arabica, Coffee robusta, Tea, Kapok, Tobacco, Neem, Sterculia pexa and Rattan are currently produced in Lao in varying amounts depending on province and climatic zone and there is some experience with the growing of these crops. Food legumes such as mung bean, soy bean, and peanut and starchy roots such as sweet potato, potato, yam and taro were not considered in the study, since the main focus is on industrial crops and potential new crops.
Cassava has a place in both lowland and highland areas of Lao as a reserve food crop for both animals and humans. In Vietnam cassava may be left as a fallow in shifting cultivation fields as a reserve food supply. The crop gives reasonable protection to the soil, when left in a somewhat weedy condition and fertility of the soil appears to be preserved. Ideally, the incorporation of a legume into such a Ley System would assist greatly in actually improving fertility. Such a practice could be used in Lao in areas with insecure food supplies in isolated areas. In Salavane commercial production of cassava via contract farming has begun with a Vietnamese company for export. Also, opportunities exist for more contract farming of cassava to supply to Thailand who needs to meet its quota shortfalls for exports. Unfortunately cassava is a low value crop with little added value deriving to Lao and relatively low returns to labour. The current practice of growing cassava for export to Viet Nam or Thailand in essence results in Lao becomes the disadvantaged, where Lao resources of labour and land are used to compensate, at unfair returns to Lao and labour, for inefficiencies and lack of mechanisation in the Viet Nam and Thailand cassava industries. Again Lao farmers become price takers and are only needed since Viet Nam and Thailand farmers no longer want to grow this low value labour intensive crop any longer. Lao should not pursue expansion of cassava except as their own fully mechanised model. Again cassava is a “slave labour” type crop. Again returns to labour and many other enterprises are far more pleasant and rewarding to Lao farmers and labourers than cassava.

Cashew is a tree requiring good deep lighter soils for better performance. It is suited to an agro-forestry grazing system once trees are well established after about 2-3 years. Cashew can also be intercropped for 4 years or more depending on spacing and will benefit from the incorporation of a legume into the system, whether it be an annual or perennial. Cashew demand fluctuates in the world market and pest problems can be of major significance, depending on location and these issues require careful assessment prior to widespread promotion of the crop. Thai and Viet Nam selections of cashew offer superior quality, and yield and some pest tolerance and these could be introduced if cashew is to be promoted. Vietnam is a very major producer of cashew of excellent quality (N.B., In some countries cashew is regarded as an industrial crop, while in others it is a horticultural crop). It is unlikely that cashew can be grown in Lao with a competitive advantage compared to Viet Nam. Viet Nam is investing in some cashew production in Lao in Attepeu province. It remains to be seen if this venture will prove profitable in Lao with its limited labour availability and lack of technical expertise in-country.

Coconut is essentially a household village tree in the Lao highlands and lowlands. The trees satisfy local household demands for coconut and tree products. Perhaps the most useful interventions for coconut may be the introduction of better performing hybrids such as the Chumphon #60 and Chumphon # 2 varieties and Sawi Hybrid #1 from Thailand, and the aromatic young tender coconut varieties, Nam Hom and Nam Wan, and perhaps the MAWA and Maytag hybrids from Malaysia. Some households do sell coconut in excess of needs, while in the larger towns many drinking coconuts are available along with whole coconut in the shell. Widespread planting of coconut, for copra production and export should not be advocated as it is simply unable to compete with palm oil for oil production/ha and cost per litre in the world markets. Coconut planting has accelerated in recent years on the plateaux areas of Bourikhamxai and in the islands of the Mekong in Champasaak province. Most production is likely to be for local consumption and import substitution.

Household value adding from cold pressed Virgin Coconut Oil (VCO) and value-added products of VCO may assist with household oil supplies and improved livelihoods and improved health and nutrition and be of use as a 10 % substitute for
adding to diesel in low RPM diesel engines in isolated communities. Production of value-added handicrafts from coconut shell, husk, by-products etc., is another way to generate income at village level from coconut. Prospects for expansion are limited in a larger commercial sense because of competition from much larger producers in nearby countries.

Cacao is not produced commercially in Lao, but a few plants are to be seen in the Ethnic Gardens, 25 km south and east of Vientiane on the Mekong river, near Tha Deua, altitude about 155 m.a.s.l. A few Cacao plants are also held in a collection at the Coffee Research and Experiment Centre at Paksong at around 900 m.a.s.l. Cacao would certainly grow in the Robusta coffee areas of the AEZ 2 footslopes of the Bolovens Plateaux, and could be a replacement crop for Robusta coffee, as is being practiced in parts of adjacent Viet Nam, at altitudes of up to around 700 m.a.s.l. However, world prices for Cacao are very low present and with Viet Nam planning expansion, caution is urged in following this same pattern. If Cacao plantings do expand then it is recommended that the Cacao be grown under shade with a lower input, rather than higher input full-sun system. Cacao can be grown successfully intercropped under rubber with reduced planting densities, wide spacing of rubber. Cacao is not a crop recommended for development in Lao. It is not a commodity for which Lao would have a comparative advantage in a very competitive world market.

Sugarcane is widely grown in many house yards as a source of sugar for eating and simple processing and for feeding to livestock. Projected sugar consumption for Lao is estimated at around 25,000 to 30,000 MT per year. Average yields are low at around 36 MT/ha of cane. Most sugar in the past was imported with estimates as high as 20,000 MT/year. Sugarcane production is now around 218,430 MT/year, as given in official statistics of 2006, with a likely recovery of around 8% this represents about 17,000 MT of sugar. The broken nature of the highlands and low light/solar radiation limitations makes them far less suited to production of sugar in an efficient manner, with good value-adding and competitive with Thai sugar imports. Gently undulating areas such as Salavane and parts of the Champasak footslopes at 200-400 m.a.s.l., with good rich volcanic soils or good lowland alluvials of Champasaak, Savannahkhet etc., with high rainfall in the growing season, and a 4 month dry season for harvesting and land preparation are ideal, for a highly efficient commercial sugar industry to develop.

Sugar is a political, international commodity, whose price fluctuates according to world demand and futures trading. For Lao to be successful and competitive in sugar production, the GOL would need to gazette an area of at least 40,000 to 50,000 ha of land, as sugarcane land to make it viable to support a factory and alcohol plant. Sugar companies, may then be attracted to invest based on their feasibility study competitiveness outcome and willingness to participate in the investments required. The company would require one large contiguous sugar estate land in a designated area, with or without small holder out-growers, and with clearly defined pricing, tax incentives, etc, for Lao to benefit. Sugar is more than many crops benefits from a compact area of dedicated sugarcane land around a factory, with a high degree of mechanisation and “Just in time delivery“for processing to reduce costs and losses in sugar from processing delays. Sugar production is more engineering than agronomy, if the location selected for production is good, one good efficient factory is all that is needed for Lao to produce all the sugar it needs plus extra for exports as sugar or alcohol or both.

Sugarcane grown by smallholders with low yields low technology is not a crop to be recommended for Lao. Essentially in Lao at low returns to labour sugarcane
becomes a “slave labour” crop and it is not recommended for promotion as a smallholder model.

The production of sugarcane in the highlands of Luang Namtha, for sending to a factory in China, and in Savannakhet for sending to Thailand should not be encouraged as there are no value-added benefits to Lao. Prices paid will be poor, Lao becomes a price taker, as “Just in time delivery “ cannot be assured and severe deterioration of sugar content occurs in transit and in the long delays in processing. In essence Lao becomes the disadvantaged where Lao resources of labour and land are used to compensate, at unfair returns to Lao and labour, for inefficiencies and lack of mechanisation in the China and Thailand sugar industries. Lao should not pursue expansion of sugar except as their own fully mechanised model.

Sugarcane is likely to remain a household, subsistence crop in the highlands.

**Betel Nut Palm** falls into the category of a household crop once again. Prospects for increased production seem small.

**Tea**, both the Assam and Chinese types and intermediate types such as Red Tea are all grown in Lao. Total production is about 1000 MT tonnes/year, down from 1,400 MT/year in 1991-95. Most tea is currently produced in Vientiane province and Houah Phanh (250-280 tonnes/year) with lesser amounts from Champasak and Phongsaly. In the past public sector enterprises were set up to contract grow tea. Farmers were pleased with this system as they did not have to worry about marketing. However, yields were low at around 300 kg/ha/year of dried leaf and the enterprises would not be economically attractive at these very low yields. Current yields for Houah Phanh are quoted at around 3.8 tonnes/ha/year, which are very high and even at half this yield returns are likely to be very attractive economically. Yields in India and Sri Lanka are usually of the order of 3 tonnes/ha/year or more depending on location and clone for Assam teas. Yields for Chinese Tea are lower and usually range from 0.5-2 tonnes/ha/year.

Little tea is produced in Luang Prabang and this is probably due to the drier, warmer, less humid climate. Specialty teas produced in the highlands of Thailand and Vietnam by small producers are sought after by tourists, both local and international. Thailand is now producing Organic Tea in the Mae Salong area of Chiang Rai province. Opportunities exist for development of specialty and organic teas from Lao and this could be an area for provision of technical assistance in the near future. The smoky Fume’ teas of Lao are already being marketed in a small way from Pakxong district in Champasak province, by a French group. These teas are traditional and unusual in the world tea market and a novelty and should attract market interest. The higher quality teas are coming from locations around 1000 m.a.s.l. or above. San Xay district in Attapeu province at an altitude of 600-800 m.a.s.l. on red volcanic soils and with a high rainfall of more than 3000 mm per year, and only a 2-3 month dry season, produces high quality tea and the area has more than 10,000 ha of gently undualating country for further development of tea, coffee, pepper etc.

In Summary, tea would appear to be able to offer some attractive prospects for highland areas. It can be readily integrated with value-added shade trees such as fruits or macadamias and can be grown on relatively steep lands in a sustainable way. However, the improved growing and marketing of specialty teas will need both GOL and private sector assistance. Current demand in the world market for high quality tea is strong and prices are attractive. In Lao both well managed and poorly managed tea gardens are in evidence in the northern and southern highlands and I have seen generally poorly managed tea in both in Houah Phanh and Xieng
Khouang previously. Some 6-7 years ago a Taiwanese group was interested in producing high quality red tea for export to Taiwan from an area near Phonsavanh at 1150 m.a.s.l.

**Kapok** is grown in almost every village in the lower highlands. Its main use is in the home but on occasions kapok is sold in the more distant markets. Further, promotion beyond household use is not suggested, without a market study.

**Tobacco** of course is regarded as a drug crop that is not to be promoted by projects. Nevertheless tobacco is widely grown in the project areas in the dry season. Management is relatively good and yields would seem to be attractive and as such it can provide much needed cash flow for a village as well as meeting some of the village’s tobacco needs.

**Neem (A. siamensis)** is found in some villages in household gardens. Wild Neem is used in the diet. Young tips and flowers are eaten for internal parasite control. Mixtures of Neem, Galangal and other wild plants are used for bio-pesticides in some villages. Growing Neem as an industrial crop is practiced in Thailand and India and some other countries. In Thailand the leaves and fruits are collected for drying and sale to Japan. More recently, Neem seed is being processed commercially in Thailand for the Thai and export markets. Perhaps these opportunities should be examined for Lao. Neem is used as a shade tree for both coffee and tea in some farms in Lao.

**Sterculia pexa (Mac Kao)** produces a nut that is sold nut-in-shell to Viet Nam traders for 4000 Kip/kg or more from Houah Phanh province. An industrial oil is extracted from the nut. **Sterculia pexa** is a relatively fast straight growing tree with a pale gray bark. It is deciduous in the dry/cool season and mature trees produce around 12 kg/tree/year of nut in shell. Trees begin to bear at around year 4-5 and should reach 12 kg/tree by about year 10. Trees are established by direct seeding into the field in the wet season at a spacing of about 4.5 x 4.5 m, which gives 493 trees/ha. Potential gross returns of nearly USD 5000/ha from mature trees bears serious further investigation about future market demand and market size. It is likely that the specie will have considerable timber value too at the end of its nut production cycle. The Provincial Office in Xam Neua has planted up a significant area of **Sterculia pexa** on the hillsides near the town. The opportunity is for Lao to extract the oil in country and sell it as a value added product.

**Rattan** grows in the forests of Lao and is used as both food and for cane production in commerce. Indonesia is a very big producer of Rattan cane, but the government restricts exports to made-up final products and does not permit the export of cane. Thailand and Viet Nam and Lao have a high demand for Rattan cane for furniture. The challenge is to examine how rattan can be produced in a commercial profitable way as it takes nearly 10 years to produce thick canes for some furniture items. Rattan is a NTFP in Lao and fits into community forestry in Lao, but perhaps might be grown in other ways at household level in gardens (Joost Foppes pers comm.).

**Pho Sa (Paper Mulberry)** has become an important cash income generator for a number of farm families, especially in slash/burn areas of the highlands, and production in Luang Prabang is very significant. The trees often regenerate naturally after an upland rice crop and second year Job’s Tears or other legumes, and are encouraged by the farmers in the follow-up fallow. High quality paper is produced from the bark of the Paper Mulberry for local use and export. About US$ 0.80 is paid per kg of dried bark and returns per hectare are around US$ 600-800. Yields are variable and often around only 500 kg/ha, and one person on average can only
prepare about 8 kg/day of dried bark. The income generating enterprise is just one part of mixed plantings of crops, fruit trees and livestock in the farming systems of the highlands. Pho Sa would be somewhat difficult to commercialise further and profitability is low

**Swamp or Paperbark Tea Tree** (*Melaleuca cajuputi Powell*), a native to coastal Northern Australia, may be grown in most lowland, swampy areas of Lao up to around 300 m.a.s.l. The bark of the tree is easily stripped by simply pulling off by hand to produce paper or used without processing to make paperbark paintings and artifacts. The tree would be well suited to the lowland swampy areas such as found in parts of Champasak, Saravane, Xekng, Attapeu etc. Cajuputi essential oil can be extracted from the leaves using simple steam distillation. The trees will grow in standing water.

**Melaleuca alternifolia** is the plant which produces the high quality Terpen-4-ol dominant **Tea Tree Oil** of commerce, which is low in mucous membrane irritant Cineole, if grown in warmer areas of sub-tropical Australia. The plants are managed as low coppiced bushes, much like tea bushes. Leaves and twigs are cut from the plants either by hand or mechanical means and the high quality oil extracted by simple steam distillation. In Lao the preferred locations would be areas with good rainfall, well drained but moist soils, not subject to waterlogging or flooding and the site should be frost free. In Lao the preferred altitudes are likely to be from 500-1000 m.a.s.l. Tea Tree oil is a very high priced commodity and could be simply produced at village level in Lao, provided markets are developed.

**Sweet Bamboo** (*Dendrocalamus asper*) considered an NTFP in Lao, is a crop, which grows throughout the highlands of Lao, usually up to about 1200 m.a.s.l. Sweet Bamboo can be a very profitable crop in highland areas and in Thailand and Viet Nam and has high returns to both capital and labour and high yields per hectare. However, profitability depends on having a processing plant for canning the bamboo shoots, which are in very good demand in the world market, and/or a bamboo product industry. The bamboo is also used for construction and in some instances for commercial paper making. A natural fibre bamboo paper has been developed in Lao in Van Viang district for export. Such a product could possibly be expanded for production in other areas of Lao. More recently demand for various species of bamboo in Thailand and Viet Nam for furniture for companies such as Ikea in Sweden and making preassembled parquet floor tiles and sheets are high value products has increased dramatically. This has been driven by a large initiative of OXFAM UK in Viet Nam who pioneered the studies to foster such demand. Lao is ideally placed to provide bamboo to Viet Nam from existing forest stocks and to plant commercial stands for the future and develop more a value-adding bamboo product industry in-country. This is an initiative well worth pursuing for Lao.

**Macadamia nut** has recently been introduced to the Bolovens plateau at the Coffee Research and Experimentation Centre in Paksong district at 900 m.a.s.l. Experience in nearby Thailand has shown that in the North at latitude 19-20 Deg. N, Macadamia can be very successfully grown at altitudes ranging from about 900 m.a.s.l up to 1500 m.a.s.l. The management levels for establishment are somewhat higher than for more robust crops, but the nut has a very high commercial value in an under-supplied world market which has a huge capacity to grow in the region.. Processing can be done with simple small-scale machinery for fresh nut but sophisticated larger commercial plants are essential to capture more added value for Lao. The long post harvest life of air dried, nut-in-shell, after harvesting is ideal for isolated locations as is the robust nature of the nut, which allows for transport without damage. In North Thailand Macadamia is planted with Arabica coffee at altitudes of 900-1500 m.a.s.l.
Similar excellent opportunities exist in Lao which has better gently sloping volcanic lands on the Bolovens Plateaux ideal for commercial production of macadamia nuts, as plantations or intercropped as shade in coffee. (See the sub-project concept note of Appendix 2 of this report).

**Oil Palm** plantings were observed at Ban Chieng district in Champasak province at an altitude of 195 m.a.s.l., and on volcanic soils of the foot slopes of the Bolovens. Palms were very poorly tended and made very poor growth, no ring weeding or mulching was practiced and cattle were damaging the young palms, planted in June 2000. Centrosema was used as a ground cover, but establishment was poor. The area of about 10 ha was planted by a Malaysian Company as a trial. The Volcanic soil areas of Champasak to Saravane in the warmer, better rainfall areas 200-400 m.a.s.l., should be suitable to conventional lowland oil palm production, but yields are likely to be low and marginal without irrigation as the dry season of 4 months per year, which greatly affects bunch production and the number of fruiting bunched produced. Recent inspection of this area, which is now a little better managed by a new company, found palms still looking poor with respect to bunch production per plant, which is still very low again reflecting dry conditions where female bunches fail to develop and many male flowers take their place.

A Thai company Pathoumphone Prosperity Kankaset Co., Ltd is over the past 3 years planting an experimental area of 3,000 palms at Km 24-25 on the Pakse to Cambodia road on an area of underutilised forest with Cambriosol soils. This area is at an altitude of 300 m.a.s.l., nearby a river, with some possible underground water. Irrigation will be essential to be commercially viable. A minimum of 10,000 ha is required to justify a crude oil palm factory. 7,000 ha for a nucleus estate and 3,000ha for smallholders. The oil palm may well be a failure due to the 4 month dry season and low relative humidity which forces the plants to close down the stomata and the photosynthesis process, even if irrigation is available.

Rubber plantings which are now taking place rapidly in Bachiang district, of Champasaak on the red volcanic soils of the footslopes of the Bolovens and in the Cambriosols and Acrisols of areas to the south of Pakse along the river highway to Cambodia. The development of either commercial Oil Palm or Rubber should be commercial decision based on a competitive feasibility and the will of GOL to be involved in plantation crops, either as straight commercial plantations or nucleus estates with smallholders. Large-scale plantations involve large investments in infrastructure and must be competitive with the highly efficient industries of Malaysia, Thailand, Indonesia, India and Papua New Guinea. The Vietnamese have already applied for more than 50,000 ha in Bachiang district and already 3,000 ha are planted. More concessions are listed for the Parhoumphone district, some in biodiversity forested areas. The challenge is for Lao people and GOL to get a better share of the investments and to ensure that disrupted farmers are fully compensated for loss of their lands and loss of access to community forest areas and can be engaged in the plantations, if they wish, as labourers or smallholders. GOL has an overall target of 200,000 ha of rubber. However at the present time Lao is a price taker on rubber as no market in the true sense is operating as plantations send block rubber directly to China or Viet Nam and not via the international rubber market value-added rubber sheet. As labour in these areas are nor sufficient to support the rubber tapping requirements immigrant labour has been planned from Viet Nam or China.

One plan by a Vietnamese company is to bring in Vietnamese people to do the work in Bachiang district of Champasaak and Lao Ngam district of Salavane With families of an average of 4 people this means that 300,000 Vietnamese would settle in these
districts. These labourers would be in addition to the hundreds or more of Vietnamese already working on coffee plantations. GOL would need to seriously assess the social impacts of this imported labour on the culture of Lao people. In addition is the displacement of people often with minimum or no compensation from their lands to give them up for plantation concessions.

**Cold Tolerant Oil Palm** which will tolerate down to about 10-12 Deg.C., in the cool season is a relatively recent crop bred and developed by ASD de Costa Rica a private oil palm breeding company in Costa Rica.

Cold Tolerant (CT) or Altitude Adapted Oil Palm hybrid tenera seed, bred in Costa Rica, have been successfully adapted to higher, cooler areas of Africa, including, Cameroon, Zambia, Kenya, Malawi and Ethiopia. The plants can tolerate temperatures lower than those suitable for classic oil palm hybrids and still produce more oil in cool conditions than with less adapted cultivars. FAO has pioneered this development of palm oil in poor rural communities of Africa, with ASD de Costa Rica, as a rich source of Vitamin A and E, energy and protein, as well as providing a substitute for expensive imported oils, and value-added products. The system uses smallholder production and small-scale portable presses easily adapted to village activities. Women can be readily involved in the processes of nursery operations, inter-cropping, maintenance, loose fruit collection, processing, refining, down stream products, packaging, marketing, waste utilization and accounting. (FAO/TCP, 1996). Palm oil may also be used for adding to diesel fuel for low RPM diesel engines, often found in villages for cultivating fields, electricity generation, powering rice hullers etc. and for transport. Up to 10 % of oil may be added to diesel without any problems accruing to the engines. The fuel also burns cleaner than pure diesel.

Significant numbers of people in areas of isolation and particular communities of Asia and to a less extent the Pacific, are deficient in Vitamin A according to UNICEF statistics, and the level of supplementation for children varies widely from country to country. Already, considerable interest in the CT Oil Palm has been expressed by a number of countries in the region. (Pers Comm).

From discussions with UNICEF in Vientiane in 2001, it is clear that Vitamin A, along with Iron and Iodine, are the major micronutrient deficiencies in the Lao diet, and in 2002 UNICEF is to commence a programme of malnutrition focus on children less than 3 years of age and a programme on relief of Vitamin A, Iron and Iodine deficiencies. Vitamin A relief would focus on supplementation, but would greatly benefit from a oil such as palm oil, high in Vitamin A, Vitamin E, protein and energy and with the ability to generate additional income in the community.

Cold Tolerant Oil Palm will probably grow in areas up to about 600 m.a.s.l., in the North and about 900 m.a.s.l., in the south, depending on temperatures in any given location.

The best way of introducing Cold Tolerant Oil Palm is likely to be as a link to Upland Projects in isolated target villages. A similar approach would involve linking to other on-going projects of say UNICEF, NGO’s and International Projects of donors. CT Oil palm is not being recommended for commercial production, but to support village oil needs in isolated areas to improve nutrition, village oil supplies for cooking oil etc. Just a few palms in a village near to the water supply where they can be watered regularly by hand in the dry periods may be an ideal model.

Cotton is a relatively small crop in Lao and production from around 1991 up to 2000 had been stable at 5,000 MT/year. Xayabury and Salavane provinces were
the largest producers with the former producing around 40% of the crop. In 2006, cotton production had declined to 2,370 MT with Salavane and Savannakhet the largest producers. Cotton is important to the villages of Lao for provision of cotton for weaving and most cotton was grown on a small scale for such a purpose. Today obviously imports are replacing local cotton to meet demand. Cotton is not seen as a good potential cash crop for Lao, but as a crop that supports village enterprise, income generation.

Coffee (Coffee arabica and Coffee robusta, and Coffea liberica) is a very important income earner for Lao via exports. In 2007 the exports were setimated at US$28.87m.

Coffee has been traditionally produced in Lao since the times of the colonial French rule. Thus, Lao has a long experience in coffee production, especially from the Boloven’s Plateau, which produced 18,500 tonnes in 2007, mostly from Champasak and Saravane provinces. In the north, Luang Prabang, Phongsaly, Oudomxay and Houah Phanh produce about 1% of the total production. The total area under coffee in 2007 was estimated as 45,000 ha of which 13% is Arabica and 87% is Robusta. Sallee et al 2007. In 1998 exports of Arabica constituted 296 MT, Robusta 13, 823 MT, while in 2007 Lao exports were 20,752 MT of Robusta in 2004 and 14,452 by June 2007 worth around US$23.89m. For Arabica there was 2,505 MT exported in 2004 and 1885 MT exported by June 2007, worth US$4.98m. About 95% of production goes to the export market. Sallee et al 2007, estimates from surveys that young plantings of Arabica that are yet to produce constitute some 6,000 ha with some 15 million Arabica coffee seedlings in nurseries, or enough to plant about a further 6,000 ha. The very comprehensive study on the supply chain for Lao coffee Sallee et al, 2007 shows that Lao coffee is now in strong demand in the world markets because of its quality attributes and especially the soft, neutral Robusta, washed and natural has excellent qualities, and it is often high grown although most is at 400-900m.

Lao is wanting to expand further the high quality Arabica coffee production, via improved varieties, improved wet processing and better linkages to high quality coffee markets. At the same time Lao Robusta is in high demand. Prospects for expansion are bright and high prices of $3.60/kg for Arabica green bean and $3.00/kg of green bean Robusta are very attractive. The challenge is to maintain and promote the Lao image and identity for high quality in the world market.

In recent times:

Extending and improving on the quality management and wet processing techniques, introduced by AfD France, Projet de Developement Rural du Plateau des Bolovens ending in 2001 supported this process.

FAO followed up in 2002-2005 with a coffee project emphasising quality improvement and alternative processing techniques for Robusta and Arabica and providing facilities and a good cup tasting facility at the Coffee Research and Experiment Station in Pakson district and training of staff in cup tasting techniques that can be used to screen samples from trials, test plantings, farmers fields, trial shipments etc. In addition the project undertook training of trainers and key farmers in Arabica coffee quality awareness, processing techniques, tastings, and coffee production and management, and upgrading information of coffee via manuals. Samples of coffee both Arabica and Robusta were collected, tasted and sent out to commercial world buyers for assessment to promote Lao origin coffee. The project
also introduced new high quality Arabica varieties for testing under shade at high altitude of 1200m, which has never been done previously.

Early in 2005, the AfD PAB-PCADB Project de Bolovens funded by AfD began. The project has now set up 51 farmer association groups and 31 washing stations to date to upgrade farmer skills in coffee production and processing and has made an extensive study of the coffee supply chain for Lao, continued the assessments of coffee quality begun by the FAO project and has initiated a major Geographic Indicator study for Lao coffee and made major contributions to the reformation of the Lao Coffee Board. The project has greatly assisted smallholders with their management and processing practices and has set up microcredit systems for smallholder associations to manage.

All of the above support is helping greatly to raise the profile of Lao coffee and origin in the world market and ideally the support needs to continue with donor support for another 5 years at least to help secure the industry’s future via high value high quality coffee production in Lao and for the benefit of the coffee smallholders.

