

# Forestry Development Program for the Nam Theun 2 Hydropower Project:

An Independent Analysis

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<sup>1</sup> This report was written by an individual familiar with rural development issues in Laos.

## Executive Summary

Forestry development is included as an important component of the proposed livelihood system for the 6,200 people on the Nakai Plateau who will be displaced by the Nam Theun 2 Hydropower Project. While an area of 18,106 hectares of land along the southern length of the Nakai Reservoir has been zoned as community forestland, the SDP estimates that production forests cover only about 5,590 ha of the area.

The feasibility of the forestry development program presented in the Nam Theun 2 project's SDP is questionable for a number of reasons. Past illegal logging activities have dramatically reduced the availability of quality timber in the resettlement area. The poor market for low quality timber, combined with high government taxes, makes it essential that tax concessions are secured and post harvest chemical treatment occurs if the operation is to be profitable. As both the tax concessions and the chemical harvesting component are uncertain, if either one fails to materialize the viability of the entire plan will be jeopardized.

The SDP calls for the establishment of the Nakai Plateau Village Forestry Association (NPVFA) to manage the forest area and institute a commercial forestry scheme to harvest, process and sell timber on a sustainable basis, and to distribute the profits of these sales equally between all the resettled households. The NPVFA activities proposed by the SDP incorporate programs that have never been tried in Lao forestry projects before, namely the post-harvest processing and marketing of logs by villagers themselves and achieving Forest Stewardship Council (FSC) certification.<sup>2</sup> The SDP does not provide any detailed plans for these untested processing or plantation activities or explanations as to how or why they will succeed.

Traditional forest usage in terms of NTFP collection, presently the single most important income generator for villagers, will be severely restricted due to the inundation of prime NTFP collection sites, and there is little plan for a substitute NTFP base. This will decrease the villagers' ability to depend on their surrounding environment in the case of bad harvests or other unexpected eventualities. Furthermore, the SDP does not address the NTFP collection that currently occurs in the proposed community forestry area by villagers who do not live on the Nakai Plateau. Their access to these NTFP collection sites will presumably be lost when the forestry development program is initiated.

From a managerial perspective, the operation of the NPVFA as a complex corporate-type entity seems to be particularly optimistic given the present capacity of villagers and government staff. When timber companies run out of forests to log, they often go bankrupt. What recourse will be available to Nakai Plateau villagers – whose forests have already been logged of much of their high value timber – if their timber company runs out of forest to cut, loses money or fails? Other resettlement projects in Laos have left villagers worse off than before the project. The inherent complexities and uncertainties of NT2's forestry development program reduce the likelihood that income improvements for resettled villagers will be achieved.

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<sup>2</sup> NT2 Project Social Development Plan, November 2004, Section 23.2 p.4

## Overview of Forestry Development Program

The Social Development Plan (SDP) proposes that forest area totaling 18,106 ha along the southern length of the Nakai Reservoir be zoned into five management types: production forests, regenerating production forests, protection forests, conservation forests, and degraded forests. Forest protection, control of wildlife poaching and management of collection of Non Timber Forest Products (NTFP) will occur in all zones. Only production forests and degraded forests will be utilized for timber harvesting or converted to other land uses.

The forestry program consists of four components:

- 1) Institutional Development: Every resettled family will be a member of the NPVFA, and 5-8 person Village Forestry Committees (VFC) will also be established in each village. Technical assistance and capacity development will be provided for villagers and staff in all aspects of forestry organization management – from methods of sustainable log harvesting, processing and sales, to management training for those who will be involved in the implementation of the complex, bureaucratic NPVFA system.
- 2) Natural Forest Management: The SDP calls for the implementation of a sustainable and environmentally sound forest management system that is transparent, managed by villagers for villagers, and appropriately monitored. This management system will include delineating forest management zones and initiating sustainable harvesting in production forest zones. These activities are expected to lead to certification by the Forest Stewardship Council (FSC) in order to provide access to higher-price markets in Europe, Japan and America.
- 3) Forest Business and Enterprise Development: This component focuses on the development of the NPVFA's forestry business, including obtaining a logging and log transport license, a log processing or sawmilling license, and a timber processing and furniture factory license. The business will be developed in two stages: 1) the three-year construction phase where salvage logging in the inundation area and area cleared for resettlement will be the main (or only) harvesting activity; and 2) a long term post-construction phase where the "full capacity" of the NPVFA and its VFCs will be developed, FSC certification will be achieved, and forestry businesses will be fully operational. The plan foresees villagers processing logs salvaged from the project construction lands during their transition and resettlement period to supply timber for their housing. The plan suggests that logging and processing of logs in the production forest should begin one year before the Commercial Operations Date. Actual logging activities – and the village employment generated by these activities – will only occur in the dry season, as wet season harvesting could lead to soil runoff and silting of the reservoir.
- 4) Forest Plantation Development: This component proposes to convert presently degraded forestlands into forest plantations. However, technical and feasibility studies on this component have not yet been completed.

