

Fig. MH-2 Index Map of Aerial Photographs

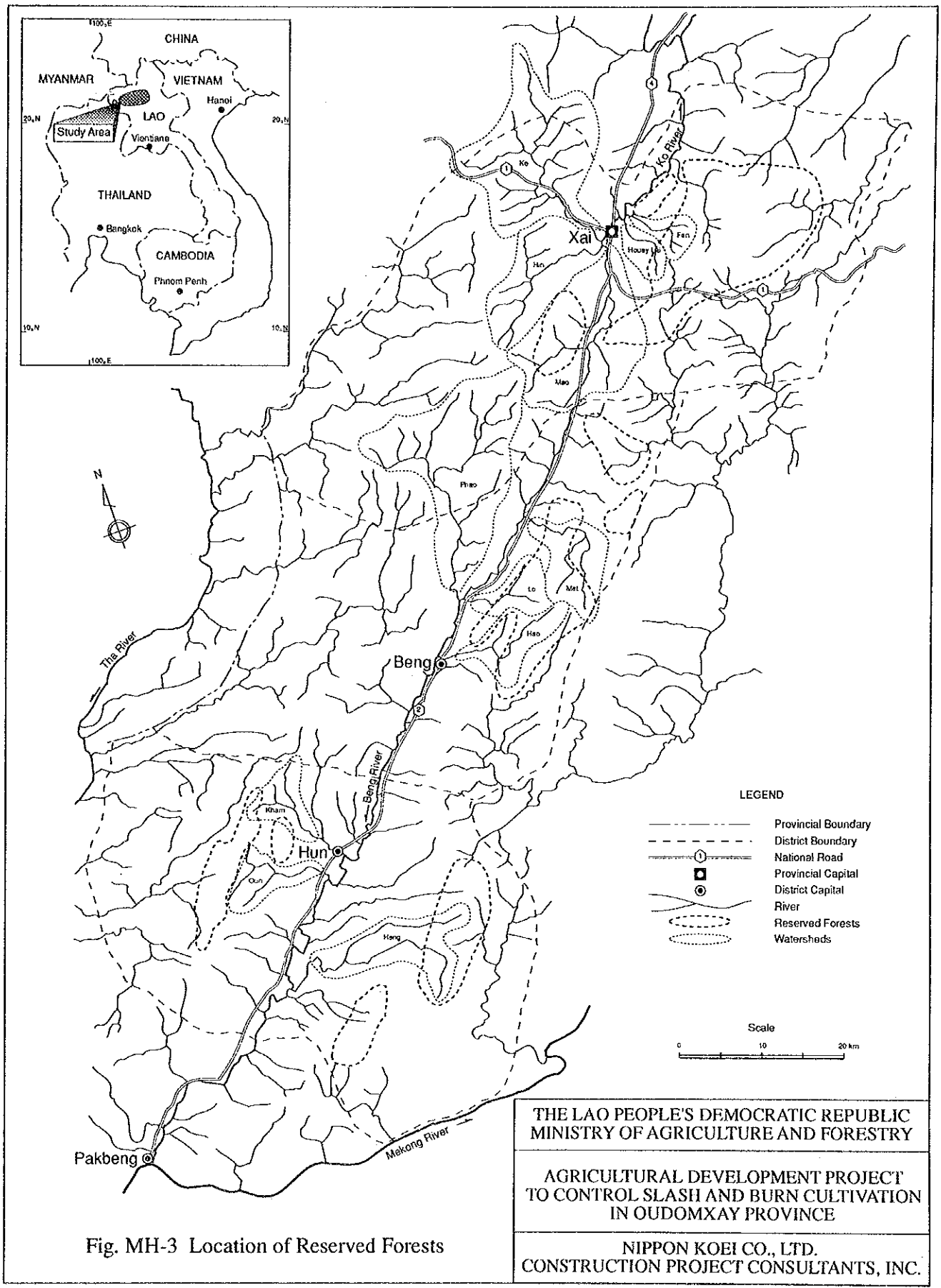


Fig. MH-3 Location of Reserved Forests

THE LAO PEOPLE'S DEMOCRATIC REPUBLIC
 MINISTRY OF AGRICULTURE AND FORESTRY

AGRICULTURAL DEVELOPMENT PROJECT
 TO CONTROL SLASH AND BURN CULTIVATION
 IN OUDOMXAY PROVINCE

NIPPON KOEI CO., LTD.
 CONSTRUCTION PROJECT CONSULTANTS, INC.

Appendix

APPENDIX-MH
SPECIFICATION OF LAND USE CLASSES AND FOREST TYPES

1. Areas of Current Forest

Areas of Current Forest are defined as areas being suitable for forest production and having a tree cover with a crown density of at least 20%. Forest Plantations are excepted from the rule of a minimum crown density.

11. Evergreen Forest Types

The evergreen forest type is a multi storey forest consisting of more than 80% trees of evergreen species. Most of the trees have long and cylindrical boles, many of them with a big buttress. Usually, the height of the trees of the upper storey is more than 30 m. The dense second storey prevents most of the light from reaching the ground floor. Another typical characteristic of this forest type are climbers and lichen on the tree stems. Bamboo is usually not found except when the canopy has been opened.

111 Upper Evergreen Forest (UE)

Evergreen forest located at an altitude above 200 m.

112 Lower Evergreen Forest (LE)

Evergreen forest located at an altitude below 200 m.