In addition, JCFC has managed to get Fair Trade certification for Lao high quality Arabica coffee and is now establishing Organic certification for some 600 coffee farmers in the group. Fair Trade exports in 2008 have amounted to 4 containers or 64 MT of high quality green bean. Their links to a high quality roaster, Lao Mountain Coffee has pushed up local demand for high quality roasts, which are now being exported to a number of countries as value-added roasted coffee. OXFAM Australia has fostered links to the high quality Arabica market in Japan.

All of the above interventions are positioning Lao in the high quality market of the world.

Coffee is not quickly perishable, has established marketing channels, is of reasonably high value and thus can be grown in more isolated areas of the highlands of Lao. It is also a crop that can be grown under shade with lower input levels to produce high quality Arabica coffee. Coffee is also a crop, which is now becoming more diversified and less often grown as a monoculture in Lao. Fruit trees are used as shade along with legume trees, and livestock and vegetables are often produced with coffee in the Bolovens area. Very suitable areas for expansion of high quality Arabica coffee will be in the Bolovens, on good soils at altitudes above 900 m.a.s.l., and preferably at altitudes of 1200m plus. Macadamia nuts and value-added Black pepper could be readily integrated into the coffee farm systems.

**Sweet Sorghum** has prospects as a crop for areas deficient in animal feed, such as Savannakhet, and the southern provinces, where it could be grown for cattle feed and silage as a rainfed crop in the late wet season to supplement dry season feed needs. Also it may be used for sugar syrup extraction at village level if required or alcohol production. The grain can be used for food if desired or for animal feed. Sweet sorghum is a very good multipurpose crop that in China is used for food, feed, fuel and fibre, (Chapman, 2004) and is quite drought and salinity tolerant. New varieties have very high sugar contents far exceeding those of sugarcane and make it ideal for making alcohol for fuel etc., with the fibre remains used for animal feed or high quality paper. In China sweet sorghum has saved the livestock industry in the NW where water is in short supply and grazing has been banned to stop more desertification. In the Yellow River delta water is also running out and salinity is well advanced and traditional summer crops such as peanut, soybean, cotton and maize and even rice, now fail or yields are severely reduced, because of salinity, sweet sorghum has been the saviour of these farm systems. Palmyrah Palm grows in
the lowland paddy areas of many parts of Lao. The Palmyrah Palm (*Borassus aethiopum* Mart.) is a very useful palm of Asia with the use of palm products such as sugar/gur dating back some 4000 years. Like the coconut many different parts of the palm are used for basket making, timber, cattle feed, sugar/gur, broom making, fencing, rope, roofing, craft goods, nectar (sap) and so on. It thrives in the poorer drier lowland soils of Lao and is a source of food and income. The sap can be added to rice and roughage for fattening of pigs. Thus conservation of such palms may be important to income generation of families in Lao. In Vientiane province one Thai/Lao company (Lao Agroindustry Co Ltd) is very successfully processing fruits for export of 150 reefer containers per year.

**Vetiver, Kenaf, Roselle, Linseed (Flax), Citronella, Ramie, Chinese (Cassia) Cinnamon, Nutmeg, Sisal, Candelut, Duboisia, Arrowroot, Peppermint, Chicory, Applemint, Spearmint, Saigon (Cassia) Cinnamon, Indian Sandalwood, Tung Oil, Chamomile, Patchouli, Black Wattle (*Acacia decurrens*), Pyrethrum, *Quinina calisaya*, Red Quinine and Yellow Quinine** are crops that will grow in the Lao highlands. The tree and grass species are probably more attractive as they are easier to manage in terms of labour commitments at peak periods than the mints and the fibre plants.

Returns from **Kenaf and Roselle** are generally not very attractive for fibre and the plants are reasonably exacting in their management, nutrition and water needs and these days are often mechanically harvested and processed. Roselle for fruit production for medicine is an attractive alternative, which is being grown organically by a Japanese company in Thateng district of Xekong province for export to Japan, along with organic Okra which has very powerful antioxidant and anti-cholesterol medicinal properties.

**Ramie** produces a very high quality fibre, but the extraction process is long and complicated to produce a high quality product. Ramie is also adversely affected by drought and requires a high level of fertility for good production.

Of the remaining fibres after cotton, **Sisal** is the easier to grow and manage and large areas of this crop are grown in Central Vietnam. However, Sisal tends to produce better under hot drier lowland and footslope conditions rather than in the highlands, where productivity is likely to be lower in Lao. Again careful marketing assessment is needed before proceeding with Sisal or indeed any of the above species. Conditions in Lao are not suited to **Jute**, which is a very labour intensive crop and not recommended for Lao where labour may often be in short supply in rural areas.

**Linseed (Flax)**, is produced successfully by Hilltribe villages in N. Thailand in shifting cultivation fields with vegetative contour strips. Linseed could probably be successful in the project areas, however again market demand will dictate opportunities. The main limitation is, as was found in Thailand, the low returns to labour and investment.

**Vetiver and Citronella** grasses grow well in Lao, but again market demand will determine future production prospects. Also, Vetiver has an important use as a vegetative contour strip to reduce erosion and achieve better water penetration on sloping lands. It is used to stop gully and sheet erosion and help repair gully erosion. Both produce extractable essential oils, but market considerations should be established first. Vetiver is a crop now used to trap pollutants from water and factories, mine sites and municipal dump drainage, as well as stabilising roadside cuttings and edges of waterway and canals subject to erosion. Young vetiver grass can also be grazed. Vetiver has the amazing characters of tolerance to fire, frost,
drought, salinity, waterlogging and can trap pollutants like heavy metals in its root system, which may extend to 6m or more deep in soils, while the leaves of the plant stay free of these chemicals. Vetiver does not become a pest as it does not produce viable seed and must be propagated vegetatively. Also plants such as trees and vegetable can be grown right next to Vetiver plants without any competitive problems due to the very deep root system. Vetiver is thus a very useful plant that because of its diverse uses will find useful slots in Lao agricultural farm systems etc.

**Quinnines, Tung Oil, Candle Nut, Chicory, Pili, Nutmeg**, all have potential production opportunities depending on finding and retaining markets for these products. The more attractive of these products are likely to be the nuts of Tung, Candle Nut, and Pili as these require lower labour inputs and a gathering operation.

Lao has a naturally occurring plant, *Artemisia annua* that gives a product, artemisinine, from a root or leaves, which is now the basis of a new Anti-malarial drug, originally produced by China in recent times. This product is active against drug resistant forms of malaria. The Research Institute of Medical Plants has initiated commercial production. Whether production proceeds depends on commercial investment linkages and returns to labour and investment.

*Duboisia leichardtii and D. myoporoides* and their hybrids are an important source of atropine, hyoscine, hyoscyamine and scopolamine. The plant is native to Australia and grows in the sub-tropical areas of the Burnett district of Queensland. The small tree is easy to grow as is kept coppiced from about 3 years on when the first limbs are cut and the dried leaves collected and bagged for sale, mostly to Boehringer company in Germany and Switzerland. However, the market is dominated by this company and demand would dictate whether a commercial interest might develop in Lao.

**Arrowroot** is an important starch rhizome crop that grows readily in areas of Vietnam adjacent to the Lao, in the Song Da basin and Son La. It is an important source of starch for human and animal consumption and provides a good ground cover quickly on sloping land. Arrowroot may not be an important cash crop for sale, but rather to act as a reserve for human and animal food in much the same way as cassava. It can provide good ground cover on sloping slash/burn sites in Lao.

**Chamomile**, along with Jasmine, Cardamom, Ginger, and Chrysanthemum is often grown in highland areas of Asia for flavoring tea and other beverages. It is easy to grow and store as a dried flower product and may well find a small niche if a tea industry expands in the highlands. Ginger is grown on the Bolovens Plateaux and elsewhere in the highlands of Lao. Ginger is ideally suited to production on the Bolovens Plateaux, Mostly it is used locally but as demand rises in adjoining countries exports may develop significantly.

**Black Wattle** (*Acacia decurrens*) is a major source of tannin for tanning processes throughout the world. It will grow in the higher altitude areas above 1000 m and up to 2000m or more. Harvests of bark usually begin at about year 4-5 and the cutting and drying process is simple and is well able to be handled by villagers with little training. Market data are the key to developing this product along with costs of production.

**Pyrethrum** is an important perennial herb, insecticidal plant and grows well in the highland tropical areas above 1000m and up to 2000m or more. Harvesting and drying of flowers is a very simple process. Again markets are the key to development of this crop, along with prospects for local use on crops such as vegetables.
Indian Sandalwood is an important fragrant wood for carvings and for the production of Sandalwood oil. Currently, India supplies most of the world market for these products and before any development market prospects must be assessed and assured. However, Australia has made significant plantings in recent times and supply may well be catching up to demand quite quickly.

The above list covers the more important industrial crops of commerce that will grow in the highland areas at the proposed sites. Prospects for some look very attractive, because many grow like forest species with low inputs in easily sustainable systems, and have simple processing requirements and a spread out labour commitment. However, all prospects depend on Lao having either a good local use and/or a competitive advantage in production and ready access to markets for individual products. Successes in the past have mostly related to market development.

Spices

Spices are of course considered as industrial crops, but have just been separated here for convenience in discussion.

Lao already produces many spices including Basil, Cardamom, Siamese Ginger, Ginger, Coriander, Lemon Grass, Bastard Cardamom, Cardamom, Chilli and Black Pepper, Garlic and smaller amounts of Tumeric. Anise and Saffron, are as far as we know are not produced in Lao. Cardamom is a NTFP in Lao, which produce now some 1000MT foer export to China and Viet Nam at around $4/kdg each year. Spices are an attractive product for highland areas of Lao, because of their relatively high value, good post harvest life and ease of transportation. All of the above group would grow in the highland areas. To expand production a good marketing linkage is required as a prerequisite. Opportunities exist for Lao to produce value-added organic spices in-country for the export market.

Unfortunately it is very difficult to determine both the production and demand for industrial crops and spices in Lao as statistics are simply not kept on many of the commodities. However, there are reasonable opportunities to increase the cropping of these well known crops, as population and disposable incomes rise.

Nutmeg, requires more labour in preparing the product for sale than some of the other spices, but the oil, mace, nutmeg and processed fruit offer a number of options for income generation but need processing and export linkages. Nutmeg oil is used as a therapeutic massage oil.

Vietnamese or Saigon Cinnamon is now being grown in a small way in Houah Phanh province. Luang Namtha, Phongsaly and Houah Phanh and Paxong, and all have good prospects for production of Vietnamese Cinnamon (Cassia loureiri), which is grown as an Agroforestry tree in the Yen Bai area of N. Vietnam at around 400 m.a.s.l. in tea plantings across from the Lao provinces mentioned above. This Vietnamese Cinnamon, while not the true Cinnamon (Cinnamomum verum) of commerce, is of high quality and much less labour consuming, since the whole tree is cut only after 8-10 years, bark removed and dried and the timber sold separately to cinnamon bark. The tree re-grows from a sucker. Vietnamese cinnamon could readily be grown in coffee and tea on the Bolovens plateaux or elsewhere. In 2004 income from trees grown in tea in Viet Nam at about a density of 100 per ha returned to farmers at 10 years, when harvested, around $6,000/ha for the cinnamon, plus extra from sale of the timber.
**Black Pepper** is produced in small amounts in the Bolovens plateau area and possibly in other areas of Lao in upland/highland areas. In the Paksong district of Champasak province, Black Pepper is grown up to an altitude close to 1100 m.a.s.l., but may be more productive at lower altitudes from sea levels to 900 m.a.s.l., under shade. In 2001 Attapeu was preparing to expand the area under Black Pepper at San Xay at an altitude of 600-800 m.a.s.l. on red volcanic soils and with a high rainfall of more than 3000 mm and only a 2-3 month dry season. More information is provided on Black pepper in Appendix II on development prospects for black pepper in Lao, which look attractive especially when pepper prices are now close to $4/kg of black pepper and $6/kg of white pepper.

**Organic Agriculture Certification:**

In 2002 GOL was keen to seek assistance to promote the setting up an affordable, credible, Organic Agriculture Certification Scheme for Lao that has international recognition. In meetings with the D/G of Department of Agriculture early in this mission assistance it was emphasised that assistance is still needed with this process.

Already some initiatives on organic certification have begun on coffee in Paxong district of Champasak province and organic vegetables in Thateng district of Xekong province with a Japanese company, that the author is aware of, in the south to date. A further organic vegetable initiative with coffee is to be started by a Chinese company in Paxong district. Lao has many opportunities for organic certification of products as many crops are organic by default as no chemical fertilisers or chemicals are used on many crops to date.

15 **Future Technical Assistance Areas for Industrial Crops in Lao PDR-2001**

In addition to the higher priority areas for more immediate technical assistance the following opportunities for niche market future developments were identified by the author in 2001. These areas would require some TA inputs to help catalyse development. Such TA interventions may be proposed to donors, NGO’s and international development agencies. Viz.

- Organic spice production.
- Organic tea and production.
- Vietnamese Cinnamon development.
- Production of key essential oils for niche markets.
- Further production of key medicinal plants for value-added product development.
- Macadamia nut production in Arabica coffee areas.
- Avocado production in Arabica coffee areas for both market windows and for baby food. Avocado is an almost complete baby food in its own right and would be grown for improving nutrition of young children and for possible income generation.
- Sweet sorghum rainfed development for silage, in areas where long dry season forage is limited. Sugar syrup production too if desired.
- Value-adding to *Stecul ia pexa* nut production in N. Lao, by simple in-country oil extraction for export.
- Bamboo processing for bamboo furniture and shoots and other uses just being explored like parquet flooring etc.

The above opportunities are just as relevant in 2008 as when proposed in 2001 but market opportunities would need to be closely examined for cinnamon, essential oils
and Steculia. **Black pepper and organic coffee**, should be added to the above listings after further investigation of niche prospects.

Other commercial and contract farming and collection operations have been brought in by turnkey technologies provided either by Thailand, Viet Nam, China and Japan and others with rubber, cassava, fruit and vegetable processing, organic vegetables, corn, soybeans, sugarcane, cashews, Palmyrah palm fruits, bamboo shoots, and some other medicinal plants including the NTFP’s of orchids and oils/resins from Styrax, Bong Bark, Shorea resin, Dipterocarp resin, Agar wood resin, and other NTFP’s.

16 **Non Timber Forest Products (NTFP’s)**

Table 7 Below gives an indication of diversity and the importance and value of NTFP’s to Lao. Some have been covered under industrial crops above.

Unfortunately there seems to be no recent data readily available on NTFP production and value. The most recent reference available was from Joost Foppes (pers comm.) quoting the D/G of Forestry in 2006. At that time it was stated that NTFP’s were worth some $49m while wood and wood products were valued at around $100m, based on Ministry of Commerce data. Joost Foppes estimates that orchid exports and cardamom exports at around 1000MT/year each. Champasaak is a major producer of cardamom and has prioritised expansion of cardamom production among its forest priorities.

Because of the lack of information at present on NTFP’s, it is recommended that a study on production, including areas and species utilised and future product potential be undertaken by NAFRI in collaboration with a NTFP Specialist. The activity and NTFP Specialist be funded by the ADB Grant.

17 **Bio-fuels**

Bio-fuels are very much in the spotlight in the Asian region and indeed throughout the world. The reality is that with bio-fuels a number of points have to be taken into account, based on the scale of operation planned and all externalities involved in their production and use. Often a bio-fuel produced from Coconut, Jatropha, Oil palm etc., may be well suited and perhaps economical in isolated areas and where costs of production and collection of the fruits for oil production and simple processing are used to produce a product as an alternative to or additive to diesel.

The commercialisation of these oils and conversion to bio-diesel by methylation with methanol often becomes a financial feasibility question that must also take into account all subsidies and externalities such as loss of tax revenue, and overhead and capital costs of distribution of the new product. Even for a simple coconut oil fuel to replace diesel with or without adding up to 20% kerosene to replace diesel as is done in the Pacific Island states may often present major problems. When diesel imports are reduced because of coconut fuel replacements the Government of Vanuatu loses valuable tax revenues needed to run the country. (Duncan Burnett pers.comm.). Such externalities must all be taken into account as well as the basic costs of producing the bio-fuel product.

There is another very serious externality issue that is currently already affecting world food supplies and costs. E.G. Currently oil palm oil is selling for around $150/barrel compared to Crude petroleum oil at $100/barrel! It really makes no financial sense to make bio-fuel from palm oil when there are no savings and costs must be added on
to produce the final product. If a subsidy is given by government it still amounts to a costly solution for taxpayers.

Bio-fuel products made from palm oil in Malaysia, Indonesia and Thailand, which are major producers of palm oil in the world, have driven up the prices of oil palm cooking oil by some 50% in the past 6 months or so, with disastrous consequences for poor people and low income earners. Demand for culinary oil is already increasing rapidly especially in Asia and China as more people become middle income earners each year and consume more vegetable oil, of which most is palm oil, so diverting supplies to bio-fuel simply pushes up prices.

This competition between food and fuel from food crops is a very serious concern worldwide and is already having a big influence on the prices of food crops to consumers. On one hand there may be an advantage in using a bio-fuel, as it may burn cleaner and reduce engine emissions, and be slightly cheaper because of subsidy and conserve some petroleum or diesel, but on the other is threatening future food stocks and production of food needed to support future demand because of world population increase.

Such problem is already occurring with maize in the USA as huge diversions of maize have been made to produce Ethanol for bio-fuel and 10% substitution in normal gasoline refined from crude petroleum oil. This diversion of maize to ethanol production action has already resulted in a 40-50% increase in maize for poor families in Mexico, which is a very undesirable outcome.

Recent studies and data presented on bio-fuels and world food demands at a conference in Australia in January 2008, have estimated that the amount of food diverted into bio-fuels from all food sources worldwide amounts to more than the entire crop of rice in the world! Such a situation is a very worrying scenario and furthermore their future predictions are that world food shortages will begin to occur by 2012. Already relief agencies such as the World Food Program are paying as much as 40% more for food grain purchase than they did a year ago. These issues put big question marks over the use of food crops for bio-fuels and has pushed the EU into considering a major revision of policy that promoted use of ethanol to replace 10% of all gasoline by 2020.

Lao-PDR needs to develop firm policy guidelines based on the current problems with bio-fuel production from food crops. Furthermore, unless there is a commercial comparative advantage in growing bio-fuel crops other than food crops, Lao should not promote such developments.

Also GOL should seriously consider not allocating potential food crop lands to commercial production of bio-fuel crops, especially where Lao does not benefit from and value adding or use of the fuel. Eg., Growing Jatropha, or sugarcane commercially for export of raw material to Thailand or China or Viet Nam to produce bio-fuels. Currently, oil palm is growing experimentally in Champasaak province. It is very doubtful if this project will succeed because of 4 dry months and low humidity which adversely affect palm productivity. Even if it is partly successful the oil produced should not be diverted to uneconomic bio-fuels, but used in Lao for food oil or exported for the same purpose.
APPENDIX VII. SOCIAL ISSUES ROAD MAP

The following report was prepared by Elizabeth Mann, Social Analyst and is available as a separate document.

1 Introduction

1. Background to the Agricultural and Natural Resources (ANR) Sector. Lao PDR is one of the poorest in the region and classified as Least Developed Country (LDC). The population of Laos depends primarily on rural agriculture (estimated 80% of the labour force), which contributes some 53% of GDP, while rice farming alone accounts for 39% of agricultural GDP.25

In the five proposed project provinces of Savannakhet, Champassack, Sekong, Salavane and Attapeu, agriculture is central to both individual livelihoods and provincial economies.

<table>
<thead>
<tr>
<th>Province</th>
<th>Total Population</th>
<th>% of 5 project province population</th>
<th>% Population in Agricultural Activities</th>
<th>% Population in Non-Farm Activities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Savannakhet</td>
<td>825,902</td>
<td>42%</td>
<td>87</td>
<td>13</td>
</tr>
<tr>
<td>Salavane</td>
<td>324,327</td>
<td>17%</td>
<td>92.7</td>
<td>7.3</td>
</tr>
<tr>
<td>Sekong</td>
<td>84,995</td>
<td>4%</td>
<td>85.5</td>
<td>14.5</td>
</tr>
<tr>
<td>Champassack</td>
<td>607,370</td>
<td>31%</td>
<td>80.4</td>
<td>19.6</td>
</tr>
<tr>
<td>Attapeu</td>
<td>112,120</td>
<td>6%</td>
<td>85.6</td>
<td>14.4</td>
</tr>
</tbody>
</table>

Source: Population & Housing Census 2005, Table 5.7

While the country is typically described as "land-locked", the Government of Lao (GoL) is increasingly seeing this as an opportunity rather than a disadvantage through its position as a "land-link". Southern provinces have already taken good advantage of this through development of road and bridge connections between Vietnam, Cambodia and Thailand. This has had advantages and disadvantages. Advantages have been to open out trade and market routes, particularly through Vietnam to sea ports, leading to improved flows of goods and services in the region. Disadvantages have been to facilitate smuggling of natural resources from southern Laos, particularly the illegal timber trade.

2 4 Goals and 13 Measures. Because agriculture is so fundamental to the Lao economy, the GoL's intention to remove the country from the list of LDC's by 2020 critically depends on development of the Agriculture and Forestry sector. National policy, through the Ministry of Agriculture & Forestry (MAF), has developed a

25 FAO, Programme Priorities Framework, Lao PDR 2006-2010, November 2005. Other publications give different figures; e.g. the recent DFID/World Bank (ARD) Partnership, Lao PDR Public Expenditure Study: Public Expenditures for Pro-Poor Agricultural Growth, estimates that agriculture contributes 42% to GDP and accounts for 67% of the employed adult workforce.

Strategic Vision with 4 Goals and 13 Measures\textsuperscript{27} which are expected to deliver the goals of the 8\textsuperscript{th} Party Congress and the National Socio-Economic Development Plan (NSEPD). These 4 Goals are:

\textit{Food Production:} increase the sector's growth rate by 3.4\% per annum;

\textit{Commodity Production:} supply agriculture and forestry products to the industrial sector (agro-processing);

\textit{Slash-and-burn Cultivation:} end shifting cultivation focusing on the 47 poorest districts; and

\textit{Sustainable Forest Management:} increase forest cover from the current 41.5\% to 53\% by the year 2010\textsuperscript{28}.

3. \textbf{GoL plans for the ANR Sector}. Within the framework of national policy, MAF has expanded the Strategic Vision through identifying agro-ecological zoning priorities. For areas including the 5 proposed project provinces, objectives are summarised in Table 1\textsuperscript{29}. The Strategic Vision additionally identifies specific actions for Lowland and Upland development. These include:

\textbf{Lowland Areas:}

Improving and diversifying farming systems

Expanding and intensifying value added processing enterprises

Government and private sector sponsored market research, market information system

Developing internationally accepted product grades and standard

Strengthening and expanding rural credit facilities

Supporting and strengthening rural and agribusiness lending by SOCBs

Rehabilitating, expanding and intensifying dry season irrigation schemes

\textbf{Upland/Highland Areas:}

Land-use zoning based on bio-physical and socio-economic parameter

Participatory land allocation and land-use occupancy entitlement

Community management of natural resources

Farming systems diversification and agro-forestry development

\begin{flushright}
\textsuperscript{27} These are included in Annex A
\end{flushright}

\begin{flushright}
\textsuperscript{28} In January 2008, a meeting between central and provincial government authorities decided that the country's resources would be divided 70\% for forests and 30\% for other uses
\end{flushright}

\begin{flushright}
\textsuperscript{29} MAF Planning Dept., \textit{Lao PDR's Paper on Poverty and Development}, 2006
\end{flushright}
Expansion of small-scale community manage irrigated systems
Farmer demand-driven extension
Sustainable land-management
Rural saving mobilization and micro-credit extension
Competitive rural finance system development
Strengthen the capacity and legal framework of state-owned commercial bank in commercial and banking transaction
Opening community market accesses through feeder road upgrading and expansion and market information delivery

4. Foreign Direct Investment (FDI) Management. One method to pursue MAF goals has been to encourage FDI in all provinces at an accelerating rate. Data indicate that FDI investment in Lao PDR just between ASEAN country members has increased by 31% in four years\(^30\). Between 2005 and 2006, Lao PDR demonstrated the highest year-on-year change of all ASEAN countries in a single year net inflow of FDI, (particularly from countries outside ASEAN\(^31\)) with a phenomenal 575% change. Services grew in 2006 by 5.5%, and agriculture by 3.3%\(^32\).

However, figures need to be used with caution, as many provinces acknowledge they either do not have the full statistics of FDI agricultural concessions actually awarded versus proportion of concessions taken up. Moreover, some awarded concessions have not been followed through and areas allocated have not been taken up as agreed\(^33\). Additionally, many foreign investments are undertaken in the name of Lao proxies and may be classified as national investment, rather than FDI.

Concessions awards are inconsistent in methodology. Some have profited smallholders, others have severely impoverished them. External investors do not take responsibility for imbalances that put the smallholder at a disadvantage, arguing that they are only doing business and it is the Lao government that should be responsible for setting appropriate standards and controls\(^34\). Recognising that the

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\(^{30}\) ASEAN Secretariat, ASEAN FDI Database 2007, BOP Basis, Table 10: FDI Flows to ASEAN New Member Countries 2002-2006. An ADB report puts growth in 2006 at 31%, mainly due to hydropower and mining investments; ADB, Lao PDR 2007 Development Profile.

\(^{31}\) ASEAN FDI Database, Table 25, Foreign Direct Investments Net Inflow, Intra- and Extra-ASEAN, 2004-2006

\(^{32}\) ADB, Lao PDR 2007 Development Profile

\(^{33}\) For example, in Salavane province a Lao investor was awarded 1000has in Ta Oi district, but only planted 100has. A Chinese investor wanted 8000has, but was only awarded 100has.

## Table 1: MAF Strategic Vision for Central and Southern Areas of Lao PDR

<table>
<thead>
<tr>
<th>Lowland Areas - Overall Objectives</th>
<th>Central &amp; Southern Area</th>
<th>Upland &amp; Highland Areas</th>
<th>Remote Upland Areas</th>
<th>Southern Area Plateau (Bolovens)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overall Objectives</td>
<td>Direction</td>
<td>Valley Paddy Areas</td>
<td>Remote Upland Areas</td>
<td>Recognising less potential to expand agricultural land</td>
</tr>
<tr>
<td>Increase paddy productivity</td>
<td>Stabilise shifting cultivation</td>
<td>Distribute improved rice seeds</td>
<td>Upgrade quality of current commodity crops</td>
<td></td>
</tr>
<tr>
<td>Promote crop diversification</td>
<td>Develop alternative production systems</td>
<td>Improve cultivation techniques</td>
<td>Adopt focal site approach for rural development</td>
<td></td>
</tr>
<tr>
<td>Promote market oriented agriculture</td>
<td>Develop rural road networks</td>
<td>Rehabilitate and improve existing irrigation systems</td>
<td>Focus on commercial crop production for export</td>
<td></td>
</tr>
<tr>
<td>Flood mitigation</td>
<td>Improve farming economic and rural development</td>
<td>Promote fish culture</td>
<td>Enhance private sector investment in agro-processing</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Create job opportunities</td>
<td>Increase income for poor households</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

| Table 1: MAF Strategic Vision for Central and Southern Areas of Lao PDR |
situation was out of hand, a moratorium on concessions was declared in early 2007, yet concessions awards continue to be recorded after this date.