## Key Assumptions in the Forestry Program

1. The SDP has demarcated an area from the southern edge of the resettled villages to the edge of the Nakai Plateau as a community forest area for the sole use of resettled households. This area consists of 18,106 ha.
2. Of the 18,106 ha of forestland in the resettlement area, there are 7,793 ha of degraded production forest, 4,723 ha of inaccessible and steep forests, and 2,586 ha of forest land that is to be utilized for future resettlement and agricultural areas. A total of about 5,590 ha is considered appropriate for commercial production in the short to medium term.<sup>3</sup>
3. The SDP concludes that the proposed community forest area has already been exploited for the better quality trees species of good form and dimension.<sup>4</sup>
4. The SDP proposes that “by practicing sustainable forest management, the communities can harvest up to 6,000m<sup>3</sup> (of timber per year) on a sustainable basis from the 5,590 ha of production forests....”<sup>5</sup>
5. For the NPVFA to meet “the dividend expectation of over US \$100 per household per year” and cover capital replacements and community projects, the commercial forestry operation must generate disposable net earnings of more than US\$250,000 annually.<sup>6</sup>
6. The project developer, the Nam Theun 2 Power Company (NTPC), will only provide funding to support the first year of NPVFA’s activities.<sup>7</sup>

## The Loss of Non Timber Forest Products (NTFP)

Villagers on the Nakai Plateau presently collect a wide variety of NTFP from surrounding forests and lands. NTFP are collected for food and as commercial products to be sold, often to traders. The importance of NTFP for villagers cannot be understated; NTFP are “the most important source of cash income (41%) [for Nakai villagers] compared to livestock (32%), and off-farm employment (28%).”<sup>8</sup>

NTFP include edible products, such as mushrooms, bamboo shoots and terrestrial and aquatic wildlife, as well as construction and handicraft materials like rattan and bamboo. Additionally, there are a number of products harvested specifically for commercial sale, such as medicinal plants, spices and condiments, tree barks and plant exudates like tree resins. In terms of livelihoods, villagers themselves consider NTFP food products to be “more important (56%) than [NTFP] non-food products (44%)”.<sup>9</sup>

The SDP does not provide an extensive analysis on the areas from which villagers presently collect NTFP, nor does it explain where villagers will collect future NTFP after they are displaced by the NT2 reservoir. However, many of these issues were covered in a Lao Department of Forestry NTFP survey conducted in 1997 for the NT2 project. The SDP bases its

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<sup>3</sup> Section 23.1.2 p.3

<sup>4</sup> Section 23.8.4 p 22

<sup>5</sup> Section 23.1.3 p. 3

<sup>6</sup> Section 23.8.4, p. 23

<sup>7</sup> Section 23.10.4 pp.26-27

<sup>8</sup> Section 23.4.5 p.9

<sup>9</sup> Section 23.4.5 p.9

information on NTFP on the Nakai Plateau from this seven-year-old survey. However, due to a number of dynamic factors, such as market prices and availability, it is likely that much of this survey data is now out of date.

The SDP states that villagers collect some NTFP in the inundation zone and, as a result, “once resettled, villages would need to relocate their NTFP collection sites.”<sup>10</sup> However, the SDP fails to examine exactly where NTFP sites will be relocated. The 1997 Lao Department of Forestry survey provides more detailed information on the extent of the impact of NTFP losses resulting from the dam:

*villagers estimate that 60 % of NTFP’s are collected from streams, ponds, paddy fields, grass fields, and fallow fields, which are not strictly forest areas. These areas are likely to be mostly situated within the inundation zone... Only 16 % of all NTFP’s are said to be derived from the proposed resettlement area.<sup>11</sup> Because of its poor soils, the proposed resettlement area on the southern edge of the escarpment can only produce very few NTFP’s and the potential for cultivating NTFP’s as crops seems to be limited.<sup>12</sup>*

According to the survey, 60% of the NTFP resources will completely disappear for villagers after reservoir inundation, and there is an extremely limited opportunity to relocate these NTFP collection sites into the production forest area. The fact that this important piece of information was not stated in the SDP raises serious questions as to the integrity of the livelihood plans for displaced villagers.