FDI has had a marked impacts on Lao PDR. The way in which it is managed determines whether the impact on communities is positive or not. Both consequences can be seen in different locations. In some provinces and districts, FDI is undertaken in consultation with communities and balances benefits to both investor and land user. In other locations, FDIs only seek a cheap labour source, which has led to financial and social inequities. In some places, FDIs have more rights over Lao land than Lao nationals. ADB acknowledges that tree plantations actually compete with farmer needs for land for agricultural development. It also points out that support for industrial plantations in the past failed to identify the link between plantations and poverty reduction.

5. ADB aspirations for the ANR Sector. In 2001 ADB’s Country Strategy and Programme (CSP) endorsed the position that poverty reduction through broadening community participation and opportunities, would be the unifying principle of ADB activities in Lao PDR. This principle has been maintained in subsequent CSP updates. For agriculture, the CSP includes the following priorities: (i) institutional development and policy reform; (ii) crop diversification including livestock and commercialisation; (iii) reducing shifting cultivation; (iv) rural finance development; and (v) provision of extension services.

ADB places a high priority on developing commercial agriculture and labour-intensive services to absorb a young and growing workforce. Additionally, it sees the need to improve the climate for small and medium-sized enterprises to diversify income sources, add value to agricultural production and provide steady employment. Means to do this include strengthening legal enforcement of private sector activities, improve the efficiency of business licensing and clarify property rights. ADB has also highlighted governance issues in the agriculture and natural resources sector which stress the difficulty of meeting sectoral goals due to lack of transparency, poor legislative oversight and lack of civil society empowerment. While recognising that many policies and legislation have been tightened and improved, application of improvements at local level remains a challenge.

Governance problems are also recognised by GoL, which identifies the inability of central government to enforce instructions and policies issued by the Party in provinces and districts, corruption of government officials, and poor cross-sectoral collaboration and coordination.

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35 ADB, SAPE op cit
37 ADB, Lao PDR Development Profile 2007
39 GoL, Committee for Planning & Investment, GoL, National Socio-Economic Development Plan 2006-2010, October 2006
6. **Common Ground.** Highlighted areas in Table 1 indicate where MAF and the ADB share priorities. Additional ADB infrastructure support has been provided with improved road networks, including farm-to-market roads, and upgraded irrigation systems.

Methods to achieve ANR priorities are difficult to harmonise and have, in the past, been variable in meeting objectives of poverty reduction and economic growth. Benefits have been unequally distributed, and in some respects the methodologies used to apply policies and operationalise sector priorities have had the opposite effect to poverty reduction.

While ADB has consistently emphasised its support for MAF in assisting the ANR sector with its transition to a market economy, it acknowledges that its history of project support has not entirely achieved stated objectives.

MAF fully recognises that application of nationally agreed policies and legislation is variable in different provinces and districts. Development is now happening in the provinces and districts at a pace impossible for central government to keep track of. An example of MAF's most pressing concern is management of FDIs.

The situation has been aggravated by rapid changes in land use and access to land resources. Land availability has been reduced through unrestrained concessions awards, unplanned resettlement and shortcuts in land allocation practice due to insufficient staff experience and resources.

A key point made in ADB reviews of the ANR sector is that too much dependence has been placed on project implementation to influence change on several fronts. Projects were subsequently less effective than they could have been because their implementation depended on unrealistic expectations of what could be achieved during a project's lifetime. This lesson needs to be learned in order to prevent similar mistakes in future project preparation.

7. **Legal Framework.** Lao PDR has a number of legal instruments governing land user rights, as well as other policies which have consequences on how men and women in Laos make decisions over land and property use.

The relevant legal instruments relating to land (including residential, agricultural and forest) and property, include:

2. Law on Land, 01/97/NA, amended 21st October 2003, No. 61/PO
3. Ministerial Direction 564, addressing Directions on Land Titling Regulations 997 (Systematic Adjudication) and 998 (Sporadic Adjudication)
5. Property Law (1990)
These legal instruments protect and promote all forms of land user and property rights, including possession, use, inheritance and gender equality. The state claims overall ownership of land, with the right to devolve user rights to individuals, families, state and economic organisations. The Constitution (Article 5) also confirms the State's responsibility to protect the legal interests of land use rights holders.

The amended Land Law specifies that a Land Title is now the only legal document "considered as main evidence for permanent land use rights" (Article 49). This means that until eligible land is titled, all other documents do not theoretically provide permanent tenure security.

Nonetheless, the Land Law does clarify that groups or individuals can acquire land legally in 3 ways: allocation by the state, transfer (defined as "sale, transfer or exchange"), and inheritance (Articles 52, 57 and 58).

Given that Lao PDR is a country of high ethnic diversity and that the population of the 5 project provinces reflects this variety, the legal and policy framework relating to ethnic minorities is also worth noting.

While the amended Constitution remains the prime document stressing the State's multi-ethnic character and the right of all ethnic groups to protect their culture and traditions, it also mentions (Article 8) that the State will implement every measure to "develop and upgrade the socio-economic levels of all ethnic groups." The legal and policy instruments to effect this include:

1. Resolution of the Central Party Organisation Concerning Ethnic Minority Affairs in the New Era (1992). According to an ILO report, this policy is the cornerstone of current ethnic minority policy in Laos and has motivated many of the subsequent Decrees relating to village organisation and administration.

2. Resolution of the Political Bureau Concerning the Affairs of Various Minorities, Especially the Hmong Minority (1981). This document was created in response to a concern over the growing insurgency movement led by this ethnic group. Apart from law and order issues, the document focuses on the need to improve Hmong livelihoods, including agricultural practices. In 1981 the aim was not to eradicate shifting cultivation but to stabilise it.


4. Law on Local Administration, No. 60/PO (2003)

5. 8th Party Congress and Directive Order No. 9 of the Politburo, 8th June 2004, Instruction Order on the Establishment of Village and Village Cluster for Merging Administration (kumban patthana)

These last three policies affect ethnic minorities more than others because not only do they specify how many people constitute the minimum-sanctioned dwelling cluster of a village, they reinforce other efforts to provide socio-economic and infrastructure


\[41\] Ibid
facilities to remote populations. It is also the legal instrument which MAF applies to
guide and direct the channelling of activities and resources to communities through a
focal site approach.

8. **Focal Site Approach to Rural Development.** Directive 09 is the latest in a
series of decrees and directives attempting to address poverty reduction\(^\text{42}\). The
RDC previously organised focal sites *(khedchutsoom)* which still persist in some
provinces such as Savannakhet, Luang Prabang among others. In order to
accelerate the reform of local governance and public administration, the decree of
Party 09 of 2004 superseded the decree 010/PMO of 2000.

Directive 09 requires the formulation of *kumbaan patthana* (merged administrations),
as well as identifying priority zones in each district, sometimes called focal sites
"*khedchutsoom*". In Attapeu and Oudomxay, districts use the term *khedchutsoom*
and *kumbaan patthana* under Directive 09 in the same way as MAF uses it to
describe technical services consolidation.

Directive 09 is now the principal policy document cited by provinces and districts to
authorise concessions with the aim of turning land into funding opportunities to speed
up national development, as well as to again move villages already previously
resettled under Decree 102 and Law 60\(^\text{43}\). A cited objective is for "ethnic people in
the village cluster to live together with love and solidarity under the Party's guidance."

Districts use Directive 09 to change DAFO’s focus from promoting agricultural
activities to being responsive to farmer requests in line with MAF’s Strategic Vision.

2 **Wider Social Objectives for Lao PDR and the ANR Sector**

9. **Links with the National Growth & Poverty Eradication Strategy (NGPES).**

The stated NGPES objective for the ANR sector is to modernise in a manner both
sustainable and ensuring food security. It recognises this cannot be achieved in the
same way in lowlands (flatlands) and highlands (sloping areas). MAF’s Strategic
Vision also recognises this.

This objective demands flexible responses in a localised way, presenting substantial
challenges to project planning. There is no overall blueprint which can meet the
nuanced approach required by the NGPES. The NGPES vision for the ANR sector is
reflected in Table 2.

While there are many areas of synchronicity between the MAF and NGPES strategic
visions, there are differences too. These include the level at which activities are
directed, and between definitions.

For example, NGPES strategy makes a distinction between "pioneer" and "rotational"
shifting cultivation, the former being unacceptable, the latter being acceptable.

\(^{42}\) former methodologies included establishing rural development committees (RDCs) via Decree 010/PMO of 2000
on decentralisation. This Decree was felt to have been implemented inconsistently and RDCs were abolished.

\(^{43}\) Villages are either resettled, or administrative boundaries re-drawn without resettlement, to meet the latest
definition of a village, which the Law on Local Administration (repeated by Directive 09) gives as at least 200 people
in highland areas, at least 500 people in lowland areas, and at least 1,000 people in urban areas. This updates
Decree 102 which defines a village irrespective of location as being "over 20 households or a population of over 100
ADB TA 4843 Agriculture and Natural Resources Sector Needs Assessment

MAF’s Strategic Vision places priority on "stabilising shifting cultivation", which does not distinguish between different systems.

Table 2: NGPES Vision for the ANR Sector

<table>
<thead>
<tr>
<th>Lowlands /Mekong Corridor</th>
<th>Sloping/Uplands</th>
</tr>
</thead>
<tbody>
<tr>
<td>Improve and diversify farming systems with increased and</td>
<td>Plan land-use zoning based on bio-physical (slope and</td>
</tr>
<tr>
<td>intensified cash crop, livestock and fisheries production</td>
<td>land capability) and socio-economic parameters.</td>
</tr>
<tr>
<td>Expand and intensify value added processing by promoting</td>
<td>Accelerate participatory land allocation and land use</td>
</tr>
<tr>
<td>local and foreign investment</td>
<td>occupancy entitlement.</td>
</tr>
<tr>
<td>Develop market research and information systems and</td>
<td>Diversify farming systems and agro-forestry development</td>
</tr>
<tr>
<td>regional market links between producers and wholesale and</td>
<td>through adaptive research, trials and demonstrations of</td>
</tr>
<tr>
<td>retail buyers throughout the region.</td>
<td>farmers' fields.</td>
</tr>
<tr>
<td>Develop internationally accepted product grades and standards</td>
<td>Promote community management of natural resources.</td>
</tr>
<tr>
<td>Restraighten, expand and intensify irrigation schemes with</td>
<td>Sustainable land use management with soil erosion control,</td>
</tr>
<tr>
<td>community based management.</td>
<td>afforestation, plantation forestry and conservation</td>
</tr>
<tr>
<td>Strengthen and expand rural credit facilities through free</td>
<td>Strengthen demand driven extension programs.</td>
</tr>
<tr>
<td>competition and market determined interest rates.</td>
<td></td>
</tr>
<tr>
<td>Strengthen rural and agribusiness lending by SOCBs and</td>
<td>Expand and intensify small-scale community managed</td>
</tr>
<tr>
<td>private commercial banks.</td>
<td>irrigation schemes.</td>
</tr>
<tr>
<td>Open community market access by upgrading and expanding</td>
<td>Develop and expand rural savings and credit systems;</td>
</tr>
<tr>
<td>feeder roads and market information.</td>
<td>target credit to support technology adoption by the poor.</td>
</tr>
<tr>
<td></td>
<td>Strengthen the capacity and legal framework of SOCBs in</td>
</tr>
<tr>
<td></td>
<td>commercial banking transactions.</td>
</tr>
</tbody>
</table>

The level at which development should be pitched is also different: MAF has adopted the focal site approach (kumbaan patthana), while NGPES promotes a more community-based approach. This has implications for application of activities such as development funds. Under MAF, these would be concentrated in kumbaaans, under NGPES in districts or villages.

Community-led decision-making and resource allocation is promoted by NGPES and ADB alike; however, recent studies have noted that budget shortages, delays in allocating funds, lack of equipment and materials, staff shortages, and disinterested villagers lead to time constraints and methodology shortcuts. This means while participatory and consultative methods are desirable, realistically they are not internalised by district agencies and are confined to the lifetime of a project.

The top-down and blueprint approach has not demonstrated positive outputs either, thus other means to apply community-led actions have been tested, some with positive results.

NGPES selects poorest districts for priority investment, with accessibility and participatory community-level planning as two proposed key strategies for poverty alleviation.

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45 LEAP has demonstrated this in Champassack with farmer trialling. See Food for Thought
Table 3: Population Statistics, 5 Project Provinces

<table>
<thead>
<tr>
<th>Project Province</th>
<th>Population</th>
<th>% Population Share of Project Provinces</th>
<th>No. of Districts</th>
<th>No. of Poor Districts</th>
</tr>
</thead>
<tbody>
<tr>
<td>Savannakhet</td>
<td>825,902</td>
<td>42</td>
<td>13</td>
<td>7</td>
</tr>
<tr>
<td>Attapeu</td>
<td>112,120</td>
<td>6</td>
<td>5</td>
<td>3</td>
</tr>
<tr>
<td>Sekong</td>
<td>84,995</td>
<td>4</td>
<td>4</td>
<td>2</td>
</tr>
<tr>
<td>Salavane</td>
<td>324,327</td>
<td>17</td>
<td>8</td>
<td>3</td>
</tr>
<tr>
<td>Champassack</td>
<td>607,370</td>
<td>31</td>
<td>10</td>
<td>4</td>
</tr>
<tr>
<td><strong>Totals</strong></td>
<td><strong>1,954,714</strong></td>
<td><strong>100</strong></td>
<td><strong>40</strong></td>
<td><strong>19</strong></td>
</tr>
</tbody>
</table>

Source: National Census 2005

The 5 project provinces have a total of 40 districts, of which 19 (47.5%) are officially classified as poor (out of a national number of 72), with an high proportion of poor households (Table 4). Savannakhet has the highest provincial population of the 5 provinces (42%), but it also has the highest number of poor districts and the highest proportion (50%) of poor households. Champassack, by contrast, while it has the second highest population (31%), has a much smaller percentage of poor districts and poor households (15%).

10. Food Security and Household Vulnerability. The WFP recently estimated that approximately 13% of the rural population is currently food insecure, but that an alarmingly high two-thirds of the rural population lives on the edge of food insecurity. The highest incidence of actual food insecurity highlighted 4 provinces, of which 2 are included in the proposed project area (Sekong (24%) and Salavane (30%)). Research undertaken by the PPTA in a proposed core-subproject area (Paxong district, Champassack province) indicated 3% of the interviewed village population never has food sufficiency, and 23% has food sufficiency for some, but not all months. This district is not classified as poor, thus even in more food secure districts and provinces, food vulnerability at least for part of the year is experienced by a substantial proportion of households. One significant finding in Paxong during poverty assessment was that a community-criterion of poverty is having less than 1 hectare of coffee gardens, thus confirming the importance of at least one reliable cash crop to ensure household livelihood security.

WFP describes food insecure families as: "typically farmers with low engagement in fishing and hunting or unskilled labourers. They practice upland farming on a small plot of land in fragile areas with steep slopes. Often, they do not possess a kitchen garden. They are mostly asset poor, poorly educated, illiterate and from non-Lao Tai ethnic groups [minorities characterising the 5 project provinces]. They live in villages with little or no key infrastructure, and suffer from bad sanitary conditions."

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46 World Food Programme (WFP), Lao PDR Comprehensive Food Security and Vulnerability Analysis, October 2007

47 PPTA field research findings

48 author's added text
Table 4: Poor Districts and Households in 5 Project Provinces

<table>
<thead>
<tr>
<th>Province</th>
<th>Poor Districts</th>
<th>% Poor H’holds</th>
<th>No. of Villages</th>
<th>No. of Poor Villages</th>
<th>% Poor Villages</th>
</tr>
</thead>
<tbody>
<tr>
<td>Savannakhet</td>
<td>Nong</td>
<td>86</td>
<td>80</td>
<td>75</td>
<td>93.8</td>
</tr>
<tr>
<td></td>
<td>Sephone</td>
<td>76.4</td>
<td>160</td>
<td>128</td>
<td>80</td>
</tr>
<tr>
<td></td>
<td>Phine</td>
<td>55.7</td>
<td>116</td>
<td>88</td>
<td>75.9</td>
</tr>
<tr>
<td></td>
<td>Vilabouly</td>
<td>55.5</td>
<td>103</td>
<td>80</td>
<td>77.7</td>
</tr>
<tr>
<td></td>
<td>Thaphangthong</td>
<td>52.5</td>
<td>77</td>
<td>48</td>
<td>62.3</td>
</tr>
<tr>
<td></td>
<td>Thapalanxay</td>
<td>46.6</td>
<td>78</td>
<td>46</td>
<td>59</td>
</tr>
<tr>
<td></td>
<td>Xonbouly</td>
<td>39.2</td>
<td>107</td>
<td>58</td>
<td>54.2</td>
</tr>
<tr>
<td>Attapeu</td>
<td>Sanxai</td>
<td>98.8</td>
<td>59</td>
<td>55</td>
<td>93.2</td>
</tr>
<tr>
<td></td>
<td>Phouvong</td>
<td>92.1</td>
<td>25</td>
<td>25</td>
<td>100</td>
</tr>
<tr>
<td></td>
<td>Xaysettha</td>
<td>43.7</td>
<td>31</td>
<td>19</td>
<td>61.3</td>
</tr>
<tr>
<td>Sekong</td>
<td>Kaleum</td>
<td>96.4</td>
<td>74</td>
<td>63</td>
<td>85.1</td>
</tr>
<tr>
<td></td>
<td>Dakcheung</td>
<td>74.9</td>
<td>105</td>
<td>90</td>
<td>85.7</td>
</tr>
<tr>
<td>Salavane</td>
<td>Ta Oi</td>
<td>83</td>
<td>56</td>
<td>41</td>
<td>63</td>
</tr>
<tr>
<td></td>
<td>Samuoi</td>
<td>64.1</td>
<td>58</td>
<td>34</td>
<td>58.6</td>
</tr>
<tr>
<td></td>
<td>Toomlarn</td>
<td>35.3</td>
<td>67</td>
<td>44</td>
<td>65.7</td>
</tr>
<tr>
<td>Champassack</td>
<td>Moonlapamok</td>
<td>46</td>
<td>66</td>
<td>50</td>
<td>75.8</td>
</tr>
<tr>
<td></td>
<td>Sukhuma</td>
<td>19.6</td>
<td>60</td>
<td>29</td>
<td>48.3</td>
</tr>
<tr>
<td></td>
<td>Bachiengchaleunsook</td>
<td>12.5</td>
<td>94</td>
<td>39</td>
<td>41.5</td>
</tr>
<tr>
<td></td>
<td>Pathumphone</td>
<td>7.9</td>
<td>93</td>
<td>42</td>
<td>45.2</td>
</tr>
<tr>
<td></td>
<td>19 districts</td>
<td>1509</td>
<td>1054</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: NGPES, Annex 3

The study included the following causes of food insecurity:

- implementing certain government policies (e.g. opium eradication, compulsory resettlement, ban on shifting cultivation) without adequately thinking through the consequences or putting in place mitigating actions
- production shortfalls in food deficit areas
- problematic access to cultivable land, including inadequate amounts of lowland paddy to meet demand, land excluded due to UXO (95% of respondent villages in Paxong PPTA fieldwork confirm the presence of UXO in village lands), much of Lao land mass only being suitable for upland cultivation
- seasonal price variation on key foods a constraint to household purchase
- poor transport infrastructure which restricts access to markets
- low dietary intake of fat (main source meat or fish) and loss of resources providing such food sources (e.g. loss of fisheries and forest resources)
- poor sanitation, health and education

Another important factor is availability of credit. In Paxong villages, with the exception of one village interviewed, the only source of credit is stated as the local bank. Yet lack of affordable credit is repeatedly the main cause of poverty.

Community perceptions of causes and solutions to poverty include:
<table>
<thead>
<tr>
<th>Community Views on Poverty Causes</th>
<th>% Villages with this view</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Not enough funds to invest in agriculture</td>
<td>78%</td>
</tr>
<tr>
<td>2. Soil and local environment limitations</td>
<td>56%</td>
</tr>
<tr>
<td>3. No markets for products</td>
<td>33%</td>
</tr>
<tr>
<td>4. Farmers don't know how to match products to market needs (ignorance about what can sell)</td>
<td>33%</td>
</tr>
<tr>
<td>5. Insufficient irrigation water</td>
<td>28%</td>
</tr>
</tbody>
</table>

### Community Views on Solutions to Poverty

<table>
<thead>
<tr>
<th></th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Find markets for products</td>
<td>61%</td>
</tr>
<tr>
<td>2. Affordable credit fund (interest not more than 2-3% per annum) with increased credit length to 3-5 years</td>
<td>50%</td>
</tr>
<tr>
<td>3. Need fair trade for coffee or different coffee species</td>
<td>47%</td>
</tr>
<tr>
<td>4. Improved use of natural fertiliser</td>
<td>28%</td>
</tr>
<tr>
<td>5. Technical assistance</td>
<td>17%</td>
</tr>
</tbody>
</table>

Source: PPTA Fieldwork Data, Paxong District

Policies promoted by MAF do not specify how the causes of food insecurity are to be addressed. The concept of food security needs expansion beyond rice availability (normally meaning fixed rice cultivation, while many Lao of all ethnic groups prefer sticky upland rice in their diet) to include production of, access to, and consumption of, a wider range of food products. One way to undertake this is to protect traditional access to land-based resources which provide the necessary variety of products.

### 11. Ethnic Minorities in Project Provinces

Austro-Asiatic ethnic groups are considered especially vulnerable to malnutrition and food insecurity. In the 5 project provinces, these groups constitute a substantial proportion of the population.

26 different ethnic groups have been identified in the 5 provinces. Annex C shows their distribution by province and population percentages. Each ethnic group also has sub-divisions, characterised by clan and kin group, differences in dialect and some differences in customs and practices.

In some districts ethnic groups may be clustered and constitute a majority. For example, while Brao form 16.5% of Attapeu’s provincial population, they constitute 95% of Phouvong district’s population. Table 5 shows the proportion of ethnic minorities to Lao Loum in the 5 provinces.

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49 WFP Report, op cit; James Chamberlain et al, PPA II 2006, op cit
Table 5: % Ethnic Minorities and Lao Loum in 5 Project Provinces

<table>
<thead>
<tr>
<th>Project Province</th>
<th>% Ethnic Minority</th>
<th>% Lao Loum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Savannakhet</td>
<td>nd</td>
<td>nd</td>
</tr>
<tr>
<td>Attapeu</td>
<td>63%</td>
<td>37</td>
</tr>
<tr>
<td>Sekong</td>
<td>87.66%</td>
<td>12.34</td>
</tr>
<tr>
<td>Salavane</td>
<td>42%</td>
<td>58</td>
</tr>
<tr>
<td>Champassack</td>
<td>nd</td>
<td>nd</td>
</tr>
</tbody>
</table>

Source: Provincial Committees for Planning & Investment, 2006
nd = no data available

Voluntary migration and involuntary resettlement have created a broad distribution of ethnic groups across agro-ecological zones, but upland areas remain the homelands of minorities rather than Lao Loum. Strategies to address upland agricultural needs thus cannot be separated from adopting an approach suitable for the situations of different ethnic minority groups. The variety of languages and customs affirm NGPES' point: "ethnic sensitivities and language barriers call for highly localised policy and programme responses."

12. Involuntary Resettlement. ADB identifies several national policies that appear to be "biased against the interests of the rural poor (including ethnic minorities)"\(^\text{50}\). It points out that the last decade has seen the poverty gap widening between lowlands and uplands, with poverty reduction confined mainly to the lowlands.

Elimination of shifting cultivation has been a key GoL policy, supported by the ADB. In 2001 the 7th Party Congress set targets endorsed by the National Assembly to stabilise slash-and-burn by 2005 with its elimination by 2010. The focal site approach was used to achieve this, with added objectives of improving access to infrastructure and facilities. This approach has been widely criticised for its reliance on resettling entire communities rather than on stabilising agricultural production in original villages. It is claimed that the result has been to increase poverty among certain groups, than to reduce it\(^\text{51}\).

Failure to undertake adequate land use planning (LUP) beforehand means people have been resettled in areas where there is inadequate, or no cultivable land, either forcing them to return to their original villages, continue with slash-and-burn in the resettled village, or encroach into forest land in search of cultivable land\(^\text{52}\). Thus the intention to improve people's livelihoods, ensure resource conservation and decrease poverty, has in many locations had the exact opposite effect. Resettlement has been

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\(^{50}\) ADB, Lao PDR: Governance Issues in Agriculture and Natural Resources, Njoman George Bestari, Caren Joy Mongcopia, Jindra Samson & Keith Ward, Operations Evaluation Department, December 2006


contentious mainly because Lao PDR simply does not have sufficient arable land to go around the number of resettled households. This has been grasped as an opportunity to develop a cheap landless labour source for FDI plantations.

Most communities practising shifting cultivation are ethnic minorities, therefore it is inevitable that most families affected by the compulsory resettlement policy are from these groups.

In Attapeu province, Trieng communities noted both advantages and disadvantages of compulsory resettlement in an assessment of their traditional highland village location compared to the new flatland location\textsuperscript{53} (Table 6).

Elsewhere in the province, villages have been resettled not just once but twice in 10 years, making it very difficult for households to re-build their productive base and lives. For example, in village Vonghlakhone (Phouvong district), a Brao community was first resettled in 2002, then moved again in 2006 to a site where a school had been constructed and an IFAD project could provide inputs.

### Table 6: Trieng Views on Advantages and Constraints of Resettlement

<table>
<thead>
<tr>
<th>Plus points about resettled location</th>
<th>Plus points about old village</th>
</tr>
</thead>
<tbody>
<tr>
<td>Land for house and cultivation is fixed and they don’t have to repeatedly reconstruct field and rice houses, nor to stake out land</td>
<td>Easy to find many different food sources, plenty of fish and forest resources</td>
</tr>
<tr>
<td>Market access improved (but often no crops available to sell in the markets)</td>
<td>Easy to find NTFPs for household use and items for sale. Easier to make a living</td>
</tr>
<tr>
<td>Access to roads</td>
<td>No need to buy and sell land and property, land can be shared</td>
</tr>
<tr>
<td>Access to electricity</td>
<td>No sense of ownership in the same way as the lowlands, and more community solidarity</td>
</tr>
<tr>
<td>Less work for women in upland rice cultivation, more time to relax</td>
<td>Poorer families can more easily find food; there is enough rice for everyone</td>
</tr>
<tr>
<td>Schools are available for their children, who will have a better future</td>
<td>They can kill animals for health and follow traditional spirit practices more easily</td>
</tr>
<tr>
<td>Weather is warmer</td>
<td>Weather is cooler</td>
</tr>
<tr>
<td>Weather is warmer</td>
<td>Weather is cooler</td>
</tr>
<tr>
<td>The function of money means everything is paid for; the change to a cash economy means a lot of adjustment for many families</td>
<td>Difficult to fence off boundaries for upland cultivation each year</td>
</tr>
<tr>
<td>Increased indebtedness due to the need to pay for everything</td>
<td>Upland rice cultivation is harder work and requires more work from women in weeding and clearing</td>
</tr>
<tr>
<td>Less time to make money when sick, and taking loan for medicine means interest is charged and increases until a person is well enough to earn and pay off the debt</td>
<td>More travelling involved to access fields which are increasingly further away from the house</td>
</tr>
<tr>
<td>Need for family labour is more important, poor families have no family labour</td>
<td></td>
</tr>
<tr>
<td>New awareness of market benefits increases family conflicts over who will inherit assets</td>
<td></td>
</tr>
<tr>
<td>Still have to continue upland cultivation as inadequate naa available, have to travel some distance for this purpose</td>
<td></td>
</tr>
<tr>
<td>Increased competition for cultivable lowland means more cutting back of forest areas</td>
<td></td>
</tr>
<tr>
<td>Later arrivals have to pay for land, earlier arrivals were allocated land without payment</td>
<td></td>
</tr>
</tbody>
</table>
An important point raised by resettled communities is the difficulty and time it takes for communities formerly following subsistence and traditional lifestyles to adjust to a market economy and substantially different methods in use and management of land resources. It is not enough to introduce such communities to a market economy, it is necessary to improve information about and support towards the transition from one to another.

Another factor presenting difficulties for proposed activities as a consequence of resettlement is that several different ethnic groups are often grouped together in one village or location. Each group has its own set of elders, and these are the people whose opinion and counsel are sought rather than of appointed village authorities. In the experience of local NGO's working in Salavane province, this demands longer preparation time with resettled communities as consultation with each different set of elders is required.

Many government and non-government organisations report suffering loss of investment as well as higher consultation lead times and costs as a result of the GoL's resettlement policy. In Toomlarn district (Salavane province), much of Oxfam Australia's investment in irrigation systems, schools and technical centres, has been lost with abandoned infrastructure. Ta Oi and Samuoi districts are now scheduled for resettlement, which will disrupt potential investment over the next 5 years.

Resettled families may stay only one or two years before finding they cannot make a living in the new location, and returning to their place of origin. Again, this causes lost investment in families supported in their first move.

Compulsory resettlement and associated ANR livelihoods impacts also occurs with other sector FDI, particularly mining and hydropower. Some examples in the project area include the Bolovens plateau (Champassack province), currently under assessment for bauxite deposits. If bauxite mining goes ahead on the scale of the concessions award, the entire coffee industry of the Bolovens plateau will be wiped out and thousands forced to relocate. Samuoi district (Salavane province) will resettle 14 villages, including the district centre, as a consequence of the Sephone dam. Environmental assessments for the Sekong 4 dam estimate a 71% fisheries loss for Sekong and Attapeu provinces.

For all these reasons it is therefore recommended that no villages are selected for activities which (i) may be affected by other sector activities causing resettlement; (ii) are targeted by village authorities for relocation under the policy to eradicate slash-and-burn and also to consolidate kumbaans; (iii) have received households within the past 5 years under the same policy.

**Land Acquisition:** it is not envisaged that any significant land acquisition will occur as an infrastructure is limited to road upgrading. Short Resettlement Plans (RPs) may be required. What land may be required for this purpose is unlikely to cause relocation of households. It is possible it may affect temporary structures such as shelters for roadside selling, or cultivation land, or trees. However, farm-to-market all weather roads are very popular with remote communities, who often contribute their labour for construction. Where activities requiring land acquisition may provide direct benefits to communities, arrangements to deal with losses on a voluntary basis will be included in resettlement plans. However, should losses cause loss of fixed property and assets, or should roads be constructed from priorities other than those of affected communities themselves, compensation will be paid to affected families.
by the executing agency at replacement rate. Details as to RP contents will be included in the Resettlement Framework.

13. **Land, Labour and Social Equity - Changes in Land and Human Resource Use.** Resettlement policies, land allocation practices, concessions, and reduced forest cover have led to substantial changes in land and resource use in both upland and lowland areas. Competition by a larger number of people for a limited amount of flatland has led households to encroach into forested areas in search of cultivable land. Transfer of formerly cultivated land and of forest land to FDI concessions has reduced the agricultural production base for both household food and livelihood security.

MAF supports the NGPES point that governance and management of the ANR sector's natural resource base needs urgent attention if it is not to be irrevocably lost. This requires better regulation of land allocation, land tenure validation (both for households and for villages), award of concessions, and improved productivity of existing land.

The population of Laos is highly mobile, with seasonal migration within the country to look for work, long term migration within and outside the country, and compulsory resettlement under GoL policy. This mobility affects labour availability for different ANR strategies.

Productivity is linked to labour availability. The high demand for cheap labour in Thailand means that an estimated 10% of Lao PDR's labour force has migrated, particularly from Savannakhet and Champassack. Many also migrate seasonally to Bolovens Plateau coffee plantations during the harvesting season. FDIs have experienced this labour shortage for industrial plantations, which has led them to bring in labour from neighbouring countries. Even in locations where there are seasonal labour opportunities such as Paxong, field research indicated 40% of interviewed households have one or more family member migrating permanently or seasonally to look for profitable work.

The impact of the labour gap is important to consider when planning for increased agricultural productivity. Methods requiring high labour inputs may not be feasible in many locations.

While rice cultivation is promoted as the key subsistence crop, again, in fieldwork locations data indicates that households are constrained by natural factors which channel decisions towards some crops rather than others. For example, in Paxong, land is not considered suitable for rice cultivation and most households must buy it in; only 28% of interviewed households cultivate rice for consumption. The most important household consumption crop cultivated was cabbage, followed by cassava, chilli, pumpkin and cucumber. All interviewed households have coffee as their main cash crop, followed by cabbage and ginger. Sales of cash crops are to middlemen who visit villages daily. Only 4 of the 18 villages interviewed go to markets; most wait for markets to come to them.

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55 Fieldwork was undertaken in 18 Paxong villages in March 2008. Additional fieldwork in Salavane, Sekong and Champassack was completed in February 2008, and in Attapeu under another assignment in March 2008.
While agricultural growth is necessary for poverty reduction in Lao PDR, it is not sufficient in itself to permit an escape from poverty. Policy studies and field data indicate other factors need addressing. Isolation and ignorance of market information as well as of rights and responsibilities related to land, are among the most important reasons for continuing poverty among some groups. Recommendations in the following section therefore address these important points.

3 Key Social Issues to be Addressed in the Policy and Investment Framework for the ANR Sector

The following recommendations are made based on analysis of key social issues presented in this document.

14. Agro-ecological Differences and Consequences for Approaches. In brief, there are three categories of agro-ecological zones which may influence process, methodology, and potential activities (NGPES identifies 2, MAF identifies 4 sub-zones for southern provinces). Different strategies which could best be represented in each zone include:

Flatlands

- increase productivity to compensate for loss of land to FDIs, particularly for rice, cash crops, livestock and food crops
- introduce higher value crops
- develop farmer associations
- support credit & loan facilities
- support value added processing and moving farmers up the value chain
- improve market linkages
- support mechanisation to offset labour shortages

A core sub-project for upgrading coffee and diversifying key cash crops by intercropping with macadamia, has been prepared for this zone (Paxong, Bolovens Plateau). This sub-project meets both ADB and MAF ANR strategic priorities, responds to identified poverty causes, limits the introduction of new commodities to one crop only and improving an existing cash crop, and has ensured integration of social safeguard issues including village selection criteria.

Sloping lands

- stabilise and secure production base through agroforestry
- stabilise upland agriculture without resettling communities
- UXO clearance

intercropping of trees, food crops, NTFPs

56 Martin Prowse & Admos Chimhowu, Making Agriculture Work for the Poor, Natural Resource Perspectives No. 111, October 2007, Overseas Development Institute, Swedish International Development Cooperation Agency (SIDA)

57 "Flatlands" is applied to the Bolovens Plateau, as its production characteristics are similar despite the difference in elevation.
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- promote one economically valuable crop per village
- develop replicable models to establish standards and requirements for private sector investment
- infrastructure provision, particularly improved access through all-weather farm-to-market roads
- Highland/Steep Land
- focus on forest management, with boundary demarcation and certification
- promote NTFP management
- eco-tourism

15. **Common Social Equity Requirements for all Locations:** the likelihood of improved social equity in the ANR sector is raised if the following components are included in all types of activities in all agro-ecological zones:

A. **Communication and Information.** Information Services must be a key component of any support to the ANR Sector. Civil society’s lack of empowerment is largely due to (i) lack of accurate, reliable and relevant information about land and property rights and responsibilities; (ii) different provincial and district methods of interpreting and applying the same policies and regulations; (iii) inappropriate crops or cultivation methodologies for the agro-ecological situation; (iv) poor information about farmers’ situation, soils and market options; (v) absence of effective and functioning grievance redressal mechanisms when faced with inequities. A programme of accurate and reliable information is needed, together with sensible pacing of innovations geared to absorption capacities of different communities in different villages.

Information needs to be both obtained and transferred. **Obtained information** is data gathered by projects about village farming systems and whether technology options are suited. A biophysical and socio-economic profile of villages should be prepared. This helps interventions to be suited to the ethnic group, soil and geographic characteristics, to understand a village situation, and for villagers to identify their key skills, needs, problems, issues and potential with the project. Relevant information should include:

**Physical information:** geographical location, existence of UXO, terrain, climate, soil and water resources, infrastructure including roads, electricity, transport availability

**Social information:** (all gender disaggregated): ethnicity, population, farming practices, ability to communicate in Lao, literacy, length of residence in villages, farmer-identified needs (male/female: upland/lowland), community skills & human resources relevant to agro-enterprise, any existing sources of conflict, land tenure status

**Economic information:** existing crops and livelihood options (including annual gross productivity and estimated profitability), income diversification, labour availability, marketing practices, farmgate crop & livestock prices, production seasonality, commercial organisations working in the area, access to cultivable land and types of land, what type of support system is in place for commerce and agro-enterprise, credit availability

**Institutional information:** type of organisations working in the area (NGOs, government, private) the history of their interventions and outcomes to date

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Transferred information refers not only to conveying information to farmers about suitable crops, products and markets, it also refers to correct information about their land rights and responsibilities. Lack of correct and reliable information is a key factor in persistent poverty; land use decisions are based on a more constrained knowledge base, while ignorance about land rights leaves land users open to abuse from the unscrupulous.

It is important to analyse existing information sources available to villages, and their impacts. Agricultural extension services are the conventional route for information, but the private sector has now become more important. For remoter villages the middleman is the primary source of information. Even in more accessible locations such as Paxong district (Champassack), every surveyed village without exception relied on middlemen for both information and the cash crop market.

In ethnic minority areas, the channel of information sources and its transfer methodologies needs additional adjustment for men and for women. Ethnic minorities are significantly less literate than Lao Loum, and women are less literate than men. This influences the manner and format in which information is obtained and transferred.

Inter-sectoral communication: because of reported difficulties of coordination between DAFO and PAFO in several provinces, many FDIs are now signing MoAs directly with districts, and PAFO sometimes may not be aware of DAFO activities. Regular inter-sectoral meetings at provincial planning level with PAFO and DAFOs are recommended, either on a quarterly or 6-monthly basis. Other investors, NGO's and IFIs working in a province should have the opportunity to attend these regular meetings. This will help to avoid overlap and duplication of activities and ensure mutual benefit to avoid conflict of methodologies and activities, so that one does not undermine the efforts of another.

4 Land Tenure Security and Equity. Tenure insecurity and restricted access to traditional resources is credited with a shrinking agricultural production base and increased poverty.

Tenure security must be a important project component, as this has an impact on the type and variety of crops people are willing to plant, on the poverty status of communities, on any potential for farmer cooperation, and on the social equity of rural households.

For poorer households, increased productivity on its own may not mean increased participation in the market economy, but may mean improved food security if coupled with tenure and resource access security. Thus rights to land and forest resource access and use must be more clearly defined and formalised.

No link between types of land tenure and productivity growth has yet been satisfactorily analysed in Lao PDR. However, the more secure the tenure, the higher the likelihood of productivity as farmers will be more willing to invest both time and money in securely tenured land, whether this belongs to the individual or the village.

Tenure security has mainly focused on individual land tenure via land allocation and land titling. Traditional land resource tenure tends to be perceived as common to all members of a village rather than individually owned. This has left traditional communities very vulnerable to alienation from their customary resource base.
While customary tenure cannot mobilise land for raising capital in the same way that individual tenure is promoted, it has been proven to provide a varied livelihood base which ensures both food and livelihood security. Thus tenure reform should not rely on individual tenure alone, but encompass common use land, including grazing land, rotational cultivation areas, and forests. User rights must be linked to activities concerned with buffer zone management and the demarcation of forest area boundaries.

Thus diverse forms of tenure security should be pursued, including not just the ongoing land titling programme, but facilitating traditional tenure security through certification of village land.

5 Activity selection and Implementation Methodology should be guided by:

- technical feasibility
- community acceptability
- location suitability
- market potential
- potential for poverty alleviation
- Methodologies of interacting with different villages in different locations and different ethnic groups, has to be adaptive and based on lessons learned:
  - adjust the amount of information, crops and technologies to the different absorption rates of communities
  - concentrate on one crop or technology per village at first. This is consistent with Decree 09 which promotes "one village one or more products" producing at least 1 cash crop. Project implementors must also learn from mistakes of previous projects, including the ADB-supported smallholder project, and not introduce too many crops or innovations at one time. This lesson has been learned in developing the Paxong core-subproject.
  - focus on practical activities that build on identified needs and priorities of the different communities concerned
  - full knowledge, free informed prior consent of villagers, understanding of the crop or product, its labour requirements, productivity potential and income potential, is necessary before it is adopted
  - in collaboration with DAFOs, focus on test & trial with farmer groups, e.g. test and trial new techniques for rice production (LEAP). DAFO can then support farmer initiatives, rather than take responsibility for them.
  - nothing should be for free, to support the objective of self-sufficiency and long-term sustainability. Project support can develop technical methodology and conduct training, but not provide inputs to farmers. Successful farmers can be hired by interested villages with support of village funds, for example, to assist others (cf the LEAP experience in Salavane, and explore how to expand the system)
  - in flatland areas, the focus should be more on farmer associations. Farmer groups should be specific interest groups, depending on what farmers are interested in doing in their particular village and given their

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58 World Food Programme (WFP), Lao PDR Comprehensive Food Security and Vulnerability Analysis, October 2007
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particular land, resource and labour circumstances. Identify opportunities and solve real and present problems

D. Village Selection. In light of factors analysed in this document, it is important to select villages appropriately to ensure integration of specific social equity actions. Village selection should be guided by the following criteria:

- where project expertise is relevant to farmers' needs
- with similar farming practices (different ethnic groups have different farming systems and therefore will have very different priorities; technology options offered by the project will not be able to meet all priorities)
- with good potential to benefit from technology inputs and can share successes with other villages (are there other villages nearby which could benefit from solutions developed in initial villages?)
- where promising solutions can be integrated with farmers' existing production cycle (which will be different in different locations)
- no village should be selected which will be compulsory resettled under the GoL relocation programme, or which has received resettled households in the previous 5 years
- which will not be affected by other sector projects (e.g. hydropower, mining, etc.)
- where farmers can be actively involved in decision-making (if villages are selected for project implementation convenience rather than for good potential to benefit from project skills, knowledge and technologies, the project is unlikely to be successful)
- where there are local organisations with potential for partnership (NGOs, other projects, ethical private business)

16. Social Equity Issues. All social equity issues have an overarching responsibility to apply gender equity, as women may be multiply disadvantaged by gender practices as well as by ethnic identity and poverty. A separate Gender Action Plan is being prepared for the ANR Sector PPTA.

Because ethnic minorities are significantly poorer and more disadvantaged, social equity steps are outlined in the Ethnic Minority Development Framework.

17. Social Issues Staffing and Resources. A high level of TA inputs across the lifetime of project support will be required.

TA marketing support needs to be full time and permanent across the life of the project. Additionally, long term community development inputs will be required to support a community process of identifying skills, needs and resources, and developing response strategies. Lastly, a communications specialist will be vital to develop an information programme and appropriate delivery methods, as discussed in this document.

Based on MAF’s strategic shift from depending less on PAFO/DAFOs to deliver project activities towards strengthening provincial and district extension to respond to farmer needs, project inputs should focus on supporting farmer abilities to identify what their needs are and how to articulate them to DAFOs. This moves the focus to farmers driving the development process. The project would thus contribute:
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- technical skills and knowledge
- experience of working in a variety of farming systems
- links to other sources of information and technology options
- PAFO/DAFO contributes:
  - government oversight
  - legislative framework
  - long term administrative structure lasting beyond the project's lifetime
- The farmer contributes:
  - expertise in local farming and soil conditions
  - ability to adapt to new crops and opportunities

Annex A: MAF 4 Goals and 13 Measures

**Goal 1: Food Production:** The specific targets related to national food security have been defined as follows:
- Increase agriculture and forestry GDP growth rate by 3.4 percent annually.
- Maintain the level of food production at 400-500 kg per capita per year, which corresponds to 3.3 million tons of paddy rice by the end of 2010.
- Increase the quantity of food in the 47 poorest districts bringing it equivalent to the national level (350 kg per person per annum).
- Increase the production of meat, eggs, fish, and fresh milk by 5 percent annually, corresponding to an average consumption demand of 40-50 kg per capita per year.

**Goal 2: Commodity Production:**
- Supply raw materials and agriculture and forestry products to the industry and services sectors (processing industries).
- Increase the export share of agriculture and forestry products to 1/3 (approximately US$1 billion) of the total export value of the commercial and services sectors (US$3.48 billion) by 2010.

**Goal 3: Stop Slash-and-Burn Cultivation:**
- Total end of shifting cultivation practices.
- Actions under this goal focus particularly on the 47 poorest districts and are linked to initiatives for rural development, poverty reduction and environmental protection.

**Goal 4: Sustainable Forest Management and Balance between Exploitation, Utilization, and Protection / Conservation:**
- Increase forest cover from the current 41.5 percent to 53 percent (nine million hectares to 12 million hectares) of the total land area by 2010.

These goals will be achieved by implementing the following 13 measures:

**Measure 1: Agriculture and Forestry Sector Perspective**
- Execution and thorough understanding of the Resolution of the 8th Party Congress on the Agriculture and Forest Sector.
- Enhancing cooperation with all concerned bodies to support and better understand the responsibilities, ownership, and ways of implementing the
agriculture sector's development priorities from now to 2010, particularly focusing on the process of establishing village and development groups.

**Measure 2: Survey and Allocation of Agriculture and Forestry Production Zones**
- This includes zoning for rice production and increasing productivity in irrigated and non-irrigated areas (including food production areas in seven large and some small plains, and for agricultural production in lowland and mountainous areas);
- zoning for intensive agricultural production and development of a new cooperative system; review of the land / property lease policy; finalization of forest land allocation; formulation of detailed policy and measurements to strictly enforce and manage protected areas, watersheds/upstream/water sources and other areas.

**Measure 3: Seed and Breed Availability**
- Improve seed varieties, emphasizing improved rice and coffee varieties.
- Improve animal breeding with the application of hybrid technology and improved grass seed for forage.
- Enhancement of investment, training and marketing.

**Measure 4: Extension and Technical Services, and Human Resources Development**
- Promotion of high productivity and low cost investment production techniques and technologies.
- Capacity building of the district agriculture and forestry office (DAFO); development of technical staff and establishment of technical and information service centres for village development groups.

**Measure 5: Establishment of Village Development Groups linked to Sector Development**
- Implementation of the Politburo Order on the establishment of village cluster development groups (*koum ban patthana*) with the objective of moving development will towards the local / grassroots level.

**Measure 6: Organizing Production and Establishing Economic Structures from the Local / Grassroots Level (bottom up)**
- Strengthen production groups in pilot areas to enable formation of production cooperatives; development of cooperative services, marketing systems, processing services, communications, savings and credit.
- Formulate relevant procedures.

**Measure 7: Irrigation and Prevention of Droughts and Floods**
- Allocation of irrigated areas for integrated agricultural development zones; implement integrated agriculture properly.
- Improve and expand reservoir systems to mitigate droughts and floods; maintenance of irrigation pumps; promote use of energy efficient pumps.

**Measure 8: Increase Productivity** (through the application of fertilizer, compost, improved seeds, advanced technology)
- Support more intensive use of agricultural techniques to increase agricultural and forestry productivity

**Measure 9: Quality Control** (sanitary and phytosanitary standards [SPS]) and Disease Prevention
Aim to improve bio-safety of food for consumption and ensure compliance with ASEAN and WTO procedures and principles.

**Measure 10: Financial Mechanisms**
- Improve the use of assistance provided by development partners and internal and external public and private investment.

**Measure 11: Achieving Economies of Scale in Production** (lowering production costs)
- Doubling productivity by: expanding the production of goods with a comparative advantage; applying modern technology; using energy more efficiently; and, developing policies and quality control measures to support production.

**Measure 12: Implementation of Monitoring and Evaluation**

**Measure 13: Decentralization**
- Instituting a management hierarchy that supports collaboration among the Government, people and economic sectors.
Annex B: Key References


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World Food Programme (WFP), *Lao PDR Comprehensive Food Security and Vulnerability Analysis*, October 2007
# Annex C: Ethnic Minorities in the 5 Project Provinces

<table>
<thead>
<tr>
<th>Project Province</th>
<th>Ethnic Groups</th>
<th>% Provincial Population</th>
</tr>
</thead>
<tbody>
<tr>
<td>Savannakhet</td>
<td>nd</td>
<td>nd</td>
</tr>
<tr>
<td>Attapeu</td>
<td>Oy</td>
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</tr>
<tr>
<td></td>
<td>Kaliang</td>
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<td></td>
<td>Cheang</td>
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<td></td>
<td>Nghaheun</td>
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<td></td>
<td>Lao</td>
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<td></td>
<td>Yuan</td>
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</tr>
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<td></td>
<td>Others</td>
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<td></td>
<td>Trieng</td>
<td>21</td>
</tr>
<tr>
<td></td>
<td>Nhet</td>
<td>8</td>
</tr>
<tr>
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APPENDIX VIII. GENDER ISSUES
APPENDIX IX. LIST OF PROPOSED SUB-PROJECTS

1 Proposed sub-projects submitted by provinces

Following the decision to prepare a Sector project for the ANR sector in southern Lao PDR it was also decided that time and resources only allowed for detailed discussions with three of the five provinces to be included in the proposed project. Accordingly, Champassak, Salavan and Sekong were selected, on the basis that Champassak was also reasonably representative of the conditions in Savannakhet (both being large and relatively wealthy provinces with substantial lowlands) and Sekong was reasonably representative of Attapeu (both being relatively small, poor and with a high proportion of uplands), while Salavan is somewhat intermediate between the other pairs. It was assumed that the provinces investigated in greater detail would act as models for interventions in the other two provinces once project implementation began. All five Provinces were visited to brief the Provincial government about the proposed project and identify important issues in the sector.

The three provinces selected were invited to submit proposals for priority sub-projects that could be appraised during the early stages of project implementation so that the project management team would have a pipeline of projects to work on. Each province was provided with a Sub-Project Proposal Form (see Annex to this Appendix) which was translated into Lao Language, and the Directors of the Provincial Agriculture and Forestry Offices were requested to submit completed proposals by the end of February 2008. The responses were then translated into English and are incorporated in this appendix.

The following are the sub-projects proposed:

A. Champassak Province:
   1. Commodity Production Promotion and Marketing
   2. Commodity Promotion and Production
   3. Animal Production Improvement, Fodder Crops and Fishery Production for Commodity

B. Salavan Province:
   1. People’s Livelihood Improvement and Promotion Projects in Phoutatlava area of Saravan and Toumlan Districts
   2. Conservation and People’s Livelihood Improvement in 2 upland districts: Ta Oy and Samouay
   3. Conservation Forest and People Livelihood Improvement Projects in Phouxiengthong Forest Reservation, Xebangnouan.

C. Sekong Province:
   1. Integrated farm management in Kuleum District
   2. Coffee Growing Extension in Kalum District
   3. Coffee Growing Extension in Dakchung District
   4. Integrated form Management in Dakchung District
   5. Land Clearing in Lamam District
   6. Road Building linking Mo Village – Tok Saming Village
   7. Road Building linking Duk Lan Village – Tok Ongkeo Village
   8. Road Building linking New Chakam Village – Vang Village
   9. Road Building linking Phon Village – Songkhone Village

An additional sub-project proposed by the consultants for four Districts in Savannakhet and Salavan provinces is also included:

Proposed Integrated Forest-based Rural development sub-project for four Districts
Champassak Province
Agriculture and Forestry Office

Project Proposal
Work Plan:
Integrated Agriculture Development
Project Name:
Commodity Production Promotion and Marketing
Proposed by:
Provincial Agriculture and Forestry Office

Champassak Province 2008
1. **Project Name**: Commodity Production Promotion and Marketing

1.1 **Proposed by**: Provincial Agriculture and Forestry Office

1.2 **Target** Districts: 5 districts

1.3 **Beneficiaries**: People of the 5 districts (Pakson, Sanasomboune, Phonthong, Champassak, and Batieng) including 11 Kumban.

1.4 **Project duration**: 5 years (2009-2013)

1.5 **Fund**: USD 1,363,000.00

2. **Project Background**:

- Aiming to implement and apply Socio-economic Strategic Development Plan of the VIIth Central Party Conference Resolution
- To implement the VIth 5year Socio-Economic Development Plan (2006-2010) as well as 11 Programs and 111 projects of the Government
- On the basis of the application of the VIIIth Central Party Conference Resolution as well as the Resolution of the Vth Provincial Party Conference
- Aiming to ensure the success of the implementation of the 4 targets and 13 measures set forth by the Ministry of Agriculture and Forestry and the 5year Socio-Economic Plan (2006-2010). In parallel with this, promoting ethnic population poverty reduction by using agricultural production to increase their production and income in focusing on family and Kumban based value added products, leading to increase family incomes and to reduce poverty by the year 2020 according the set plan, included in the 47 poor districts, which are expected to be reduced to less than 15% in comparison with the year 2000.

2.1 **Location and Geography**

Champassak is the most southerly province of the country with an area of 1,541,500ha, 700,000 multiple ethnic people (about 300,000 females): 99.2% Lao Loum, 0.5% Vietnamese, 0.03% Chinese, less than 0.03% Kampuchea and Burman and Thai very few. Saravan Province is in the North, Sekong and Attapeu in the East, Kampuchea in the South and Thailand in the West.