While some zones could possibly be relocated to sites at great distances from the villages themselves (on the other side of the reservoir, or below the plateau), many daily edible NTFP resources in Laos are commonly collected in areas near the village. Due to poor soils in the production forest areas, only “very few NTFP” can be produced there. NTFP collection in other zones will require extensive walks into the rich forested areas below the plateau or boat trips across the reservoir to the watershed area, severely limiting the ability of villagers to have ready access to NTFPs. This loss of NTFP also poses a serious threat to the food security of villagers if markets are not forthcoming for their cash crops, or if harvests are particularly poor one year.

Furthermore, there are concerns regarding resource competition following reservoir inundation, due to the greater number of people collecting NTFP in a much smaller area. Despite SDP assurances that NTFP collection in the production forest will not be impacted by logging, Kisi resin, an important NTFP, comes from one of the most valuable tree species, mai si or *Vatica Cinerea*, which is to be logged in the production forest area. The Department of Forestry NTFP survey conducted for NTPC states that “the main threat to kisi production is the logging of trees of mai si, which has a good quality wood.”<sup>13</sup> This threat is exacerbated by the fact that good quality wood in the production forest area is in short supply. While *Vatica Cinerea* trees are

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<sup>10</sup> Section 23.4.5 p.10

<sup>11</sup> 7.3 *The use of non timber forest products on the Nakai Plateau; Report on a short mission from 26/2 to 30/3 1997*, Department of Forestry, Vientiane, 1997, Chapter 7.3

<sup>12</sup> *Ibid.*, Chapter 7.4

<sup>13</sup> *Ibid.*, Chapter 6

listed in the SDP as the most common tree in the Dry Evergreen Ecotype, the trees that provide the best resin production are the larger more mature trees, which are also considered to be of best commercial logging value. It is possible that logging activities could therefore be in direct competition with NTFP collection and vice-versa.

Finally, the SDP fails to consider NTFP collection on the plateau by surrounding non-plateau villages. While the SDP states that the “NPVFA will protect the Resettlement Area against collection of NTFP by outsiders,”<sup>14</sup> it does not evaluate the possibility that other villages may have traditional NTFP collection sites in the proposed community forestry area. In fact, independent Lao research indicates that there are villages surrounding the plateau that utilize the proposed production forest area as part of their traditional NTFP resource base.<sup>15</sup> Apparently, no attempt has been made in the SDP to assess the impact that the restricted-access production forest and resulting loss of NTFP resources would have on people in surrounding villages.

## **Upland Swidden Farming**

The establishment of the proposed production forest area means that villagers will lose individual rights to this land. Many of the villagers residing near the proposed production forest have utilized this forestland to grow rice in upland rotational swidden fields for generations. Once this area is designated for production forestry, villagers will be forced to stop upland farming.

Despite the intended restrictions, it is unclear how successful the project will be at stopping upland farming in this area. The example of the Nong Boua pilot village highlights the villagers' dependence on upland rice. All but two of the villagers in the pilot village planted an upland rice crop in 2004. In an attempt to ensure adequate food security, villagers increased their upland farming fields in 2004 to 9.83 ha from 1.59 ha of upland rice crop in 2003,<sup>16</sup> despite the fact that upland rice cultivation is to be prohibited after the construction of the dam.<sup>17</sup> The production forest model will not work with a large amount of upland farming in the forest area. The question will be how to monitor and stop villagers from planting upland fields in the forest area when they are simply trying to provide for their own food security? The SDP does not make any reference to this problem.

## **Log Quality**

According to the SDP, the quality of the logs presently available in the production forest area also limits the feasibility of the forestry livelihood option. The SDP states that a conservative estimation of the volume of timber that could be sustainably extracted from this 5,590 ha of viable production forest is 6,000 m<sup>3</sup> per year. While the Nakai Plateau used to be home to an abundance of high quality timber resources, the SDP notes that the resources presently remaining in the forest area have “already been exploited for the better quality tree species of good form

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<sup>14</sup> Section 23.7.1 p.17

<sup>15</sup> Author wishes to remain anonymous.