Champassak Province is the economic centre for the southern region, having a great agriculture production, industrial, energy and mining potential. Geographically, the Province area is divided in to two parts: plains and plateau. The first part is along the Mekong river banks, suitable for rice, vegetable, animal production and native fruit trees. Champassak plateau area is suitable for animal, crop production, temperate climate fruit trees, flowers, potatoes etc...

The province income is mainly generated by the agriculture sector with about 52%, industry 24% and 25% from services. This is shown that agriculture sector still remains the largest part of contribution to the provincial revenue. Therefore, in the near future (according to the Socio-economic Plan 2006-2010) Champassak Province has to fulfill the provincial set targets below: generating incomes from the service sectors at about 33%, industry 24% and 43% from agriculture. Based on this investment in agriculture sector is still covering a largely important portion of the budget. To accomplish targets set above the province as well as the agriculture forestry sector have identify 78 integrated strategic agriculture sector projects, which have to be fully strived in line of the strategic plan (2006-2010).
2.2 Targeted Kumban.

The project targeted Kumban have been selected for production promotion based on the provincial and district Kumban development strategy relating to the initiative of the Party Decree No. 9/ PB with the aim to develop the country’s socio-economy cohesively with natural resource conservation and environment protection. These are targeted Kumban in 5 districts, with .....people (.....females) as detailed below: Rattan Handicraft Group of Km 28 and Km 29 Village, sculpture group of Nongbung village, women handicraft group, industry processing group, small enterprise group, pig production group, cattle fattening group, fish cage culture group, rice production group, free chemical vegetable growing group, crash crop growing group (Macadamia) and so on...These stated villages groups are included in the targets districts, which will be established as development Kumban of the province.

3. Necessity and reasons of proposing activities

Micro finance small enterprise development (MED). There is a need to establish this fund because of government fund provision did not reach the grass root people, in spite of the existence of Agriculture Promotion Bank or Policy Banks, especially vulnerable remote communities having unstable family incomes and lacking access to loans. About 30 to 40% of mediocre farmers can access to bank credits, and only 10 to 15 % of poor. This is to satisfy the socio-economic development policy of government in stimulating micro economic system to be strengthened and smoothly on track to develop appropriate opportunity for a local competitive commercial and marketing system ably and quickly integrating to the macro national economy as well the ASEAN Economic Community and the preparation of WTO accession in the future.

Encouraging, improving and developing qualified goods (ODOP). Government, Champassak Province as well as other districts have set out concrete policy and strategy in encouraging rural remote communities having potential, skills and talent. These communities provided some appropriate training by government, having access to natural resources, shall be more strengthened such as in rattan, bamboo, tree left branches handicraft by creating production groups of wood handicraft and sculpture. Even though in one hand, these communities being skilled but lacking adequate working facilities and tools, more over not able to marketing access, and in the other hand government investing fund is still limited and could be only basically affecting.

Regarding the promotion of agro-industry processing, province has set some 15 projects to promote and encourage the implementation of the industry-handicraft sector strategic policy. To enhance these stated targeted projects, the province does have studied and identified possible potential, which could be piloted and demonstrated for the industry processing sector. As given example in he past, this task had not yet properly been strengthened due to the industry processing sector being sensible from its starting production steps up to its distribution. Besides this the marketing study was yet very limited, its products quality has to be accepted by customers, especially by the foreign markets. As being aware that local market is still narrow because local consumers not having enough purchasing power. Therefore, post-harvest processing and cool chains facilities have to be first consideration for final and semi-final product export purposes like stocking of commercial spearhead crops (free chemical vegetable, macadamia, with rice for brewery factory, animal products...). There is a need to encourage and enhance external investment in building up final product factory.
Marketing structure and system: this is the decisive factor for agro-processing industry process. As in the past, agriculture production was strongly promoted but without marketing concern. This lacking of marketing information or markets direct access by farmers caused some agriculture product surplus in local markets leading to long storage goods degradation and affecting negatively farmer’s family incomes. Other unpleasant impact factors were unfair benefit sharing between the farmers themselves and pressure from some selfish investors. Therefore, the targeted projects have to make studies relating to updated market information transferred to farmers groups aiming to strengthen their skills and abilities in production accounting keeping, managing and able setting up appropriate direct contract farming with investors with out grasping traders and middlemen.

4. Government Policy relating to these tasks:

The Government VIth 5Year Socio-economic development Plan has concretely stated that based on existing potential of the agro-forestry sectors, the annual growth has been studied and figured at about 4%. This annual growth will be closely related to industry processing expansion and new export market ability, therefore, the contribution of the projects should concentrate in developing largely business at family, community and Kumban levels, and create community based micro-economic structure to base for industry and modernization in the future.

Opportunities and strength:

Based on the existing potential of community relying in natural dependent live-hood, it can be observed that almost remote people live by using natural forest areas as their food stuff and medicine necessity resources. Their live-hood almost depends on nature but not market dependence; this makes a significant different manner versus the one in the towns.

Opportunity in job creation development, income generation for their families are for them very necessary, thereafter in the next future natural resources won’t be any more facilitating their live condition. Thanks to their particular potential in familiarizing to natural environment plus their conventional skills in producing tools and decorating ornaments with additional knowledge of market quality requirement, this may stimulate them to participate in applying the Party and government policy on sustainable use of natural resources.

5. Project design:

Project design explanation:

The projects have been designed on the basis of the real situation and the needs of the province to establish the firm and improved basis of socio-economic development as the front base of gradual transformation to industrialized country and modernized, and aiming to accomplish the Party conference resolution ( especially the 2006-2010 Plan has identified 11 programmes and 128 projects related to districts and sectors plan as well as the 4 targets and 13 measures set by Agriculture and Forestry Ministry).

Goals, Expected Outputs, Activities

A. Expected Output 1: Micro Finance Enterprise Development (MED).

Activities:

1.1 Conducting Meeting for provincial and district staff and target Kumban to clarify project implementation.
1.2 Conducting Participatory Rapid Appraisal in Kumban and target districts for community need assessment.
1.3 Establishing producers groups (fishery, cattle fattening, pig production, rice production, free chemical vegetable, cash crop production, industry processing groups, handicraft ..)
1.4 Strengthening management and accounting capacity for community.
1.5 Setting up group and fund use regulations.
1.6 Group and activities selection for development fund establishment.
1.7 Providing necessary facilities (tools) for production groups.
1.8 Conduct meeting for all related parties to set up future common strategy.

B. Expected output 2: Commodity quality promotion and Improvement ODOP (one district one product)

Activities:
2.1 Conducting Meeting for provincial and district staff and target Kumban to clarify project implementation.
2.2 Conducting Participatory Rapid Appraisal in Kumban and target districts for community need assessment.
2.3 Commodity producer group establishment (rattan and sculpture groups).
2.4 Improving quality and techniques of rattan production in Km 28 and Km 29 village, Pathoumphone district.
2.5 Improving quality and techniques of wood sculpture production in Nongbung village, Pathoumphone district.
2.6 Strengthening and revise labor force management for rattan handicraft and sculpture groups.
2.7 Providing training on sculpture and rattan processing techniques to group members.
2.8 Promoting women handicraft groups (data to be collected and assessed).
2.9 Providing necessary facilities (tools) for production groups.

C. Expected output 3: Promotion of agro-industry processing

Activities:
3.1 Data collection and feasibility study of industry sector potential in targeted Kumban for need assessment.
3.2 Establish industry processing association at Kumban level.
3.3 Selection of products, target groups for processing demonstration.
3.4 Set up regulations of activities and group management.
3.5 Strengthening technical capacity, labor management, accounting of industry processors groups.
3.6 Encourage local and foreign investors to build up large scale processing factory.
3.7 Providing equipment and process

D. Expected output 4: Marketing system and structure development

Activities:
4.1 Consulting with relevant sectors to seek for common understanding in building up marketing system and its structure and finding out its responsible agency.
4.2 Feasibility study of market information on local agriculture production, industry and handicraft.
4.3 Enhance capacity build and good understanding marketing system of provincial, districts and producers groups.
4.4 Establish marketing information center at Kumban, district and provincial level to integrate local and foreign markets.
4.5 Strengthen producers groups and association and create opportunity for them to have direct access to market, especially the contract farming manner.

4.6 Providing facilities / equipment to the marketing information system.

E. Expected output 5: Services and facilitating sectors

Activities:

5.1 Tables, chairs and documents shelves.
5.2 Travels.
5.3 Communication.
5.4 Office equipments.
5.5 Training and study tours
5.6 Computers, printers, photocopier and LCD.
5.7 Transports
5.8 Fixing, repairing.
5.9 Administration incentives
5.10 Project activities monitoring

6. Implementation mechanism.

6.1 The implementation of these projects has to be integrated with other sub-projects such as national forest reservation protection projects, rice seed supply project, and other crops for commodity promotion, animal breeding improvement. Beside this project could be facilitating experience exchange with other projects and be integrated with local and foreign investments activities. Obviously the implementation of these projects, at their first initiation, has to be incorporation of participation of all relevant technical sectors, district target working units, Kumban and producers to effectively enhance collaborative ownership.

6.2 Selection criteria of projects, target districts, Kumban and project activities has been based on the VIIIth central party conference resolution, the resolution of the VI provincial party conference and the VIth 5year socio-economic development of the government (2006-2010) with the aim to speed up sustainable production and increase diversity of commercial commodity with the local market enlargement and ensure value added of exported goods. In parallel with this, capacity competency should be as well strengthened aiming to improve competitive potential integrating to foreign market and forming appropriate balance between socio-economic development and natural environment protection, community poverty reduction, especially enhancing national agriculture GDP at 35-36% and 37% at provincial level.

7. Positive and negative impact to environment

Analysis of these projects has indicated more positive impacts than the negative one:

1) The project is focusing on advising farmers to use their existing production land avoiding newly land clearance.
2) Some construction activities require only of small scale area such as marketing information center.
3) Women sub-activities can be silk production and mulberry trees planted in their own existing areas without clearing new places (this activities are only proposed sample, but before conducting real action it should need a concrete feasibility study with participation of provincial, district and Kumban women union).
4) Regarding industry processing sectors, small scale industry processing factory could not negatively affect environment or community, but province
authority has already identified industry zones for large factory (details of activities will be discussed with consultation of provincial Water and Environment Offices).

5) Credits or loans released to activities will be provided after finishing PLA data survey; this may identify which activities will be feasible or risky. Credit and loan provision shall be generated and monitored by compatible committee. Some activities may have some how minor negative effects to environment, such as the application of chemical fertilizers or pesticides in certain crops or vegetable, this has to be controlled and closely monitored by the project management in selecting appropriate internationally allowed products. But in fact, the project will encourage and promote mainly free chemical products for export.

Regarding pig farm production and fish cage culture, these activities could not much affect environment, due to the use of EM product by producers to reduce or eliminate farm wastes smells and pollution. This approach has to be, by regulation, strictly applied.

8. Logical Framework

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9. Plan of Action Fiscal Year 09

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II. Expt. Output 2. Commodity improvt. ODOP

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#### Project activities control & monitoring

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### 10. Fund requirement

(See attached table of budget requirement)

### 11. Implementation measures and responsibilities of concern parties

#### A. Implementation measure:

**Annual project design**

The annual project design will be generate ob the basis of the results of each implementation year, this could decide whether activities will be extended or further promoted.

**Budget allocation**

Budget should be annually allocated according to the project activities quality evaluation, concrete needs of producers and market demand.
Participation

The implementation of project should be participated by concern parties such as MAF, province, districts, Kumban and other producers groups, who consult with each other to lead the project being as sustainable community-based. Pakse,
date..............

............

Proposed by

Certified by

Head of Champassak PAFO
Champassak Province
Agriculture and Forestry Office

Project Proposal

Work Plan:
Integrated Agriculture Development

Project Name:
Commodity Production Promotion

Proposed by:
Provincial Agriculture and Forestry Office/ Crop Division
Commodity Promotion and Production

1. Name of Action plan: Integrated Agriculture Development Plan
2. Goal: Commodity Production
3. Project Name: Promotion and Production of Commodities
4. Project Location: 3 Districts (Paksong, Phonethong, Champassak)
5. Proposed by: PAFO of Champassak Province
6. Beneficiaries: State, Population in Kumban and Target Districts
7. Detailed Benefits:
   - State: Increase state revenue from planting land tax collection, trading of agriculture products, which is generated from using existing resources and natural environment protected.
   - Population: Increasing incomes and stabilizing livelihood of 550 families from 11 Kumban in 3 districts.
8. Project Background

   Based on 4 targets and 13 measures of the Resolution of the VIII the Agriculture and Forestry Conference and the implementation of the Socioeconomic Development Plan of Government in 11 Programmes, 111 Projects for the year 2006 - 2010

   To enhance the implementation of strategic socio-economic Development plan up to the year 2020 set for the by the party bases on regional existing potential to ensure succession of planned targets.

8.1 Location and Geography of Province

   Champassak Province in the Southern most part of LPDR with an area of 1,541,500 Ha (about 6.51% of the National Area), situated between East Longitude 151'2" and 106'50" and between the North parallel 13'55" and 15'22", having borders with:
   - Saravan province, 140 km long in the North - East,
   - Sekong Province 140 km long in the South - East,
   - Thailand, 125 km in the west, and
   - Kampuchea, 125 km in the South.

   Champassak Province is went through by the National High way N: 13 from its North Past down to Kampuchea border. As it was aware that in the past, Champassak Province has been the communication and trading center for the 4 Southern Provinces, due to having its high development potentials the Road N: 20 gos through Pakse to Sekong and Saravan. Pakse Paxong to Attapeu is connected by the Road N: 23. Pakse - Phonethong is connected to Lao-Thai market border by Road N: 10, Road N: 6A links Phonethong with Champassak. Soukoumma and Moulapamok districts, and other roads... Moreover one international Airport is as well located in Pakse facilitating communication with other 4 Southern Provinces.

8.2 Specific position of the provinces.

   Geographically Champassak province is composed of middle plain slope lands, plateau and some high lands. Province population in 561,000 people (51% females)
with 17 ethnic groups, 90,957 Households with 70,233 families living in agricultural. Forest area covers about 931,349 Ha (60.42%) of the province in producing agriculture goods.

8.3 Issues and Reason why project Proposing. Champassak Province, in practical, possesses more potentials than other Province in the country 90% of the provincial population are dealing with agriculture production, having their own planting land, with almost can satisfy their own needs and ably party release out. Existing potential in the province such as suitable agriculture lands, with the help of technical assistance and modern tools. Therefore, commodity promotion has to be considered as major concern of the province such as vice production, fruit trees planting in plains and on the plateau according to their specific conditions

9. Goods and Expected outputs

9.1 Goals:
- Enhancing sufficient rice seed supply in the province
- Promoting rice, vegetable and fruit tree production for commercial purpose.

9.2 Expected outputs:

<table>
<thead>
<tr>
<th>N:</th>
<th>Activities</th>
<th>Annual Expected Outputs</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>2009</td>
</tr>
<tr>
<td>1</td>
<td>Rice seed improvement and Production</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- F1 rice seed Production (kg)</td>
<td>1,000</td>
</tr>
<tr>
<td></td>
<td>- F2 rice seed Production (kg)</td>
<td>10,000</td>
</tr>
<tr>
<td></td>
<td>- Cost (Lkip Mill)</td>
<td>45</td>
</tr>
<tr>
<td>2</td>
<td>Macademia Growing</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Area (Ha)</td>
<td>50</td>
</tr>
<tr>
<td></td>
<td>- Seedling supply (pcs)</td>
<td>14,000</td>
</tr>
<tr>
<td></td>
<td>- Production (t)</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>- Cost (Lkip dill)</td>
<td>70</td>
</tr>
<tr>
<td>3</td>
<td>Cabbage Production</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Area (Ha)</td>
<td>50</td>
</tr>
<tr>
<td></td>
<td>- Production (t)</td>
<td>1,250</td>
</tr>
<tr>
<td></td>
<td>- Cost (Lkip million)</td>
<td>625</td>
</tr>
<tr>
<td>4</td>
<td>Rice Production</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Area (Ha)</td>
<td>500</td>
</tr>
<tr>
<td></td>
<td>- Production (t)</td>
<td>2,500</td>
</tr>
<tr>
<td></td>
<td>- Cost (Lkip million)</td>
<td>5,000</td>
</tr>
</tbody>
</table>

10. Budget Breakdown

10.1 Detailed Activities
ADB TA 4843 Agriculture and Natural Resources Sector Needs Assessment

This project will be implemented in 2009 in 3 districts (Paksong, Phonethong and Champassak) with the following activities:

- Rice seed improvement and production
  - F1 and F2 seed Production
  - Farmers Training
- Macademia Production
  - Data collection
  - Producers Training
- Cabbage Production
  - Data Collection
  - Gardeners Training
- Rice Production
  - Data Collection
  - Farmers Training

11. Measures and implementation approaches

- This Project will be implemented and 13 measures of MAF, and under the technical responsibilities of provincial crop division
- This project will be implemented incorporating with livestock division for the use of production lands already identified by provincial and districts authorities.
- This project will be co-implemented by PAFO and Agriculture Forestry Offices of the 3 targeted districts (Paksong, Phonethong, Champassak)
- This project will be implemented with the cooperation of village authorities, who will be selecting families to be participating in.
- The project director will be recruited to manage project activities and report the project progress to supervisor for further advises.

12. Budget Needed for 2009 - 2013

12.1 Budget breakdown by activities

<table>
<thead>
<tr>
<th>N:</th>
<th>Items</th>
<th>Planned investment</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>2009</td>
<td>2010</td>
</tr>
<tr>
<td>1</td>
<td>Seed improvement and Production</td>
<td>485,000</td>
<td>350,000</td>
</tr>
<tr>
<td></td>
<td>Macademia Production</td>
<td>172,000</td>
<td>250,000</td>
</tr>
<tr>
<td></td>
<td>Cabbage Production</td>
<td>135,000</td>
<td>220,000</td>
</tr>
<tr>
<td></td>
<td>Rice Production</td>
<td>195,000</td>
<td>275,000</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>987,000</td>
<td>1,095,000</td>
</tr>
</tbody>
</table>

160
### 12.2 Detailed budgets by activities in 2009

<table>
<thead>
<tr>
<th>N:</th>
<th>Items</th>
<th>2009</th>
<th>Total</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Q1</td>
<td>Q2</td>
<td>Q3</td>
</tr>
<tr>
<td>1</td>
<td>Rice seed improvt. and Product.</td>
<td>145,000</td>
<td>132,000</td>
<td>102,000</td>
</tr>
<tr>
<td></td>
<td>- Non-consumable facilities for canter</td>
<td>100,000</td>
<td>100,000</td>
<td>50,000</td>
</tr>
<tr>
<td></td>
<td>- Facilities for F1 production</td>
<td>10,000</td>
<td>5,000</td>
<td>5,000</td>
</tr>
<tr>
<td></td>
<td>- Labor cost for F2</td>
<td>20,000</td>
<td>10,000</td>
<td>10,000</td>
</tr>
<tr>
<td></td>
<td>- Training</td>
<td>10,000</td>
<td>5,000</td>
<td>5,000</td>
</tr>
<tr>
<td></td>
<td>- DSA, Fuel for district and Province</td>
<td>5,000</td>
<td>5,000</td>
<td>5,000</td>
</tr>
<tr>
<td></td>
<td>- Product Purchasing, Transport</td>
<td>-</td>
<td>20,000</td>
<td>20,000</td>
</tr>
<tr>
<td>2</td>
<td>Macademia Production</td>
<td>43,000</td>
<td>43,000</td>
<td>43,000</td>
</tr>
<tr>
<td></td>
<td>- Data Collection</td>
<td>5,000</td>
<td>5,000</td>
<td>5,000</td>
</tr>
<tr>
<td></td>
<td>- Training</td>
<td>18,000</td>
<td>18,000</td>
<td>18,000</td>
</tr>
<tr>
<td></td>
<td>- DSA, Travel dist and prov. Staff</td>
<td>15,000</td>
<td>15,000</td>
<td>15,000</td>
</tr>
<tr>
<td></td>
<td>- Evaluation</td>
<td>5,000</td>
<td>5,000</td>
<td>5,000</td>
</tr>
<tr>
<td>3</td>
<td>Cabbage Production</td>
<td>35,000</td>
<td>35,000</td>
<td>35,000</td>
</tr>
<tr>
<td></td>
<td>- Data collection</td>
<td>5,000</td>
<td>5,000</td>
<td>5,000</td>
</tr>
<tr>
<td></td>
<td>- Training (Demonstration Plots)</td>
<td>15,000</td>
<td>15,000</td>
<td>15,000</td>
</tr>
<tr>
<td></td>
<td>- DSA, dist and Provin. Staff travel</td>
<td>10,000</td>
<td>10,000</td>
<td>10,000</td>
</tr>
<tr>
<td></td>
<td>- Evaluation</td>
<td>5,000</td>
<td>5,000</td>
<td>5,000</td>
</tr>
<tr>
<td>4</td>
<td>Rice Production</td>
<td>50,000</td>
<td>50,000</td>
<td>50,000</td>
</tr>
<tr>
<td></td>
<td>- Data Collection</td>
<td>5,000</td>
<td>6,000</td>
<td>6,000</td>
</tr>
<tr>
<td></td>
<td>- Training (Demonstration Plats)</td>
<td>18,000</td>
<td>18,000</td>
<td>18,000</td>
</tr>
<tr>
<td></td>
<td>- DSA, travel of dist. And Prov. Staff</td>
<td>6,000</td>
<td>6,000</td>
<td>6,000</td>
</tr>
<tr>
<td>- Evaluation</td>
<td></td>
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</tr>
<tr>
<td>Total</td>
<td>273.000</td>
<td>260.000</td>
<td>230.000</td>
<td>224.000</td>
</tr>
</tbody>
</table>

13. Detailed fund Resources
- Total Fund : Lkip 987,000,000
  - Government : Lkip 168,000,000
  - Foreign investment: Lkip
- Project duration: 5 years ( 2009-2013 )
- 2009 Budget: Lkip 987,000,000

14. Impact Analysis ( Positive and Negative )
- On Socio - economy
  In general commodity development project is the main development tool of the province; this will increase incomes of the Kumban population by increasing their production. These after, the poverty reduction among participating people will be gradually altered.
- On Environment
  This project will promote the way of effective use of natural resources, especially the soil erosion in unused land will be effectively solved, and keeping proportional balance between natural resources exploitation and their protection.

Proposed by
Crop Division Head

Certified by Champassak PAFO
Champassak Province
Agriculture and Forestry Office

Project Proposal

Work Plan:
Commodity Production

Project Name:
Animal Production Improvement, Fodder Crops and Fishery Production for Commodity

Proposed by:
Champassak PAFO/Livestock Division

Champassak Province 2008
1. Project Name: Animal Promotion Improvement, Fodder Crops and fish for Commodity Production,
1.1 Proposed by: PAFO/Livestock division
Location: Veterinary service center km 7, fishery Breeding center km 8 and Nonghin cattle station.
Project Target Districts: Pakse, Phonethong, Batieng, Sanasanboune and Paksong.
Beneficiaries:
- km7 service center will be furnished by appropriate equipment and will be demonstration place and pig raising training center for students from Agriculture college.
- Piglet supplier to promote farmer pig production for commodity
- Pig and cattle artificial insemination center servicing targeted district farmers:
  - km7 Prohery breeding center will have enough nurserying ponds sufficiently supplying fingerlings to farmers.
  - Will be demonstration center of fishery improvement and training place for agriculture college and farmers.
  - Fishing farmers will be provided with qualified fingerlings and technical training to support their commodity production.
- Noighin Cattle station will be furnished with appropriate infrastructure to undertake cattle breeding and fodder crops production to support farmer commodity production.
  - Able to produce good cattle breeders and grass seeds for liveslsek farmers.
  - Supplying gress and fodder crop seeds and artificial insemination service center
  - Being demonstration and training center for Agriculture college students and farmers.
Project duration: 5 years (2009-2013)
Project Coit: Likp 826,995,000

2. Project background:
- Aiming to apply the development strategy and enhance the resolution of the VIII the central party conference.
- Aiming to implement the governmental socio-economic development plan from now to 2010 as well as 11 Programmes and 111 Project of the government.
- To implement and ensure the success of the MAF 4 targets and 13 measures (2006-2010) in parallel with the farmer poverty redaction by upgra agriculture system and using good and adequate animal and crop breeds. Based on potential stated above some approaches have been set out as below:

The km 7 veterinary service center:
This center has already been furnished with some trained staff, some technical facilities / tools able to conduct cattle and pig artificial insemination, adequate analysis laboratory.

The km 8 fishery breeding service center:
ADB TA 4843 Agriculture and Natural Resources Sector Needs Assessment

- The center is allocated in 4 Ha area (with 2 Ha for production area) and established longtime enough for fish breeding multiplication and improvement, native fish species research.
- Available infrastructure and area for nursery ponds expansion.
- Available technical staff to produce fish fingerlings for farmers.

The Nonghin Cattle station
- Location is not too far and linked by

The Nonghin cattle station
- Location is not too far and linked by the road N: 6 (Paksong-Thateng).
- 400 Ha of land with notice pasture covering and able to feed cattle throughout the rainy season.
- There are cattle plots and plots for grass seed production.
- Good cattle breeders are available in the station as well as improved grass seeds and ready to supply to farmers.
- Availability of cattle artificial inseminators, livestock keepers and animal feeding processors.

3. Goals and Expected Outputs

Goals:

3.1 To improve the Km7 veterinary center becoming as effective center for animal artificial insemination to serve surrounding farmers with good, fast growing and heavy body weight animals and to reduce imported animal breeds from outside.

3.2 To make the Km 8 fishery service center becoming breeding and fingerlings producer to satisfy farmer demand.

- Improve infrastructure of the center to undertake technical service
- To make the center as fishery technical transfer center to demonstrate and train farmers.

3.3 To make the Nonghin cattle station becoming research and experimental center servicing farmer as well as animal feed production, and being livestock technical transfer center for southern part of LPDR. And lately, according to the government initiative, this center will be an autonomous business in the future.

- For the current time this center will be rehabilitated and conducting cattle breeding improvement, fodder crops seed production, cattle artificial insemination servicing farms and animal producers.

4. Expected outputs

4.1 Veterinary service center:
- Target districts are: Pakse, Phonethong and Batieng.

Activity to be done:
- At the first year: inseminating 300,500 heads of swine, expected 2,100 - 5,000 piglets.
- Artificially inseminating 50 - 100 farmers cows and expected 30-60 calves.
- Establish a firm and complete infrastructure of the center.

4.2 The km 8 fishing station:
ADB TA 4843 Agriculture and Natural Resources Sector Needs Assessment

- Target districts: Pakse, Paksong, Sanasomboure, Batieng

Activities to be done
- Conducting 44 fish breeding times using 2,000 kg of fish, expected about 1,800,000 fingerlings.
- 8 training courses for 4 districts, 160 persons.