<sup>16</sup> Table 21-6 and 21-5, pp. 24-25

<sup>17</sup> It has also occurred simultaneously with a drop in the production of cash crops among villagers with a decrease in total wet season cash crop farming area from 7.62 ha in 2003 to 2.04 ha in 2004. Ibid.

and dimension,” and that this will generally result in the harvest of “poorer quality logs” from the production forest area.<sup>18</sup>

It has been widely reported that much of this logging was conducted illegally by the state owned BPKP logging company run by the Lao military. In a sense, the people of the plateau were robbed of their forest resources and forest-based livelihoods before the NT2 project began and an independent, transparent audit of BPKP should be required. According to the SDP, “there is a lot of timber [on the Nakai Plateau] cut but not collected, and thus lies decaying in-situ.”<sup>19</sup> Villagers on the Nakai Plateau have been left with little in the way of commercial timber potential, as the SDP acknowledges:

*This high percentage of low value local market wood (either in log or sawn form) makes achievement of a profitable wood industry enterprise virtually impossible due to the high volume of low unit value sales.*<sup>20</sup>

Additionally, as a result of the low log quality, Lao government taxes on logs are reported to directly threaten the profitability of the proposed NPVFA forestry venture:

*Log taxes payable to the Government on low and medium density timber proposed to be harvested by NPVFA are significantly higher than prices currently being received for wood of similar quality, on average, by forest owners elsewhere in Pacific Rim markets.*<sup>21</sup>

The NT2 project is presently attempting to negotiate tax concessions with the government of Laos to address this issue. The SDP acknowledges that these tax concessions are vital to the success of the forestry development plan:

*If no taxation concessions are available, a minimum log harvesting level of 8,000 cu.m. is required with sawing and timber treatment. The investment return of 11% is a margin too low for local investment risk, and the volumes are not likely to be achieved.*<sup>22</sup>

It appears that the success of the forestry development plan is dependent on tax concessions that have not yet been secured. Additionally, due to the “high percentage of low density hardwood and pinewood species,”<sup>23</sup> the SDP determines that the only commercially feasible business option is to chemically treat the low value timbers with preservatives to allow them to compete with higher value durable local hardwoods.<sup>24</sup>

However, despite the fact that this process of chemical treatment was not considered in the May 2004 version of the SDP the cost estimates in the November 2004 version has actually decreased from \$265,000 to \$240,000.<sup>25</sup> Furthermore, the November 2004 version indicates a 30,400

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<sup>18</sup> Section 23.8.4 p.22

<sup>19</sup> Section 23.4.3 pp. 10-11.

<sup>20</sup> Section 23.8.4 p.22

<sup>21</sup> Section 23.8.4 p.22

<sup>22</sup> Section 23.10.3 p.26

<sup>23</sup> Section 23.10.3 p.26

<sup>24</sup> Section 23.8.4 p.22

<sup>25</sup> See Section 23.13 p.25 (May) p.29 (November)

increase in the number of workdays, and hence wages, for forestry workers. Given these increases in costs that were not accounted for in the May 2004 version, it is unclear how the November 2004 cost estimates could have decreased by such a significant amount.

Finally, the SDP states that “in the short to medium term prospects are very poor for obtaining profits from sale of low density pinewood and hardwood logs,”<sup>26</sup> although these logs “will comprise 60% of volume (4000 cu.m.).”<sup>27</sup> Questions immediately arise as to whether the forestry production scheme is viable at all. To further confuse matters, in the next paragraph the SDP notes that a pressure treatment cylinder will be installed “with a capacity to treat 2500 cu. m. minimum of sawn wood a year” which would seem to be below the capacity necessary to meet annual processing targets. Furthermore, the SDP notes that in addition to the lower market prices and high taxes for low density wood products, other constraints and conditions will need to be overcome, such as the high overhead costs to deal with government regulations and FSC certification, which “are in general terms not being met by the industry in Laos.”<sup>28</sup> In fact, while a few forestry operations have been pre-assessed, there are currently no forestry operations in Laos that are FSC certified.

## **Plantations**

While plantations are proposed to be a component of the forestry development plan and a major contributor to estimated employment and income benefits, the technical and financial feasibility of plantations has not yet been assessed. The SDP notes: “The level of employment would be less if forest plantation [sic] development were not found to be profitable and thus not pursued.”<sup>29</sup> Despite recommendations from NTPC’s consultants as early as 1996 to undertake plantation feasibility studies, these assessments have still not been conducted.<sup>30</sup> As a result, the SDP provides very little information about how plantations would be developed as part of the forestry program for resettled villagers.