4.3 The Nonghin Cattle station
- Paksong district is target.

Activities to be done:
- Ensure 30 calves produced from artificial insemination. (sell out 30 cattle breeders/year, expected 50 farmers cows inseminated.
- Experimentally fattening 50 cattle for technical data to promote farmer cattle fattening
- At the first year, promoting farmers to grow fodder grass about 15 - 20 Ha and expand gradually each year.
- Grow 10 Ha of fodder grass and 50 Ha for seed production.
- Produce 5 tons of Ruzi grass seed to supply to farmers.
- Conduct 5 training courses on animal and fodder crops production (150 people).

5. Needs and Reasons why proposing project.

These centers used to be supported by a limited government fund. Therefore, there is a need to improve these 3 centers in quantitative and qualitative manner to be able support the farmers commodity production leading to poverty reduction by promoting there appropriate technology.
- Improve animal production from conventional system by promoting new and effective system and using high productive species and step up to apply industrial system.
- Sufficiently supply fish and meat consumption of local and export demand according to the MAF initiatives in striving 4 targets and is nesses.

As per above stated reasons, a feasibility study on production and village and target families selection has to be taken in consideration, aiving to form model families. There after, in the part this kind of promotion haven't yet been strongly done and people livelyhood used to be naturally dependent,

6. Government policy regarding this issues:

as per the VI the 5 year development plan indicated by the government, agriculture sector based on its potential has annually contributed about 4% to the national GDP, this has guide the project to closely consider the economic development at village and family level, aiming to strongly increase agriculture production and farming new micro economic base of agriculture sector to be potential for industry based development.

7. Opportunities and strengths.

Base on the existing potential that farmers living dependently on nature, it is observed that people are aware of the use of new adaptive techniques in increasing their production, and as well being promoted to apply these technology to uplift their liveli- hood from the conventional way of life. With the centers servicing and people awareness, the community commodity production and people poverty reduction
could be gradually giving certain positive imparts on their production quality and obtaining satisfied quantity of goods for generating family and community incomes.

8. Fund used for the projects.

Activity 1*
Need fund for the km 7 veterinary service center.
Total Lkip : 171,400,000

Activity 2*
Need fund for the km 8 fish breeding center.
Total cost : 269,650,000 Lkip.

Activity 3*
Need fund for the Nonghin cattle station.
Total cost : Lkip 385,945,000

Total fund needed for 3 centers : 826,995,000 Lkip.

*:............( translation in brief )

9. Measures and implementation approaches

- For Activity 1:
  - Village data collection for family selection to participate in projects.
  - Recruit and allocate technical staff to manage pig artificial insemination servicing farmers activities.
  - Planning activities and regularly monitoring aiming to get appropriate records and finding ways to solve any problem or difficulties if there are.
  - Each authority level should promulgate and activate farmers to strongly implement project activities.
  - Farms and producer families have to be officially registered and regularly provided adequate information.
  - District technical staff, village veterinarian, farm. Owner and pig producers have to provide regular data records regarding raising process.
  - Responsibility is given to inseminators in the manner of contract based.
  - Livestock division is responsible to directly supervise, manage and monitor the project activities implementation.

- For Activity 2:
  - Collect data of fish pond area, delivery record of fish provided to target production ponds and select target families participating to the project.
  - Transfer fish feeding techniques, promote effective technology and sufficiently supply fish and fingerlings.
  - Target families should self invest their own activities.
  - Local authorities are responsible to encourage processors in purchasing fish bloodstocks.
  - Livestock and fishery division takes direct responsibilities in supervising, managing and monitoring.

- For Activity 3:
ADB TA 4843 Agriculture and Natural Resources Sector Needs Assessment

- Village data collection to identify participating families.
- Target families are responsible for implementing and funding activities.
- Local authority has to promulgate and encourage processors to purchase animal breeders.
- Livestock and fishery division is directly responsible in supervising, managing and monitoring.

10. Socio- economic issues.

- To contribute participatory in producing sufficient food to satisfy the social demand on meet and fish.
- To straighten family economic incomes, to form up basis of fish and animal production in line of industrialized production manner in the future.
- Increase family income generation, which will help farmers to be running their own businesses in form production and become model for surrounding community. This may lead to new jobs creation for society.
The Report

Attention: His Excellency, the Saravan Province Governor

( submitted though the province cabinet )

Ref: Report of the meeting dated 19/2/2008 between the Saravan PAFO and the ADB Project Team concerning the project identification and allocation.

During the meeting project team representatives have explained about the project concept and project title, which is named: Agriculture and Natural Resource Sector Need Assessment. Beside that options and primarily project initiation has also been discussed as detailed below:

1. Areas without re-settlement (permanent settlement)
2. Should have ethnic communities areas
3. Should be Accessible throughout the year
4. Areas having existing activities such as irrigation, technical service centers
5. Selected areas should be a good model for other areas

In addition, during the meeting PAFO has raised 3 issues regarding the project allocation and 3 core project titles to be discussed as below:
First Core Project Title: People Livelihood Improvement and Promotion

Projects in Phoutatlava area of Saravan and Toumlan Districts
- Sub-Project 1: Large and Small Animal Production Projects
- Sub-Project 2: Seed Production and Yield Improvement Projects
- Sub-Project 3: Technical Service Centers Improvement and Establishment Projects
- Sub-Project 4: Small Irrigation Scale Improvement Projects (Reservoirs)
- Sub-Project 5: Area Identification of Forest Water Shed Project in Pahoualene Area
- Sub-Project 6: Lacquar and Mulberry Plantation Projects

Second Core Project Title: Conservation and People Livelihood Improvement in 2 upland districts: Ta Oy and Samouay
- Sub-Project 1: Large Production
- Sub-Project 2: Forest Conservation
- Sub-Project 3: Agriculture Technical Service Centers Improvement in 2 Areas
- Sub-Project 4: Small Irrigation Scale Projects (Reservoirs)
- Sub-Project 5: Commercial Tree Plantation Projects

Third Core Project Title: Conservation Forest and People Livelihood Improvement Projects in Phouxiengthong Forest Reservation, Xebangnouan.
- Sub-Project 1: Projects Replacing Forest Conservation: Large and Small Animal Production, Rice Seed Production, Rice Yield Improvement, Small Irrigation Scale Improvement and Establishment (Reservoirs) or Kengkhonglouang scale, Identification of Forest Protection, Fish Ponds Improvement and Newly established, Fish Breeding Thanks in Service Centers.
- Sub-Project 2: Projects of Forest Conservation Identification having 4 activities: Surveying Area Borders Marking, Land Use Planning, Forest Protection Arrangement, and People Land Ownership.
- Sub-Project 3: Technical Service and Training Center Improvement having 4 activities: rehabilitating and establishing new centers, Subject matters development, study tours and experience exchange, technical training for staff and villagers, information data management.

After the meeting discussion and opinion exchange between both parties, the 3rd Core Project has been selected to be implemented in the first 3 years, which will be disseminated to other places in the 2 remaining years and forward.

Therefore, the Saravan PAFO has the honor to report to your Excellency accordingly for further advices for implementation.

Deputy Director of PAFO: Stamped and signed by
Somkhit Senethavy
### Questionnaires and Answers to Sub-Projects

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
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</thead>
<tbody>
<tr>
<td>1.</td>
<td>Proposed by (Organization): Saravan PAFO</td>
</tr>
<tr>
<td>2.</td>
<td>Project Title: Technical Service and Training Centers Improvement and Establishment Projects in 3 districts: Vapy, Khongsedone, Lakhonepheng (Located in 2 Forest Reservations)</td>
</tr>
<tr>
<td>3.</td>
<td>Brief explanation: Newly established and improved centers to provide technical services to villagers</td>
</tr>
<tr>
<td>4.</td>
<td>Relating to poverty reduction: Available adequately number of qualified trained villagers allocated in local areas to ensure disseminating experiences and being model for other villagers.</td>
</tr>
<tr>
<td>5.</td>
<td>Among these sub-projects, which one would be suiting to the 11 Government Plans?</td>
</tr>
<tr>
<td></td>
<td>- Infrastructure development</td>
</tr>
<tr>
<td></td>
<td>- Staff capacity and skill upgrading</td>
</tr>
<tr>
<td></td>
<td>- Shifting cultivation eradication</td>
</tr>
<tr>
<td></td>
<td>- Food production</td>
</tr>
<tr>
<td></td>
<td>- Commodity production</td>
</tr>
<tr>
<td>6.</td>
<td>Goal: Aiming to upgrade knowledge, skills of staff and farmers in Xebangnouane forest reservation areas</td>
</tr>
<tr>
<td>7.</td>
<td>Brief project description: Technical service and training centers will be established in Nakhonesy village of Nakhonepheng district and in Nongkhulu village of Khongsedone district, Saravan Province with a total 25 Ha of land area and allocated along the National Highway such as:</td>
</tr>
<tr>
<td></td>
<td>1. In Nakhonesy District, which having border with Savannakhet Province and along the Mekong Bank Lao-Thailand, the center will be built in Nakhonesy Kang along the Highway No. 13.</td>
</tr>
<tr>
<td></td>
<td>2. In Vapy District, the center will be established in Soulya village with a 5 Ha land area situated along the Road No. 15B and having border with Saravan and Khongsedone</td>
</tr>
</tbody>
</table>
3. In Khongsedone District, the center will be established in Nongkulu village along the Highway No. 13 having a border with Champassak Province and Mekong basin. This technical and training center will be serving as training and exchange lessons and experience center for improving livelihood of 80 villages with 6,361 households surrounding forest conservation.

8. 4 main activities of the project:
   - Establishing new centers and improving the existing one
   - Subject matters development, study tours and experience exchange
   - Technical training for staff and villagers
   - Data information management

9. How is the project investment budget?
   In general, there is a need for investment into the infrastructure projects, in capacity building for staff and population, especially, in vulnerable areas lacking funds for center establishment, in arranging study tours for exchanging lessons and experiences and in technically training staff and population on information data management. Whether there would not be enough fund but at least population and staff could improve and upgrade their capabilities.

10. Estimate annual outcome of the projects:
   In the next 2 years the project outcome shall be:
   **Year 2009:**
   - Ensuring on time fund, especially the initiation fund supporting the building up new centers
   - Ensuring the staff and villagers training on information data management
   **Year 2010:**
   - Ensuring technical training for staff and villagers on project activities implementation capacity.
   - Accelerating setting up the development of subject matters, study tours for exchanging lessons and experiences for staff and villagers participating in the projects.

11. Number of beneficiaries and Who? :
   - 43 villages (4,049 households, 4,291 families), 129 trained village technical workers (3 persons from each village)
12. Positive impacts to environment?
   - Chemical free residues
   - Reducing conventional naturally based livelihood of villagers
   - Villagers having sustainable works/jobs
   - Land and water resources being protected and improved
   - Ability of farmers in agro-forestry production yield improvement

Negative impacts:
   - Occasionally destroying living plantation weeds

13. Time schedule and estimated fund in brief:
   1. Duration: 2 years, starting from 2009-2010
   2. Estimated fund:
      - New centers establishment and old center rehabilitation : LKip 700,000,000
      - Subject matters development and Experience exchange: LKip 140,000,000
      - Staff and villagers training: LKip 160,000,000
      - Information data management: LKip 70,000,000
      Grand total : LKip 1,070,000,000

14. Government contributing fund: 25 Ha of land area (with the cost of LKip 500,000,000)
    150 cubic meters of construction wood (LKip 375,000,000)

15. From private sectors: Non

Certified by
Deputy Head of PAFO

Signed and stampeded by
Somkhit Senethavy
1. Proposed by (Organization): Saravan PAFO

2. Project Title: Conservation Forest Replacement Project (Forest Conservation Xebangnouane)

3. Brief explanation:

4. Relating to poverty reduction: Fitting to the periodical Plans set forth by the Government
   - From 2005-2010, ensuring population self-sufficiency
   - From 2010-2020, ensuring population poverty eradication and shifting the country out of LDCs

5. Among these sub-projects, which one would be suiting to the 11 Government Plans?
   1. Food production plan
   2. Commodity production plan
   3. Shifting cultivation eradication

6. Goal: Aiming to upgrade people livelihood in forest reservation areas

7. Brief project description: This project will be implemented in Sebangnouane Reservation Area, which is covering 2 districts Vapy and Lakhonepheng of Saravan Province and part of Thapathong district of Savannakhet Province with an area of 99,205 Ha (90% of upland areas) allocated in 2 provinces, 6 districts, 87 villages:
   - Songkhone and Thapangthong districts of Savannakhet Province in the North
   - Road No.15 B in the South
   - Vapy, Saravan, Toumlan districts of Saravan Province and the Road No. 23 in the East
   - Road No. 13 in the West

   There are 43 villages with 4,049 households and 4,291 families surrounding the Conservation Area, which in the past has been established by the Government in cooperated with the
participation of people and international organizations, but it has been neglected for long time till the current days without rehabilitation or improvement. Therefore, to rehabilitate this Conservation Area in parallel with the people sustainable livelihood improvement the Government has notified that survey should be conducted by asking for assistance participation from people and international organizations.

In one hand, this Conservation Forest Replacement Project is aiming to gradually improve the living standards of local people, who are almost vulnerable, lacking production fund, but there are production potentials in this area such as plantation and animal rearing, and in the other hand this project would assist people reducing poverty, stopping shifting cultivation and food and commodity production to avoid illegal tree cutting, especially tree protected species

8. 5 main activities of the project:
- Raising Rice yield and rice seed production
- Rehabilitate and build up small scale irrigation schemes and continuing the construction of the Kengkhonglouang irrigation scheme
- Identify the limit of protected forest
- Improve and build up technical service centers

9. How is the project investment budget?
In general, according to the Party and Government initiatives there is a need for investment into the agriculture development to help the people in vulnerably remote areas, even though there would not be enough funds but at least the living standard of the population could be gradually improved and upgraded.

10. Estimate annual outcome of the projects:
In the next 3 years the project outcome shall be:

Year 2009:
- Ensuring on time fund, especially the initiation fund supporting the villagers activities
- Ensuring Training adequate number of qualified staff then recruit them to villages to undertake the implementation of the project with ready well planed plan of works and finance
- Some activities have to be promoted aiming to generate incomes for the people

Year 2010:
- Ensuring the success of the project activities in the project selected villages in reducing
poverty and villagers becoming ably self-help and self-strengthened, having firmly sustained family incomes

**Year 2011:**

- Production increased and becomes commodity to serve and trade to social sectors. This could participate in ensuring the National development initiatives having new prospect, People gradually getting out from state assistant dependency
- Family and community incomes increasing

11. **Number of beneficiaries and Who?:**

- 14 villages (965 households, 1,033 families), 5,719 villagers. 2 districts (Vapy and Lakhonepheng) covering 7 Kumbans
- Government and related agencies

12. **Positive impacts to environment?**

- Radically stopping forest destruction by surrounding villagers
- Reducing improper food exploiting practices of villagers aiming to give chances to biodiversity being growing
- Ensuring forest density and more areas covering to protect climate change
- Soil erosion protection

Negative impacts:

- Less food finding ground for villagers in this conservation area
- Food finding ground limited

13. **Time schedule and estimated fund in brief:**

1. Duration: 3 years, starting from 2009-2011

2. Estimated fund:

   - Large animal rearing: LKip 500,000,000
   - Rice yield improvement and Rice seed production: LKip 200,000,000
   - Small irrigation scheme improvement (Reservoirs): LKip 700,000,000
   - Identify Forest reservation area: LKip 300,000,000
   - Improvement and establishment of technical services center and breeding ponds: LKip 100,000,000
### ADB TA 4843 Agriculture and Natural Resources Sector Needs Assessment

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
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<tbody>
<tr>
<td><strong>Grand total:</strong></td>
<td>LKip 1,800,000,000</td>
</tr>
<tr>
<td>14.</td>
<td>Government contributing fund: Non</td>
</tr>
<tr>
<td>15.</td>
<td>From private sectors: Non</td>
</tr>
</tbody>
</table>

Certified by

Deputy Head of PAFO

Signed and stamped by

Somkhit Senethavy
**Questionnaires and Answers to Sub-Projects**

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
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</thead>
<tbody>
<tr>
<td>1.</td>
<td>Proposed by (Organization): Saravan PAFO</td>
</tr>
<tr>
<td>2.</td>
<td>Project Title: Forest Reservation Identification Project</td>
</tr>
</tbody>
</table>
| 3. | Brief explanation:  
|   |   This project is undertaken by 3 parties Government, villagers and international organizations |
| 4. | Relating to poverty reduction:  
|   | - To follow up the Government initiation on allocating development projects in to regional / local areas to reduce population poverty through out the country, in which people are poor, have been facing low incomes, lacking production land and fund and so on.. |
| 5. | Among these sub-projects, which one would be suiting to the 11 Government Plans?  
|   | 1. Shifting cultivation eradication plan  
|   | 2. Forest management plan |
| 6. | Goal: Aiming to raise awareness of villagers in protecting the inter-village border forest |
| 7. | Brief project description:  
|   | This project will be implemented in Phouxiengthong Conservation area belonging to 2 districts, Khongsedone and Lakhonepheng of Saravan Province with an area of 70,547 Ha:  
|   | - Kumtaphane in the North  
|   | - Saysomboune district of Champassak Province in the South  
|   | - Road No. 13 in the East  
|   | - Mekong River (Thailand) in the West  
|   | There are 50 villages with 4,000 households and 4,208 families surrounding the Conservation Area, which in the past has been established by the Government in cooperated with the |
participation of people and international organizations, but it has been neglected for long time till the current days without rehabilitation or improvement. Therefore, to rehabilitate this Conservation Area in parallel with the people sustainable livelihood improvement the Government has notified that survey should be conducted by asking for assistance participation from people and international organizations.

8. 4 main activities of the project:
   - Area land limit marking
   - Planning forest land use
   - Identifying protected forest areas
   - Arranging Land and forest ownership to villagers

9. How is the project investment budget?
   In general, according to the Party and Government initiatives there is a need for investment into the agriculture development to help the people in vulnerably remote areas, even though there would not be enough funds but at least the living standard of the population could be gradually improved and upgraded. During the project initiation period the budget fund for activities would be systematically allocated by quarterly basis

10. Estimate annual outcome of the projects:
    In the next 3 years the project outcome shall be:

    **Year 2009:**
    - Ensuring on time fund, especially the initiation fund supporting the villagers activities
    - Ensuring training adequate number of qualified staff recruited to undertake the implementation of the project with ready well planed plan of works and finance
    - Conducting survey for identifying about 50% of the inter-village border forest conservation area
    - Ensuring area marking and sign identification fixing in 50% of the forest protected and conservation areas

    **Year 2010:**
    - 100% Complete the survey of identified area of the inter-village border forest conservation
    - Ensuring 100% of area marking and fixing sign identification
    - Planning the use of forest land in each village
### Year 2011:
- In the area outside the reservation, ensuring 100% of forest and land ownership to villagers for using and protecting
- Ensuring 100% the survey of NTFPs
- Villagers having upgraded skills and ability to protect reservation forest in each village
- Strengthening government and village administration to be able self managed

### 11. Number of beneficiaries and Who?
- Villagers of 18 villages (1,724 households, 1,721 families), 9,765 villagers. 2 districts in Phouxienthong Reservation (Nakhonepheng and Khongsedone) covering 5 Kumbans
- Government and related agencies

### 12. Positive impacts to environment?
- Forest covering areas increased
- Natural ecology abundant with bio-diversity
- Well protecting natural balancing
- Reduce land erosion
- Forest density increased and being well living ground for wild animals
- Wind and earthquake prevention
- Wild life growing
- Reduce and eradicate deforestation in the reservation areas

**Negative impacts:**
- Less food finding ground for villagers in this conservation area
- Food finding ground limited

### 13. Time schedule and estimated fund in brief:
3. Duration: 3 years, starting from 2009-2011
4. Estimated fund:
   - Area limit identification activities: LKip 400,000,000
   - Land use planning activities: LKip 80,000,000
   - Protected forest arrangement: LKip 300,000,000
<p>| | |</p>
<table>
<thead>
<tr>
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</thead>
<tbody>
<tr>
<td>- Villagers land ownership :</td>
<td>LKip 200,000,000</td>
</tr>
<tr>
<td>- NTFPs survey :</td>
<td>LKip 150,000,000</td>
</tr>
<tr>
<td><strong>Grand total :</strong></td>
<td><strong>LKip 1,130,000,000</strong></td>
</tr>
</tbody>
</table>

14. Government contributing fund: Non

15. From private sectors : Non

Certified by
Deputy Head of PAFO

Signed and stampeded by
Somkhit Senethavy
Sekong Province
Agriculture Division PAFO
No: 36/AD-08
Date 29 FEB 2008

Sub-Project 1

Work Plan:
Integrated farm Management in Kuleum District

Area: 500 Ha

Donor: ADB
### ADB TA 4843 (LAO) ANR Sector Needs Assessment

#### Sub-Project identification Questionnaire

One page, please

<table>
<thead>
<tr>
<th>Proposal from</th>
<th>organisation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agriculture Section</td>
<td>Department of Agriculture and Forestry of Sekong Province</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Project name</th>
<th>Integrated Farm Management In Kalum District</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Summary description</th>
<th>The project is to sustain Food Production, which will generate incomes and create sustainable jobs for high land living communities</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Links to poverty reduction</th>
<th>This project will strengthen and secure technical capacity building of local people, who could increase family incomes by selling out their production, which leads to eradicate poverty.</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>To which of the Government’s 11 Goals does the sub-project contribute?</th>
<th>This project could contribute to the 11 government programmes:</th>
</tr>
</thead>
</table>

1. Human Capital Development Programme
2. Integrated Agriculture Development Programme
3. Shifting Cultivation, Eradication and Poverty Reduction Programme

<table>
<thead>
<tr>
<th>Objective</th>
<th>This project is aiming to manage sustainable integrated farming.</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Project Description</th>
<th>Kalum District is high land, situated at 800-1,000 m from the sea level, having a large surface of land with annual average temperature of 20-35 degree Celsius, 60 - 80% of humidity, precipitation of 1,000-1,200 mm. local people's having almost cultivation skills with a low annual harvest. In this area soil erosion significantly occurs. The local people are lacking of skills in integration crop plantation.</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Proposed activities</th>
<th>1. Socio economic data Collection of Villages</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2. Land survey and production groups establishment</td>
</tr>
<tr>
<td></td>
<td>3. Agriculture Inputs Provision Seeds, Fertilizers, equipments</td>
</tr>
<tr>
<td></td>
<td>5. Planting</td>
</tr>
<tr>
<td></td>
<td>6. Project monitoring</td>
</tr>
<tr>
<td></td>
<td>7. Project evaluation</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>What is the Investment cost for the sub-project?</th>
<th>Soci - economic data collection = 5.000 $</th>
</tr>
</thead>
</table>

2. Land survey and production group establishment = 5.000 $  
3. Agr. Input provision = 200.000$  
4. Farmers training = 7.000$  
5. Planting = 10.000$  
6. Monitoring = 10.000$  
7. Evaluation = 5.000$  
8. Field facilities = 5.000$  
9. Office facilities = 10.000$  
10. Project Supporting transport = 100.000$  

Grand Total = 357.000$

<table>
<thead>
<tr>
<th>What is the average annual value of the expected outputs?</th>
</tr>
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<tbody>
<tr>
<td>Year 3 = 100.000$</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>What is the expected number of beneficiaries?</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. 500 families receiving techniques and incomes</td>
</tr>
<tr>
<td>2. Government having economical data and generate exports</td>
</tr>
<tr>
<td>3. Government staff trained and having technical skills</td>
</tr>
</tbody>
</table>

**Potential environmental benefits:**  
1. Stop Shifting cultivation, Forest rehabilitated  
2. Soil Erosion protection, fertile soil protection.  
3. Prevent air pollution, fresh air.  
4. Rehabilitation of sustainable upstream water resources

**Potential negative environmental impacts?**  
Neglected negative impact on environment

**Time schedule, budget request** [short text]  
Project starting from: 2008-2013  
Project cost needed 362.200 $

**Government Budget Contribution.**  
Government Contribution : 5.000$

**Private sector Budget contribution.**
Private sector: 0 %

Contact Info (preferably name and e-mail):

1. Mr. Bounmy Chitpanya  tel: 020 5538 699
2. Mr. Khamty Silarongsa  tel: 020 9837 120
3. Mr. Sounthone Phimmavongsa  tel: 020 6900 782
4. Mr. Banxa Keomek  tel: 020 5638 689
Sub-Project 2

Work Plan:
Coffee Growing Extension in Kalum District

Area: 500 Ha

Donor: ADB
### Proposal from [organisation]

Agriculture Section [Department of Agriculture and Forestry of Sekong Province]

#### Project name [short]

Coffee Growing Extension in Kalum District

#### Summary description [2 sentences]

Coffee Growing project is to satisfy commodity production, aiming to generate income of the people, uplifting their livelihood and sustainable jobs creation in highland areas.

#### Links to poverty reduction [short text]

This project will strengthen and technical capacity building of local people, who could increase family incomes by selling out their production, which leads to eradicate poverty.

#### To which of the Government's 11 Goals does the sub-project contribute? [short text]

This could contribute to the 11 government programmes:

1. Human Capital Development Programme
2. Integrated Agriculture Development Programme
3. Shifting Cultivation Eradication and poverty Reduction Programme

#### Objective [one sentence]

Providing extension of coffee growing to people for export

#### Project Description [somewhat longer text]

Kalum District is high land, sisted at 800-1,000 m from the sealevel, having a large surface of land with annual average temperature of 20-35 degree calsia, 50 - 60% of humidity, precipitation of 1,000-1,200 mm. local people's having almost cultivation skills with a low annual harvest. In this area soil erosion significantly occurs. The local people are lacking of skills in integration crop plantation.

#### Proposed activities

1. Socia economic data Collection of Villeges
2. Land survey and production groups establishment
3. Agriculture Inputs Provision Seeds, Fertilizers, equipments
4. Farmer technical Training
5. Planting
6. Project monitoring
7. Project evaluation

#### What is the Investment cost for the sub-project? [short text]

<table>
<thead>
<tr>
<th>Activity</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Socio - economic data collection</td>
<td>$5,000</td>
</tr>
<tr>
<td>2. Land survey and production group establishment</td>
<td>$5,000</td>
</tr>
<tr>
<td>3. Agr. Input provision</td>
<td>$300,000</td>
</tr>
<tr>
<td>No.</td>
<td>Activity</td>
</tr>
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<td>-----</td>
<td>---------------------------------</td>
</tr>
<tr>
<td>4.</td>
<td>Farmers training</td>
</tr>
<tr>
<td>5.</td>
<td>Planting</td>
</tr>
<tr>
<td>6.</td>
<td>Monitoring</td>
</tr>
<tr>
<td>7.</td>
<td>Evaluation</td>
</tr>
<tr>
<td>8.</td>
<td>Field facilities</td>
</tr>
<tr>
<td>9.</td>
<td>Office facilities</td>
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<tr>
<td>10.</td>
<td>Project Supporting transport</td>
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<tr>
<td></td>
<td><strong>Grand Total</strong></td>
</tr>
</tbody>
</table>

**What is the average annual value of the expected outputs?**
- Year 3 = 300,000$
- Year 4 = 300,000$
- Year 5 = 300,000$
- Year 6 = 300,000$
- Year 7 = 300,000$
- Year 8 = 300,000$
- Year 9 = 300,000$
- Total 7 years = 2,100,000$

**What is the expected number of beneficiaries?**
1. 500 families recieving techniques and incomes
2. Government having economical data and generate exports
3. Government staff trained and having technical skills

**Potential environmental benefits**
1. Stop Shifting cultivation, Forest rehabilitated
2. Soil Erosion protection, fertiled soil protection.
3. Prevent air pollution, Fash air.
4. Rehabilitation of sustainable upstream water resources

**Potential negative environmental impacts?**
Neglected negative impact on environment

**Time schedule, budget request [short text]**
Project starting from: 2008-2013
Project cost needed 472,000 $

**Government Budget Contribution.**
Government Contribution 5,000$

**Private sector Budget contribution.**
Private sector: 10,000 $
Contact Info (preferably name and e-mail):

1. Mr. Bounmy Chitpanya  tel: 020 5538 699
2. Mr. Khamty Silarongs  tel: 020 9837 120
3. Mr. Sounthone Phimmavongsa  tel: 020 6900 782
4. Mr. Banxa Keomek  tel: 020 5638 689
Sub-Project 3

Work Plan:
Coffee Growing Extension in Dakchung District

Area: 1.000 Ha

Donor: ADB
**ADB TA 4843 Agriculture and Natural Resources Sector Needs Assessment**

**ADB TA 4843 (LAO) ANR Sector Needs Assessment**

**Sub-Project identification Questionnaire**

One page, please

<table>
<thead>
<tr>
<th>Proposal from</th>
<th>[organisation]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agriculture Section</td>
<td>[Department of Agriculture and Forestry of Sekong Province]</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Project name</th>
<th>[short]</th>
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<tbody>
<tr>
<td>Coffee Growing Extension in Dakchung District</td>
<td></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Summary description</th>
<th>[2 sentences]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coffee Growing project is to satisfy commodity production, aiming to generate income of the people, up lifting their livelihood and sustainable jobs creation in highland areas.</td>
<td></td>
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</table>

<table>
<thead>
<tr>
<th>Links to poverty reduction</th>
<th>[short text]</th>
</tr>
</thead>
<tbody>
<tr>
<td>This project will strengthen and technical capacity building of local people, who could increase family incomes by selling out their production, which leads to eradicate poverty.</td>
<td></td>
</tr>
</tbody>
</table>

**To which of the Government's 11 Goals does the sub-project contribute?** [short text]

This could contribute to the 11 government programmes:

1. Human Capital Development Programme
2. Integrated Agriculture Development Programme
3. Shifting Cultivation Eradication and poverty Reduction Programme

<table>
<thead>
<tr>
<th>Objective</th>
<th>[one sentence]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Providing extension of coffee growing to people for export</td>
<td></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Project Description</th>
<th>[somewhat longer text]</th>
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<tbody>
<tr>
<td>Dakchung District is high land, situated at 1,200 - 1,500 m from the sealevel, having a large surface of land with annual average temperature of 8 - 25 degree calsia, 60 - 80% of humidity, precipitation of 1,300-1,500 mm. local people's having almost cultiration skills with a low annual harvest. In this area soil erosion significantly occurs. The local people are lacking of skills in integration crop plantation.</td>
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</table>

<table>
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<tr>
<td>4. Farmer technical Training</td>
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<tr>
<td>7. Project evaluation</td>
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<table>
<thead>
<tr>
<th>What is the Investment cost for the sub-project?</th>
<th>[short text]</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Socio - economic data collection = 5.000 $</td>
<td></td>
</tr>
<tr>
<td>2. Land survey and production group establishment = 5.000 $</td>
<td></td>
</tr>
<tr>
<td>3. Agr. Input provision = 600.000$</td>
<td></td>
</tr>
<tr>
<td>4. Farmers training = 7.000$</td>
<td></td>
</tr>
</tbody>
</table>

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5. Planting = 10.000$
6. Monitoring = 10.000$
7. Evaluation = 5.000$
8. Field facilities = 5.000$
9. Office facilities = 10.000$
10. Project Supporting transport = 100.000$

Grand Total = 757.000$

What is the average annual value of the expected outputs?

Year 3 = 500.000$
Year 4 = 500.000$
Year 5 = 500.000$
Year 6 = 500.000$
Year 7 = 500.000$
Year 8 = 500.000$
Year 9 = 500.000$

Total 7 years = 3.500.000$

What is the expected number of beneficiaries?
1. 1000 families recaving techniques and incomes
2. Government having economical data and generate exports
3. Government staff trained and having technical skills

Potential environmental benefits:
1. Stop Shifting cultivation, Forest rehabilitated
2. Soil erosion protection, fertilized soil protection.
3. Prevent air pollution, Fash air.
4. Rehabilitation of sustainable upstream water resources

Potential negative environmental impacts?
Neglected negative impact on environment

Time schedule, budget request [short text]
Project starting from: 2008-2013
Project cost needed 772.000 $

Government Budget Contribution.
Government Contribution 5.000$

Private sector Budget contribution.
Private sector: 10.000 $
ADB TA 4843 Agriculture and Natural Resources Sector Needs Assessment

Contact Info (preferably name and e-mail):

1. Mr. Bounmy Chitpanya tel: 020 5538 699
2. Mr. Khamty Silarongsa tel: 020 9837 120
3. Mr. Sounthone Phimmavongsa tel: 020 6900 782
4. Mr. Banxa Keomek tel: 020 5638 689
Sekong Province
Agriculture Division PAFO
No: 34/AD-08
Date 29 FEB 2008

Sub-Project 4

Work Plan:
Integrated form Management in Dakchung District

Area: 500 Ha

Donor: ADB
### Sub-Project identification Questionnaire

One page, please

**Proposal from** [organisation]

Agriculture Section [Department of Agriculture and Forestry of Sekong Province]

**Project name** [short]

Integrated Farm Management In Dakchung District

**Summary description** [2 sentences]

The project is to sustain Food Production, which will generate incomes and create sustainable jobs for highland living communities

**Links to poverty reduction** [short text]

This project will strengthen and technical capacity building of local people, who could increase family incomes by selling out their production, which leads to eradicate poverty.

**To which of the Government’s 11 Goals does the sub-project contribute?** [short text]

This could contribute to the 11 government programmes:

1. Human Capital Development Programme
2. Integrated Agriculture Development Programme
3. Shifting Cultivation Eradication and poverty Reduction Programme

**Objective** [one sentence]

This project is aiming to manage sustainable integrated farming.

**Project Description** [somewhat longer text]

Dakchung District is high land, situated at 1,200-1,500 m from the sealevel, having a large surface of land with annual average temperature of 8 - 25 degree celsius, 60 - 80% of humidity, precipitation of 1,300 - 1,500 mm. local people’s having almost cultivation skills with a low annual harvest. In this area soil erosion significantly occurs. The local people are lacking of skills in integration crop plantation.

**Proposed activities**

1. Socio-economic data Collection of Villages
2. Land survey and production groups establishment
3. Agriculture Inputs Provision Seeds, Fertilizers, equipments
4. Farmer technical Training
5. Planting
6. Project monitoring
7. Project evaluation

**What is the Investment cost for the sub-project?** [short text]

1. Socio - economic data collection = 5,000 $
2. Land survey and production group establishment = 5,000 $
3. Agr. Input provision = 200,000$
4. Farmers training = 7,000$
5. Planting = 10,000$
6. Monitoring = 10,000$
7. Evaluation = 5,000$
8. Field facilities = 5,000$
9. Office facilities = 10,000$
10. Project Supporting transport = 100.000$  
   Grand Total = 357.000$  

**What is the average annual value of the expected outputs?**  
Year 3 = 100.000$  
Year 4 = 100.000$  
Year 5 = 100.000$  
Year 6 = 100.000$  
Year 7 = 100.000$  
Year 8 = 100.000$  
Year 9 = 100.000$  
Total 7 years = 700.000$  

**What is the expected number of beneficiaries?**  
1. 500 families receiving techniques and incomes  
2. Government having economical data and generate exports  
3. Government staff trained and having technical skills  

**Potential environmental benefits:**  
1. Stop Shifting cultivation, Forest rehabilitated  
2. Soil Erosion protection, fertilized soil protection.  
3. Prevent air pollution, Fresh air.  
4. Rehabilitation of sustainable upstream water resources  

**Potential negative environmental impacts?**  
Neglected negative impact on environment  

**Time schedule, budget request** [short text]  
Project starting from: 2008-2013  
Project cost needed 362.200 $  

**Government Budget Contribution.**  
Government Contribution 5.000$  

**Private sector Budget contribution.**  
Private sector: 0 %  

Contact Info (preferably name and e-mail):  
1. Mr. Bounmy Chitpanya tel: 020 5538 699  
2. Mr. Khamty Silarongsa tel: 020 9837 120  
3. Mr. Sounthone Phimmavongsa tel: 020 6900 782  
4. Mr. Banxa Keomek tel: 020 5638 689
Sekong Province
Agriculture Division PAFO

No: 37/AD-08
Date 29

FEB 2008

Sub-Project 5

Work Plan:
Land Clearing in Lamam District

Area: 1000 Ha

Donor: ADB
**Proposal from** [organisation]

**Agriculture Section [Department of Agriculture and Forestry of Sekong Province]**

**Project name** [short]

**Land Clearing in Lamam District**

**Summary description** [2 sentences]

This project is to establish infrastructure for sustainable food production, uplifting people livelihood and sustainable job creation.

**Links to poverty reduction** [short text]

This project will strengthen and technical capacity building of local people, who could increase family incomes by selling out their production, which leads to eradicate poverty.

**To which of the Government's 11 Goals does the sub-project contribute?** [short text]

This could contribute to the 11 government programmes:

1. Human Capital Development Programme
2. Integrated Agriculture Development Programme
3. Shifting Cultivation Eradication and Poverty Reduction Programme

**Objective** [one sentence]

Aiming to sustain integrated agriculture land allocation.

**Project Description** [somewhat longer text]

Kalum District is high land, situated at 200 - 500 m from the sea-level, having a large surface of land with annual average temperature of 25 - 35 degree celsius, 60 - 70% of humidity, precipitation of 1,300 - 1,500 mm. local people's having almost cultivation skills with a low annual harvest. In this area soil erosion significantly occurs. The local people are lacking of skills in integration crop plantation.

**Proposed activities**

1. Socio-economic data Collection of Villages
2. Survey of area
3. Clearing land for making ricefieds
4. Project monitoring
5. Project evolution

**What is the Investment cost for the sub-project?** [short text]

1. Socio - economic data collection = 5,000 $
2. Survey of area = 5,000 $
3. Clearing land for making ricefieds = 1,000,000$
4. Project monitoring = 5,000$
5. Project evolution = 10,000$
6. Office facilities = 10,000$
What is the average annual value of the expected outputs?
People having ricefieds, which will be their family assets for generations

What is the expected number of beneficiaries?
1. 1000 families recaving techniques and incomes
2. Having basic data enough food and able export
3. Government staff trained and having technical skills

Potential environmental benefits:
1. Stop Shifting cultivation, Forest rehabilitated
2. Soil Erosion protection, fertile soil protection.
3. Prevent air pollution, Fresh air. (from burning vegetation)
4. Rehabilitation of sustainable upstream water resources

Potential negative environmental impacts?
Neglected negative impact on environment

Time schedule, budget request [short text]
Project starting from: 2008-2013
Project cost needed 1.040.000 $

Government Budget Contribution.
Government Contribution 5.000$

Private sector Budget contribution.
Private sector: 0 $

Contact Info (preferably name and e-mail):
1. Mr. Bounmy Chitpanya tel: 020 5538 699
2. Mr. Khamty Silarongs a tel: 020 9837 120
3. Mr. Sounthone Phimmavongsa tel: 020 6900 782
4. Mr. Banxa Keomek tel: 020 5638 689
Sekong Province
Division of Public Works and Transport
No: 348/PPW

Sub-Project Proposal 6

Name: Road Building linking Mo Village – Tok Saming Village

Project Type: Building Red Ground Road

Location: Provincial Division of Public Works and Transport

Project Cost : 250,000$

Duration: 2008 – 2009

Sekong, date 31/3/2008
### Proposal From (organization):

Division of Public works and Transport

### Project name (short):

Road building linking Mo Village – Toksaming Village

### Summary description (2 Sentences):

Rehabilitate and improve existing earth road accessible for only one season to be red earth road and able to be used round year.

### Links to Poverty reduction (short text):

This is aiming to facilitate faster and easier circulation and transport in the area. More and fast access to markets, as well as access to hospital in case of emergency. Local people will have more chances to transport their production to neighboring markets in time, which could be improving their lively – hood and provide them more incentives to produce goods. Besides that the social – cultural development in various sectors could be taking place such as education, sanitation and marketing. This project will be linking group of villages together like Mo village, Phia village, Tok village, Norht and South Chung villages, Houei Le village, Small and Big Thon villages of Lamam District.

### To which of the government's 11 Goals does the Sub-Project Contribute (short text):

This project will be contributing to the 11 programmes of 111 project of the Government, Which is belonging to the 8 programmes of Public Works and Transport sectors in poverty reduction of the remote area communities.

### Objectives (one sentence):

This is to improve communication and transport network to be assured in two seasons.

### Project Description (some what longer text):

This road was already passing through villages for years during the war time. The road was used as way of weapons transportation of army and now days has been seriously damaged and eroded.

### Proposed Activities:

1. Clearing bad earth surface of the road.
2. Filling up base layer with new earth.
3. Filling up second layer with constructed earth.
4. Filling up upper layer.
5. Building road sides drainage canals.
7. Building one 24m long iron-concrete bridge.

### What is the investment Cost for the Sub – Project? (short text):

Project cost Needed fund for improvement of the road about 250,000$ including:
1. Clearing bad earth surface of the road: 7,300 $  
2. Filling up base larger with new earth: 21,900 $  
3. Filling up second layer with constructed earth: 43,800 $  
4. Filling up upper layer: 58,400 $  
5. Building road sides drainage canals: 14,600 $  
6. Building drainage: 35,000 $  
7. Building one 24m bridge: 69,000 $  

What is the average annual Value of the expected outputs?

After rehabilitation the road will provide:

1. Communication and public transport will be 2 seasonally accessible
2. Open the area for development action by having new technologies, the area more accessible and helping uplifting the people livelihood.

What is the expected number of beneficiaries?

People of 8 villages: Mo, Phiamay, Tok, South and Nord Chung, Houei le , Small and Ton village of Laman District.

Potential environmental benefits:

Stopping people shifting cultivation by rice field planting and increasing family incomes.

Potential negative environmental impacts?

There is no impact on environment, because just rehabilitating and improving existing road.

Time schedule, budget request (short text)

1 year project and cost of USD 250,000

Government Budget Contribution USD 75,000

Private sector Budget Contribution: None

Contract information (preferably name and e-mail)

1. Mr. Khounma Xayasane, Director of Public Works and Transport Division. Tel: 020 9937155
2. Mr. Soutsana Sihavong, Deputy Director of Provincial Public Works and Transport Division. Tel: 020 -037526
3. Mr. Thongthep Souligno, Deputy Director of Provincial Public works and Transport Division. Tel: 020 2296677
4. Mr. Thongsouk Phosixiangmay, Provincial PWT Planning Division. Tel: 020 5315511

E-Mail: w.a noumay@yahoo.com
Sekong Province
Division of Public Works and Transport
No: 349/PPW

Sub-Project Proposal 7

Name: Road Building linking Duk Lan Village – Tok Ongkeo Village

Project Type: Building Red Ground Road

Location: Provincial Division of Public Works and Transport

Project Cost: 255,000$

Duration: 2008 – 2009

Sekong, date 31/3/2008
**Proposal From** (organization):
Division of Public works and Transport

**Project name** (short):
Road building linking Duk Lan Village – Tok Ongkeo Village

**Summary description** (2 Sentences):
Rehabilitate and improve existing earth road accessible for only one season to be red earth road and able to be used round year.

**Links to Poverty reduction** (short text):
This is aiming to facilitate faster and easier circulation and transport in the area. More and fast access to markets, as well as access to hospital in case of emergency. Local people will have more chances to transport their production to neighboring markets in time, which could be improving their lively – hood and provide them more incentives to produce goods. Besides that the social – cultural development in various sectors could be taking place such as education, sanitation and marketing. This project will be linking group of 7 villages together like Duk Pok village, Duk Lan village, Ta Oun village, Naveu villages, Tok village, Pahung villages and Pa Lay village of Lamam District.

**To which of the government's 11 Goals does the Sub-Project Contribute** (short text): This project will be contributing to the 11 programmes of 111 project of the Government, Which is belonging to the 8 programmes of Public Works and Transport sectors in poverty reduction of the remote area communities.

**Objectives** (one sentence):
This is to improve communication and transport network to be assured in two seasons.

**Project Description** (some what longer text):
This road named road of 3 nations, was already passing through villages for years during the war time. The road was used as way of weapons transportation of army and now days has been seriously damaged and eroded and not possible used in rainy season, which cut out the villages of the area from the others and from hospitals.

**Potential negative environmental impacts**?
There is no impact on environment, because just rehabilitating and improving existing road.

**Proposed Activities:**
1. Clearing bad earth surface of the road.
2. Filling up base layer with new earth.
3. Filling up second layer with constructed earth.
4. Filling up upper layer.
5. Building road sides drainage canals
6. Building drainage
7. Building a cross road canal.

What is the investment Cost for the Sub – Project? ( short text )
Project cost Needed fund for improvement of the road about 255,000$ including:

1. Clearing bad earth surface of the road : 8,750 $
2. Filling up base larger with new earth: 26,250 $
3. Filling up second layer with constructed earth: 43,750 $
4. Filling up upper layer: 61,250 $
5. Building road sides drainage canals: 17,500 $
6. Building drainage: 17,500 $
7. Building a cross road canal. : 80,000 $

What is the average annual Value of the expected outputs?
After rehabilitation the road will provide:

1. Communication and public transport will be 2 seasonally accessible
2. Open the area for development action by having new technologies, the area more accessible and helping uplifting the people lively-hood.

What is the expected number of beneficiaries?
People of 7 villages: Duk Pok village, Duk Lan village, Ta Oun village, Naveu villages, Tok village, Pahung villages and Pa Lay village of Lamam District.

Potential environmental benefits:
Stopping people shifting cultivation by rice field planting and increasing family incomes.

Potential negative environmental impacts?
There is no impact on environment, because just rehabilitating and improving existing road.

Time schedule, budget request ( short text )
1 year project and cost of USD 255,000

Government Budget Contribution USD 38,250
Private sector Budget Contribution: None

Contact information ( preferably name and e-mail)
5. Mr. Khounma Xayasane , Director of Public Works and Transport Division. Tel: 020 9937155
6. Mr. Soutsana Sihavong, Deputy Director of Provincial Public Works and Transport Division. Tel: 020 -037526
7. Mr. Thongthep Souligno, Deputy Director of Provincial Public works and Transport Division. Tel: 020 2296677
8. Mr. Thongsouk Phosixiangmay , Provincial PWT Planning Division. Tel: 020 5315511
E-Mail: w.a noumay@yahoo.com
Sekong Province
Division of Public Works and Transport
No: 350/PPW

Sub-Project Proposal 8

Name: Road Building linking New Chakam Village – Vang Village

Project Type: Building Red Ground Road

Location: Provincial Division of Public Works and Transport

Project Cost: 244,000$

Duration: 2008 – 2009

Sekong, date 31/3/2008
Proposal From (organization):

| Division of Public works and Transport |

Project name (short):

| Road building linking New Chakam Village – Vang Village |

Summary description (2 Sentences):

Rehabilitate and improve existing earth road accessible for only one season to be red earth road and able to be used round year.

Links to Poverty reduction (short text):

This is aiming to facilitate faster and easier circulation and transport in the area. More and fast access to markets, as well as access to hospital in case of emergency. Local people will have more chances to transport their production to neighboring markets in time, which could be improving their lively – hood and provide them more incentives to produce goods. Besides that the social – cultural development in various sectors could be taking place such as education, sanitation and marketing. This project will be linking group of 5villages together like Vang village, Chakamlit village, New Chakam village, Kamkok villages, Chakam village of Thateng District.

To which of the government’s 11 Goals does the Sub-Project Contribute (short text): This project will be contributing to the 11 programmes of 111 project of the Government, Which is belonging to the 8 programmes of Public Works and Transport sectors in poverty reduction of the remote area communities.

Objectives (one sentence):

This is to improve communication and transport network to be assured in two seasons.

Project Description (some what longer text):

This natural earth type road was built in the past and passing through villages for years. Now days it has been seriously damaged and eroded.

Proposed Activities:

1. Clearing bad earth surface of the road.
2. Filling up base layer with new earth.
3. Filling up second layer with constructed earth.
4. Filling up upper layer.
5. Building road sides drainage canals
6. Building 4 drainages
7. Building a 24m long bridge.

What is the investment Cost for the Sub – Project? (short text)

<table>
<thead>
<tr>
<th>Project cost Needed fund for improvement of the road about 244,000$ including:</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Clearing bad earth surface of the road :</td>
</tr>
<tr>
<td>2. Filling up base larger with new earth:</td>
</tr>
</tbody>
</table>
3. Filling up second layer with constructed earth: 43,750 $  
4. Filling up upper layer: 61,250 $  
5. Building road sides drainage canals: 17,500 $  
6. Building 4 drainages: 17,500 $  
7. Building one 24m long bridge: 69,000 $  

What is the average annual Value of the expected outputs?  
After rehabilitation the road will provide:  
1. Communication and public transport will be 2 seasonally accessible  
2. Open the area for development action by having new technologies, the area more accessible and helping uplifting the people lively-hood.  

What is the expected number of beneficiaries?  
People of 5 villages: Vang village, Chakamlit village, New Chakam village, Kamkok villages, Chakam village of Thateng District  

Potential environmental benefits:  
Stopping people shifting cultivation by rice field planting and increasing family incomes.  

Potential negative environmental impacts?  
There is no impact on environment, because just rehabilitating and improving existing road.  

Time schedule, budget request (short text)  
1 year project and cost of USD 244,000  
Government Budget Contribution USD 36,600  
Private sector Budget Contribution: None  

Contract information (preferably name and e-mail)  
9. Mr. Khounma Xayasane, Director of Public Works and Transport Division. Tel: 020 9937155  
10. Mr. Soutsana Sihavong, Deputy Director of Provincial Public Works and Transport Division. Tel: 020 -037526  
11. Mr. Thongthep Souligno, Deputy Director of Provincial Public Works and Transport Division. Tel: 020 2296677  
12. Mr. Thongsouk Phosixiangmay, Provincial PWT Planning Division. Tel: 020 5315511  
E-Mail: w.a noumay@yahoo.com
Lao People’s Democratic Republic
Peace Independence Democracy Unity Prosperity

Sekong Province
Division of Public Works and Transport
No: 351/PPW

Sub-Project Proposal 9

Name: Road Building linking Phon Village – Songkhone Village

Project Type: Building Red Ground Road

Location: Provincial Division of Public Works and Transport

Project Cost: $112,000

Duration: 2008 – 2009

Sekong, date 31/3/2008
### Proposal From (organization):

Division of Public works and Transport

### Project name (short):

Road building linking Phone Village – Songkhone Village

### Summary description (2 Sentences):

Rehabilitate and improve existing earth road accessible for only one season to be red earth road and able to be used round year.

### Links to Poverty reduction (short text):

This is aiming to facilitate faster and easier circulation and transport in the area. More and fast access to markets, as well as access to hospital in case of emergency. Local people will have more chances to transport their production to neighboring markets in time, which could be improving their lively–hood and provide them more incentives to produce goods. Besides that the social – cultural development in various sectors could be taking place such as education, sanitation and marketing. This project will be linking group of 11 villages together like Phone village, Nongbong village, Tat Noy village, Nong Va village, Nava village, Kenglouang Village, Nangyong, Houeipoune, Pakayong, songkhone, Tampoak, Tanum of La Mam District.

To which of the government's 11 Goals does the Sub-Project Contribute (short text):

This project will be contributing to the 11 programmes of 111 project of the Government, Which is belonging to the 8 programmes of Public Works and Transport sectors in poverty reduction of the remote area communities.

### Objectives (one sentence):

This is to improve communication and transport network to be assured in two seasons.

### Project Description (some what longer text):

This road named road 7501, was already passing through villages for years during the war time. The road was used as way of weapons transportation of army and now days has been seriously damaged and eroded and not possible used in rainy season, which cut out the villages of the area from the others and from hospitals.

### Proposed Activities:

1. Clearing bad earth surface of the road.
2. Filling up base layer with new earth.
3. Filling up second layer with constructed earth.
4. Filling up upper layer.
5. Building road sides drainage canals

### What is the investment Cost for the Sub – Project? (short text)

Project cost Needed fund for improvement of the road about 112,000 including:

1. Clearing bad earth surface of the road: 5,600 $
2. Filling up base larger with new earth: 16,000 $ 
3. Filling up second layer with constructed earth: 28,000 $ 
4. Filling up upper layer: 39,200 $ 
5. Building road sides drainage canals: 11,200 $ 
6. Building drainages: 11,200 $ 

What is the average annual Value of the expected outputs?

After rehabilitation the road will provide:
1. Communication and public transport will be seasonally accessible.
2. Open the area for development action by having new technologies, the area more accessible and helping uplifting the people lively-hood.

What is the expected number of beneficiaries?
People of 11 villages: Phone village, Nongbong village, Tat Noy village, Nong Va village, Nava village, Kenglouang Village, Nangyong, Houeipoune, Pakayong, songkhone, Tampoak, Tanum of La Mam District.

Potential environmental benefits:
Stopping people shifting cultivation by rice field planting and increasing family incomes.

Potential negative environmental impacts?
There is no impact on environment, because just rehabilitating and improving existing road.

Time schedule, budget request (short text)
1 year project and cost of USD 112,000

Government Budget Contribution USD 16,800

Private sector Budget Contribution: None

Contract information (preferably name and e-mail)

7. Mr. Khounma Xayasane, Director of Public Works and Transport Division. Tel: 020 9937155
8. Mr. Soutsana Sihavong, Deputy Director of Provincial Public Works and Transport Division. Tel: 020 037526
9. Mr. Thongthep Souligno, Deputy Director of Provincial Public works and Transport Division. Tel: 020 2296677
10. Mr. Thongsouk Phosixiangmay, Provincial PWT Planning Division. Tel: 020 5315511

E-Mail: w.a noumay@yahoo.com
**Proposed Integrated Forest-based Rural development sub-project for four Districts**

**Introduction:**

A core sub-project is intended to provide investment within the sector that will contribute to sector development and can be used as a model for the preparation of other sub-projects developed during project implementation. The core sub-project provides full details of the intended investment and is appraised for technical, financial and economic feasibility together with a social and environmental impact assessment.