## **Management Complexity**

The design of the forestry management unit is highly complex and bureaucratic, a system which is totally foreign to villagers. The NPVFA is designed so that the production forest area is harvested by one entity with an equal distribution of profits for each resettled household. The NPVFA is to oversee all aspects of the forestry program, including forest protection in other zones, management, monitoring tree growth, selecting trees, cutting, transporting, processing and marketing of timber. Villagers will need to be trained in a wide variety of enterprises and positions. The SDP does not consider potential problems that could arise at the organizational level as a result of village or ethnic rivalries.

While the SDP states that “most wood based enterprises in Laos are usually small, private family

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<sup>26</sup> Section 23.8.4 p.23

<sup>27</sup> Section 23.8.4 p.23

<sup>28</sup> Section 23.8.4, p. 22

<sup>29</sup> Section, 23.12.2 p. 30

<sup>30</sup> Nam Theun 2 Hydropower Project Forestry Report, May 1996, Prepared for Nam Theun 2 Project Development Group, by Margules Groome Pöyry, page 57.



owned business with relatively low overheads” the NPVFA, in comparison, has significant overhead and is “more corporate in nature.”<sup>31</sup> Therefore, “a substantial input into training in planning and risk management, and discipline in achieving productivity targets is critically important.”<sup>32</sup> The forestry enterprise is based upon a highly bureaucratic association that the villagers will run themselves. However, due to the rural livelihoods of villagers and the relatively low level of education on the plateau, the capacity of villagers to effectively manage such a complex system is questionable:

*There is weak managerial capacity present at Nakai to ensure effective planning, direction and controls are in place to ensure proper operation and maintenance of the substantial capital investments to be made to achieve long term earnings targets.*<sup>33</sup>

The SDP proposes initially to bring in outside professional managers to effectively run the organization while selected villagers are given management training. While “outside help will be provided to develop sustainable forest management systems and procedures, train the villagers to apply them, and guide the villagers until they are able to do the work themselves,”<sup>34</sup> the SDP also highlights the capacity limitations of villagers to run what is essentially a multifaceted corporation.

Additionally, the NT2 project is to provide US \$0.9 million to support the NPVFA only for the first year. The SDP estimates that an additional “US\$0.4 million short-term operating expenditure advance would also be required in the first year to eighteen months to cover short term financing requirements and this should be repaid from sales in the first 2-3 years operations [sic] as annual cash flows stabilize.”<sup>35</sup> During the first three to four years of the project, most of the logging operations will be salvage operations from construction lands. After this period, the SDP assumes that the NPVFA will be able to finance itself from timber sales in the production forest.<sup>36</sup> However, this is a highly optimistic assumption considering that the nature of logging operations will change substantially from large-scale salvage operations in the inundation zone to much smaller scale sustainable harvesting operations in the production forest areas. Given the number of uncertainties surrounding the management aspects of the NPVFA, it seems likely that financing will need to be at least gradually scaled back rather than simply cut off after the first three to four years.

## **Conclusion**

The feasibility of the forestry development program presented in the Nam Theun 2 project’s SDP is questionable for a number of reasons. Past illegal logging activities have dramatically reduced the availability of quality timber in the resettlement area. The poor market for low quality timber, combined with high government taxes, makes it essential that tax concessions are secured and post harvest chemical treatment occurs if the operation is to be profitable. While both the tax

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<sup>31</sup> Section 23.8.4 p.23

<sup>32</sup> Ibid., p.23

<sup>33</sup> Section 23.8.4 p.23

<sup>34</sup> Section 23.4.1 pp. 6-7

<sup>35</sup> Section 23.10.4 pp.26-27

<sup>36</sup> Section 23.10.4 p.26

concessions and the chemical harvesting component are still uncertain, if either one fails to materialize the viability of the entire plan will be jeopardized.

Traditional forest usage in terms of NTFP collection, presently the single most important income generator for villagers, will be severely restricted due to the inundation of prime NTFP collection sites, and there is little plan for a substitute NTFP base. From a managerial perspective, the operation of the NPVFA as a complex corporate-type entity seems to be particularly optimistic given the present capacity of villagers and government staff. When timber companies run out of forests to log, they often go bankrupt. What recourse will be available to Nakai Plateau villagers – whose forests have already been logged of much of their high value timber – if their timber company runs out of forest to cut, loses money or fails? The inherent complexities and uncertainties of NT2's forestry development program reduce the likelihood that income improvements for resettled villagers will be achieved.