About 85% of the land area of the five southern Provinces is classified as forest land, although more than 30% (2 million ha.) is classified as "un-stocked". The Report on the Assessment of Forest Cover and Land-use 1992-2002, (Assessment) which is the main official data source classifies the forest according to forest type and condition rather than function. The data provided by the Provinces on forest areas gives the functions rather than the type or condition, and so it is impossible to relate the two data sources. A total of about 1.7 million ha or 48% of the five provinces' area is designated as National Protected Areas (NPA) formerly NBCAs which gives an indication of the importance attached to the forests in this region. These forests have been defined on the basis that they contain nationally and locally important areas of biodiversity. There are also important areas of production forest and protection forest as well as locally important spiritual and cultural forest. Review of recent satellite imagery shows that there is extensive encroachment within all the NPAs and other areas designated as Production or protection forest. The encroachment includes roads and villages well inside the mapped boundaries so that a substantial proportion of the "un-stocked" forest is actually within forest recorded by the Provinces as production, protection or conservation forest. As a result the products and services that these forests are expected to contribute to provincial and national GDP are **well below** the potential suggested by the areas involved.

The government policy as set out in the Forestry Strategy 2020 is to increase forest cover substantially over the coming years, and this includes a target to establish around 500,000ha of industrial plantations. Current commitments by three major investors will, if realised, result in about 120,000ha or about 25% of the target, and so there is an urgent need to identify suitable land and support further investment. Forest and forest products have been a major source of revenue in the past, but the sub-sector is in decline and sustainable production levels from the natural forest are now very low and are likely to have an accelerating decline due to illegal logging which is rapidly eroding the growing stock. Despite Lao PDR’s comparative advantage regarding timber and forest products, having been well endowed with natural forest in the past, having a low population density and being strategically located in the centre of a region with a huge demand for forest products, the country now benefits very little from its forest resources. The destruction of forest in due to illegal logging and shifting cultivation has caused huge emissions of CO₂ in the past few decades, so that the per capita emissions from Lao PDR are higher than the global average\(^{59}\). There is therefore an urgent need to reverse the declining trends of

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\(^{59}\) The potential environmental impacts of global warming and climate change in the Greater Mekong Sub-region (GMS) by A.I.Fraser, 2007, Report to the ADB Environmental Operations Centre, Bangkok.
the past and restore the sub-sector to a condition where it can make a contribution to the national economy more consistent with its potential.

**Background**

Savannakhet province has a total area of about 2.1 million ha of which, according to the provincial authorities about 690,000 is permanent forest and 366,000 ha is currently agricultural land, of which about a half is rain-fed rice paddy. These figures are quite different from the “Assessment”. About a half of the remaining 1 million ha is considered by the province to be grazing land. Applications for concessions have been made by 20 companies to date, of which 9 concessions have been approved. The total area requested by all these companies amounts to more than 160,000 ha. Experience by Aditya Birla, who need 50,000 ha for their plantations, is that about 20% of their concession area is available and suitable for their purposes after survey and consultation with villagers. The remaining 80% is either claimed by villagers and used for crops or grazing or is still forest that may not be cleared. This would suggest that current concessions will require a gross area of about 800,000 ha to find sufficient land to meet their requirements, which represents all the uncommitted land in the province and may include some land currently used for grazing. There would therefore seem to be little prospect for any additional concessions to be awarded.

In the provinces of Savannakhet and Salavan the World Bank/Ministry for Foreign Affairs Finland funded SUFORD (Sustainable FOrest management and Rural Development) project has been implemented in Production forest areas since 2005. In the same provinces the multi-national company Stora-Enso began piloting the identification and preparation of land for a major tree plantation project in 2007. They have identified a large area in the eastern part of Savannakhet and Salavan provinces along the old Ho Chi Minh trail that was formerly forest but through a combination of bombing, logging and shifting cultivation has been reduced to an almost treeless landscape.

The area stretching from Road 9 near Sepon in the north, through Sepon and Nong Districts in Savannakhet Province to Road 15 and Xe Sap NPA in the south in Ta Oy and Samouay Districts in Salavan Province, and between Don Phouvieng NPA in the west to the Vietnam border in the east, covers an area of around 250,000 ha. of rolling uplands formerly covered with lower or upper mixed deciduous forest according to the Forest Department definition. Within this area it is estimated that there are currently around 150 villages, with a further 40 villages within or on the boundaries of the two NPAs. The total population of all these villages, estimated from baseline studies conducted by the company is around 50,000 persons. (This is a population density of around 20 persons/km² compared with 39.7 persons/km² for the province as a whole)

[insert location map]

Road 9 is the backbone of the GMS East-West Economic Corridor (EWEC), and is already stimulating a wide range of economic development as well as cross-border traffic between Thailand, Lao PDR and Vietnam which is benefiting the villages along Road 9. In Ta Oy and Samouay Districts, Salavan Province, the Road 15 is in process of being upgraded and within a few years will connect across the border to the major Vietnam port city of Da Nang, thus putting Ta Oy also in a strategic location. The availability of water resources, electric power, good road access, and large areas of industrial and smallholder tree plantations in close proximity makes Ta
Oy an potential location for the development of a major integrated wood processing industry within the next 5-10 years, that could include pulp, MDF, sawmilling and furniture manufacture. There are already companies which have seen the potential and are interested in such possibilities.

The Storaenso company is in the process of establishing about 2000 ha of pilot plantations and plans to establish up to about 35,000 ha of company plantations and would like to support an additional 15,000 ha of smallholders plantations by about 2016. A major aspect of the work is the need to clear large quantities of unexploded ordinance (UXO) before any tree planting can begin. During the pilot stage the company has developed, in close consultation with the National Land Management Authority (NMLA), procedures for participatory land-zoning and mapping of village land, in order to determine and agree which, and how much land may be suitable and used for plantations, after agreeing with the villagers the land that is needed for agriculture and other purposes as well as important cultural forest remnants. The survey to date with 40 villages has shown that the villagers are willing and able to make available at least 25-30% of the land area in each village for plantations without adversely affecting their own production. The company is using an agro-forestry technique, with trees planted close together (1m) in rows widely spaced (10m) which allows crops to be grown between the trees during the first 2-3 years and then livestock grazing once the trees are tall enough.

The land that the company uses is cleared of UXO and cultivated so that the land between the trees is ideal for a range of crops. The land within each village that is to be used for plantations is divided into 7 blocks and one block is planted each year so that a rotation is maintained and there is always some land available for cropping. Local farmers are becoming increasingly interested in cropping between the trees, and the company is prepared to allocate each farmer a 100m stretch (1 ha.) for cropping. The villages vary in size and population, but on average have about 60 families. The average gross area for each village is around 800ha. of which the villagers use, on average about a half for shifting cultivation, and they have agreed to make up to about 30% or around 250 ha. per village available for plantations. On this basis the company will plant around 35 ha annually in each village and there is therefore enough land for about half the families to have 1 ha. for cultivation of crops.

Because the land is cleared of bombs it can be cultivated, and this is expected to result in a substantial increase in yields. At the moment the average yield of upland rice in the villages surveyed is about 0.5 tonnes per ha. which is well below the national average for upland rice, and results in severe rice deficits for most of the villagers. It is too early yet to tell conclusively, but the yield of rice is expected to double, which will not only reduce the food shortages, but will also reduce the area needed for shifting cultivation, so that eventually the villagers may be able to make more land available for commercial tree crops some or all of which can be smallholder plantations. The concentration of such plantations and the proximity to the company plantations guarantees a good market in the future.

The Dong Phouvieng NPA lies to the west of the area that the company proposes to plant, but it has been severely encroached with roads and several villages lying well within the boundary. It is necessary to review the boundary and decide how much of the encroached area can be restored sufficiently with indigenous tree species to create suitable habitat for the wildlife population, how much could be managed as a buffer zone and partially restored, and possibly how much should be excluded from the NPA and allowed to be used for productive purposes because it has been so heavily disturbed. To the North-East and South East along the border hills with Vietnam there are important areas of protection forest for the headwaters of many
streams and rivers that flow through Savannakhet province and are important sources of water supply. In Salavan Province, in the District of Samouay there is the Xe Sap NPA that covers mountainous terrain in the upper Sekong river basin. These forest areas are important both for the biodiversity that is present, being among the richest forests in the region, and for conservation of soil and water since many large hydro-power plants are proposed in the river.

**Outline design features.**

The development goals of the Ministry of Agriculture and Forestry are fourfold: food security, commercialisation of agriculture, stabilisation of shifting cultivation and sustainable forest management. The proposed sub-project would cover 4 Districts in Savannakhet and Salavan Provinces (Xepon, Nong, Ta Oy and Samouay) and will contribute significantly towards all of these goals. The four Districts are among the poorest in the South, and so the sub-project will also address the overall national goal of reducing poverty.

The company anticipate that by the time they have identified sufficient land for their own use they will have surveyed about 80-100 villages out of about 190 in the proposed project area within the four Districts. The remaining 90-110 villages, with a total population of about 30,000 people will not benefit directly from the company investment and support, and this will tend to create inequalities between villages that could lead to conflict in the future. A preliminary estimate indicates that there are about 40 villages that lie either inside NPAs or along the boundaries in the four Districts, suggesting that they are likely to depend heavily on the forest for their livelihoods. A few of the villages in Xepon District have already benefited from investment in about 20 km of road connected to Road 9, built by Belgium Technical Cooperation, small-scale irrigation schemes supported by food-for-work from WFP and a health program supported by the Poverty Reduction Fund. The remaining villages are in Nong, Ta Oy and Samouay Districts which are still inaccessible during the wet season.

Although many of the villages are in Salav en province, access to these villages is easier at present from Muang Nong in Savannakhet along the old Ho Chi Minh trail. None of the villages are benefitting from community development related to mineral extraction, as in neighbouring Vilabouly District. About 12 villages in Nong District lie along a subsidiary route of the Ho Chi Minh trail that is still usable but is difficult for vehicular access because of broken bridges and culverts. To improve access to these villages and enable them to participate in the project would require the upgrading of about 20km of road.

**Food security**

The villages surveyed to date by Stora-Enso have serious food security problems, with all families in most villages experiencing major food deficits during the wet season before harvest begins with the result that there is malnutrition and hence greater susceptibility to disease. A major contributory factor is the very low yield of upland rice, exacerbated by the lack of supplementary food from the forest in the form of meat and other plants, since most forest has been destroyed.

As discussed earlier, the agro-forestry system being adopted by the company allowing cultivation of rice or cassava in the strip between the tree rows will increase food production. If the farmers can be introduced to the “Mulch-based direct seeding zero tillage” system that has been tried successfully in a number of areas as well as
other food crops such as corn, and cassava and natural fibre crops that will produce
cash income, their livelihoods can be greatly improved.

**Commercialisation of agricultural and forest products**

The timber that will be grown in the plantations can be used for many purposes;
small roundwood can be used for pulp, but in the short-term would need to be
exported to Thailand, Vietnam or China, since there are no pulpmills in Lao PDR at
the present. This may change, but the stumpage value of pulpwod is relatively low
and does not maximise the value of the production. The trees that will be grown are
from genetically superior growing stock and therefore reach a sufficiently large size in
the seven years that they grow to produce some sawlogs that have much higher
value. There is also a possibility, as mentioned earlier, that by the time the first
plantations are ready for harvesting the construction of a plant to produce MDF or
other composite wood panel would be commercially viable in the vicinity. A
combination of sawn wood from both plantations and from sustainable harvesting of
the nearby natural production forests with composite wood panel products would
provide the basis for a furniture industry, that would add substantial value and
generate exports as well as supplying the expanding domestic market.

In addition to the traditional wood products the harvesting and marketing of NTFPs,
including bamboo, rattan, medicinal plants, resins and waxes etc. and charcoal can
be developed within the extended forest complex and provide income and improved
livelihoods for the Ethnic people that predominate in the area. These alternative
incomes will provide cash income to allow the purchase of food to alleviate the
deficits, and would also reduce the need to practice shifting cultivation. Charcoal is
an important commodity in the domestic market, and large quantities are sold along
Road 9. The traditional method of producing the charcoal in earth kilns is extremely
wasteful and so requires much larger inputs of both wood and labour than is
necessary. Conversion efficiency could be doubled or trebled by introducing mobile
steel kilns which would both help to conserve forest resources, increase incomes and
reduce carbon emissions.

The recently established Lao Natural Fibres Ltd. has plans to re-establish the
growing of a non-narcotic species of hemp traditionally used in the area, for the
production of cloth. The market for natural fibres is growing in Europe and North
America and the company has plans to grow around 5,000ha of hemp that would
provide raw material for the production of about 1,000m² of fabric monthly. This
cloth can either be exported or in due course be turned into clothes for export or sale
on the domestic market. The extraction of the fibre and the weaving will provide
additional employment and revive a local industry that died out 30-40 years ago.

A thriving forest complex with a mosaic of natural production forest, plantations,
NPAs and protection forest justifies improvement of access that will both bring direct
benefits to the local communities and will also facilitate the development of
ecotourism through improving access for visitors. There are many natural and historic
attractions in the area that can be surveyed and publicised with a view to inviting
tenders from a tourism company to develop ecotourism in the region. In due course
this will support the establishment of “homestays” and other accommodation as well
as eating establishments and will provide a ready market for handicrafts.

**Stabilisation of shifting cultivation and poverty reduction**

The communities in the area are predominantly from various ethnic groups and have
traditionally practised shifting cultivation. In some areas, secondary forest in the
Fallow land can be seen, but much has degraded so much that there is very little tree re-growth. For this reason the villagers favour cutting the better forest which is now often restricted to the steeper slopes and the more remote areas. The result is both an increased risk of soil erosion and a greater travelling time needed to reach the clearances. The company has been able to demonstrate that a combination of good site preparation and good planting stock can increase yields and this seems to be gradually convincing the communities that there are better ways to do things. The company is also employing significant numbers of daily paid labourers (men and women) and the income is enabling them to purchase rice and other essentials.

The agroforestry system adopted by the company works on a 7 year rotation, very similar to the traditional shifting cultivation, but the fertility can be maintained in a number of ways so that the cycle is sustainable, and the area does not need to be increased to compensate for declining yields.

**Sustainable forest management**

The SUFORD project has introduced the pre-requisites for sustainable forest management of production forest areas. This requires the delineation and demarcation of permanent forest management units, which then need to be inventoried so that the annual harvest can be matched with the growth and yield of the forest. The project has developed a benefit sharing arrangement so that some of the proceeds from the sale of logs go into village development funds to provide finance for essential small-scale infrastructure and other necessities.

At the present time there is no funding or management regime for NPAs and watershed protection forest. However, to ensure that these forests are protected and managed a similar approach is needed. The work of delineation, demarcation and inventory can provide employment for local people, and the management plans will provide for limited harvesting of some timber and NTFPs and hunting in designated areas within buffer zones where there is no negative impact. Areas that need rehabilitation are also identified and local people can be employed to undertake tree planting or other silvicultural work as well as protecting the forest. At the present time these forest areas generate little if any income and so rely on public funding, which is very limited. In the NT2 project the power company has been obliged to pay for the management of the watershed, and similar arrangements need to be applied in the Sekong River basin.

The growing concerns about global warming and climate change are raising the price of carbon and hence making the carbon sequestration function of forests more important. This works in two directions with reduced forest destruction being important to reduce emissions and increased forest growth being important to sequester carbon that has been emitted. The Forest Carbon Partnership Facility for the implementation of REDD (Reduced Emissions from Deforestation in Developing countries) may also be a source of funding for the prevention of further deforestation.

**Sub-project activities**

**Village land surveying and delineation of forest management areas**

The project would support similar investment in surveying land use and developing village development plans, to that of the company in villages in and around areas of protection forest and NBCAs. The provincial level land-use zoning would define “protection” forest areas at the macro-level based on river basin topography in rivers where hydro-power or irrigation schemes are planned. These, together with the
NBCAs will be surveyed on the ground and negotiated with local village communities to obtain agreement on the protection and future management of the areas. The 100 or so villages that will be involved have a gross area of around 120-150,000 ha, of which around 50,000 may be suitable for tree crops or cash crops. The cost of this surveying is estimated at about US$ 60-75,000 (based on the company experience). An additional amount is required for the socio-economic surveys for village development planning to cover all land within the village boundary. Since the company now have staff with experience in undertaking the village surveys, and have effectively trained District and local NLMA staff who have been accompanying the company surveyors, the most efficient and quickest means to complete the surveying of the remaining villages would be to contract the company to do the work.

**Village level capacity building and extension**

The new government policy is to establish District Agriculture and Forestry Technical Service Centres, which include demonstration and teaching facilities as well as having a cadre of trained technical staff who can support local District and Kum Ban government officials and villagers. (It is understood that this concept takes some inspiration from the Agriculture and Development Service Centre (Km 22) in Vientiane Municipality, established in 1993 through the good offices of the King of Thailand.) Under the new Lao Extension Approach (LEA) Centres are to be established in each District to provided a range of training and demonstration facilities appropriate to the needs identified during the land-surveying and village development planning.

It is highly desirable that these centres become self-financing, so that they are sustainable beyond the time when project funding finishes. The centre staff therefore need to be trained both in the necessary technical skills as well as basic business management skills. These latter will be used both to guide the development of the Centre itself towards being financially self supporting through the sale of quality growing stock, as well as supporting local communities to establish and manages Producer Groups that can successfully manage their affairs. The Village Development Plans will determine the range of agriculture and forestry skills and support needed, but it is likely to include basic food crops, selected cash crops, tree crops and fruit trees, livestock and possibly fish pond construction and management as well as basic forest management and technical tasks such as silvicultural and agricultural techniques, and nursery work. Selected individuals will also be trained in personnel management and basic business skills as well as the skills needed to support ecotourism. Salavan Provincial government estimate for the cost of establishing a Centre is about US$ 50,000, including basic infrastructure, utilities, nursery and demonstration areas and some basic staff training. (This is close to the estimate provided by a private company) This component would therefore require a total of around US$ 200,000 to establish one Centre in each District.

The Storaenso company is in the process of establishing a nursery and development centre for its own use near the District town of Nong and is also providing some support to the Xepon Forestry Training School to upgrade the facilities and improve the nursery. An additional contribution by Government using some of the ADB funds, will enable these facilities to be used to support additional villages, not directly involved with the company scheme. It makes sense to combine forces with the company rather than establishing separate Technical Centres. Another entrepreneur interested in promoting the growth of a range of natural fibres and establishing a weaving industry in the area is also interested in providing extension support to local farmers and their families to both grow the raw material and undertake processing.
This initiative, should if possible be incorporated into the package of support services to be provided.

**Village infrastructure and Micro-finance**

A high proportion of the population in the four Districts is from ethnic communities and they are more used to barter and exchanging goods and services, than using cash. However, Storaenso pay cash wages for labour which is generally used to purchase food to supplement the limited local supplies. The high levels of poverty in the area is reflected in the very limited family assets, especially livestock, and with no savings, the purchase of factors of production such as a simple machinery, fertilisers and improved growing stock is currently out of the question. As the local economy develops and more people receive cash wages, and learn of new opportunities to increase income, there will be a need for micro-credit. The SUFORD project proposed to establish Village Development Funds (VDF) with a one-off injection of around US$8,000 per village which was meant to cover the cost of essential investment identified in the course of village development planning. The government wanted these funds to be funded from some of the revenue from the sale of timber, but so far the basis for apportioning the log royalties so that the villagers get a share has not been agreed and very few villages have benefited to date.

Since the villages vary considerable in size, both population and land area, a fixed sum per village is not appropriate. The Storaenso are providing credit to the villages where they use land based on the area of land that they use at the rate of US$3 per ha giving an average of around US$750 per village annually or US$5,250 over a 7 year crop rotation. The application of this fund is decided by the village based upon the needs assessment and VDP and then the company costs the proposed investments and provides them in kind. Care must be taken in funding village development to maintain some equity between the villages supported by the company and others that receive support from the sub-project. The average area per household was the variable that showed the lowest standard deviation in the company's socio-economic base-line village survey and so is probably the best indicator to use. However, with an average area of only 8ha per household, of which 30% or 2.5 ha may be allocated for industrial plantations, a VDF of US$3 per ha is only US$7.50 per household annually. (In the ADB funded FLITCH project in Vietnam, the VDF was set at US$25,000 per commune similar to the Kumban in Lao PDR with an average of 10 villages, it would be equivalent to about US$2,500 per village over the six years of the project or about US$425 annually). Some of the funds will be invested in small-scale infrastructure, which will not directly generate income, making the establishment of a revolving fund difficult. However if a proportion of the fund is provided as micro-credit for investment in a productive enterprise to farmers’ or womens’ groups, beneficiaries should be able to repay the loan with modest interest after a few years and so enable the fund to become revolving. If the project finances VDFs for villages not directly benefiting from Storaenso support at the same rate of an average of US$5,250 over six years, the total fund required is US$525,000 for 100 villages.

**Enrichment planting of degraded conservation and protection forest**

Within NPA and designated “Protection” forest, areas that have been denuded of trees or badly degraded, so that “mother trees” as seed sources for important species have been lost, will be replanted or enriched through planting of native species. Where it can be demonstrated that the areas were bare of trees prior to December 1989 in order to comply with the requirements of the Kyoto Protocol, CDM
funds will be sought for the tree planting. The project will assess the financial contribution that can be obtained through CDM and promote the formation of farmers groups to undertake the tree planting as well as preparing the necessary base-line studies.

Where it can be demonstrated that the lack of tree cover is having a detrimental impact on water supply for hydro-power or irrigation schemes, the magnitude of the costs will be assessed and the project would negotiate appropriate funding for watershed management from the utilities that will benefit.

The area of such severely degraded forest within the NPAs and the Protection forest is difficult to assess without detailed ground surveys that will be the basis for management planning. The project funds will be used for replanting and restoration of a limited area of the most critical land based on its value for wildlife or soil conservation. The former would include creating corridors to link important remnants and enlargement of specific habitats, while the latter would include buffer strips along watercourses and steep slopes with erodable soils. For budgeting purposes a total area of 5,000 ha can be rehabilitated at an average cost of US$80 per ha, which assumes enrichment planting with important endemic species.

Development of tree nurseries and NTFPs and small businesses

In order to conserve the biodiversity of the forests in the area, it will be necessary to propagate local indigenous species both for planting within the forest management units and for planting around villages and along roads to provide shelter and enhance the landscape. There are many indigenous species that have medicinal or other valuable properties that are currently harvested as NTFPs, but some lend themselves to cultivation and can provide additional income for local villagers. Rattan and Bamboo are currently harvested in the area, and much is sold to Vietnam, but there is a risk of over-harvesting and degradation of the remaining wild growing stock. In order to sustain and increase the output of these species they need to be propagated and cultivated on suitable sites in the area. The project would arrange for the construction of a limited number of portable steel kilns and provide training in their use to interested farmers, who would be encouraged to establish a “Charcoal Producers Group” to organise the identification and management of the wood supply and the transport and marketing of the produce. The Charcoal Producers Group could be given credit to purchase 6 kilns initially and would then rent these to farmers interested in production. The Group would deduct the rent from the sales revenue on an agreed basis and would pay the balance to the farmer. Annex 1 gives a simple business plan for the Producers Group.

Development of ecotourism

The forest surveys that will be conducted for forest management purposes will also result in the identification of potential ecotourism sites. The project will identify responsible private sector travel companies that are interested in preparing a detailed ecotourism development plan and promote the facilities. A limited number of such companies will be invited to submit offers for an exclusive concession for a period such as five years that will include their proposals as to how the local communities will receive a fair share of the benefits. Their proposals should include training local villagers as guides and assistance to local communities for the development of accommodation, “homestays”, marketing of handicrafts and local products such as honey and fruit etc.
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**Forest protection**

NBCAs and Protection forests are at risk from encroachment and illegal logging. Should climate change result in different seasonal patterns with possibly longer dry seasons and heavier precipitation during the rainy season, there may also be increased risk of forest fires. The project will establish basic infrastructure for forest protection, such as watch towers and access trails for inspection and will provide necessary equipment for radio communications, motorcycles and office equipment for the management staff. Local villagers will be given contracts for protection of defined areas of forest that are at high risk, and the management plans will allow regulated harvesting of NTFPs by the villagers as part of the contract.

**Development of Home gardens**

There are a large number of fruit and vegetables that can be grown in the local site conditions, but communities are unfamiliar with many or have not had access to suitable planting stock. These crops provide valuable contribution to improving nutrition and can also provide additional income from sales to local markets. The companies (Stora-Enso and others that may set up offices in the area) or their staff can purchase limited supplies of fruit and vegetables, and development of ecotourism will also increase local demand.

**Provisional Project Cost**

**Assumptions**

- **Gross Project area:** within 4 District: 250,000 ha
- **Area of NPA (Dong Phouvieng and Xe Sap):** 317,000 ha
- **Area of “Protection forest:”** 70,000 ha
- **Target forest area in need of enrichment planting:** 5,000 ha
- **Number of villages in project area:** 110 = 10 Kum Ban
- **Village population:** 35,000 (7,000 HH)

**Activities and estimated investment costs:**

1). **Village land surveying and delineation of forest management areas:** Total area to be surveyed and delineated on the ground 220,000 ha @ US$ 1 per ha $220,000
   Plus TA for preparation of management plans

2). **Village level capacity building and extension:** Establishment of four DAFTSCs @ US$50,000 and provision of short courses and on-the-job training for 2,800 persons from 14 Kum Ban @ US$ 10,000 per KB related to all the sub-project activities $340,000

3). **Village infrastructure and micro-credit:** Village Development Funds for 100 villages to provide for small-scale infrastructure and micro-credit: $525,000

4). **Enrichment planting of degraded conservation and protection forest:** Average cost of enrichment planting, including planting stock, site preparation and maintenance US$ 80 per ha $ 400,000
5).  Development of tree nurseries and NTFPs: Establishment of 3 nurseries in project area and collection and propagation of seed, cuttings and tubers $100,000

6).  Development of ecotourism: Provision of equity capital for investment in tourist accommodation and other facilities $150,000

7).  Forest protection: Construction of watch towers, check posts, inspection trails and fire breaks in strategic locations within NBCA and “Protection forest” $180,000

8).  Development of Home gardens: Provision of planting stock to about half the HH in the project area with a cost of production of $5 per HH $20,000

The total investment cost is $1,795,000 plus $140,000 for capacity building and TA for planning and management, over a five year period.

Project impact

The direct impact would be the cash equivalent of full-time employment provided 1250 people or about one-fifth of the HH in the project area in the various project activities. In addition there will be additional income from sales of produce, tourist services, planting stock, handicrafts. The initial funding will come from the ADB grant, but additional funds that will make the activities sustainable and provide further employment will come from the carbon sequestration and water conservation services that the project generates.