12. Dry Evergreen Forest Types

The dry evergreen forest type has a lower proportion of evergreen trees than the evergreen type, 50%-80%. Except for in disturbed stands there is very little bamboo. Soil is usually deep. The forest consists of a considerable number of species of which 2 to 3 species tend to be predominant.

121 Upper Dry Evergreen Forest (UDE)

Dry evergreen forest located at an altitude above 200 m. Some characteristic species of this type are *Mai Khen (Hopes spp)*, *Mai Do (Pterocarpus pelatus)*, *Mai Nhang*

(*Dipterocarpus alatus*), Mai Peua (*Lagarstroemia* spp) and Mai Bak (*Anisoptera* spp). The height of upper and second storey is usually less than in LDE.

122 Lower Dry Evergreen Forest (LDE)

Dry evergreen forest located at an altitude below 200 m. The second storey is usually dense and the height, varying from 10-30 m, is usually rather even within the stand.

13. Mixed Deciduous Forest Types

In the mixed deciduous forest type the deciduous tree species represent more than 50% of the stand. The forest storeys are not as dense as those of evergreen types and most of the seedlings and saplings are deciduous trees. Most often bamboo occurs in this type of forest.

131 Upper Mixed Deciduous Forest (UMD)

Mixed deciduous forest located at an altitude above 200 m. In moist areas there might be a lot of climbers, and it could be difficult to distinguish this forest type from the Dry evergreen type. In dry regions the difference can be clearly seen. The type appears quite open with a considerable amount of bamboo and under growth.

132. Lower Mixed Deciduous Forest (LMD)

Mixed deciduous forest located at an altitude below 200 m.

140. Dry Dipterocarp Forest (DD)

The dry dipterocarp forest occurs in open stands. The tree diameter is comparably small and the height of the stand varies from 8 to 25 m. The crowns do not spread out widely.

This type of forest is normally found in places with shallow soil, where the hard pan emerges above the ground, and on laterized soil. On the most poor and shallow soils the trees are crooked and do not exceed 10 m in height. If the crown cover is less than 20% and the stand is undisturbed this vegetation type should be classified as Savannah.

Many species being characteristic for the dry dipterocarp forests are fire resistant and have a thick bark. Mai Sabeng (*Dipterocarpus intricatus*), Mai Chick (*Shorea obtusa*), Mai

Sat (*Dipterocarpus obtusifolius*), Mai Suak (*Terminalia tomentosa*) and Mai Hang (*Shorea siamensis*) are such species.

150. Gallery Forest (GE)

The gallery forest is not characterized by tree species composition but could be i.e. either deciduous or evergreen. Clues used for identification of this forest type are the occurrence of some other land use types in its vicinity such as streams and villages. In areas where streams are likely to overflow seriously, the forest is often left along the low bank of the streams (both persistent and intermittent ones) forming a long band of forest with the stream bed on one side and, for example, paddy fields on the other. The width of the gallery forest will not be more than 100 m.

16. Coniferous and Mixed Coniferous Forest Types

161. Coniferous Forest (S)

The coniferous forest is usually single storied and open but the young growth may sometimes form a dense second storey. This forest type occurs in higher elevations with a cool climate. The characteristic species of this type are pines but (*Pinus kesiya* or *Pinus merkusii*) but other coniferous trees such as i.e. *Cunninghamia* may also be predominant.

162. Mixed Broadleaves and Coniferous Forest (MS)

The mixed coniferous forest is a transition type between the coniferous and the broadleaved forest types. The coniferous trees could be mixed with either deciduous or evergreen trees. It is also found in higher elevations.

170. Forest Plantation (P)

In forest plantations the planted trees would still be identified (i.e. by even height, even spacing or by species typical for plantations) although they may be mixed up with other non-cultivated plants. All sustainable plantations (including young ones with a crown density less than 20%) should be classified as forest plantations.

Rubber plantations are also classified as forest plantations. Coffee, tea and shade providing trees for coffee and tea as well as fruit trees are not classified as forest plantations.

2. Areas of Potential Forest

Areas of potential forest are defined as areas suitable for forest production having a crown density less than 20% and not permanently being used for other purposes (i.e. housing, agriculture, etc.)

210. Bamboo (B)

If an area is covered with bamboo and the overstorey has a crown cover less than 5% it should be classified as bamboo.

Abandoned ray is often recovered by bamboo. Some species of bamboo may last for many years. Bamboo brakes may vary in height from 2 m to 25 m depending on their species. If the bamboo represents less than 80% of the total vegetation cover of the understorey, the vegetation type should not be classified as bamboo.

220. Unstocked Forest Areas (T)

Unstocked forest areas are previously forested areas in which the crown density has been reduced to less than 20% because of logging or heavy disturbance. If the area is left to grown undisturbed it will become forest again.

Abandoned ray and disturbed stands with a crown density less than 20% should be classified as unstocked forest areas. But, in case of seedlings, saplings and young trees which have a density high enough to form a stand with development capacity, the area should be classified as natural regeneration.

230. Natural Regeneration (N)

Abandoned ray, old fallows and overlogged areas with crown cover \times 20% which hold a regeneration, that with proper treatment will become a stand with development capacity, are classified as natural regeneration. If the regeneration is considered to be insufficient the area should be classified as unstocked forest area.

More clear definitions will be worked out later on. At the moment the determination will have to be based on the crew-leaser's subjective opinion.

240. Ray (RA)

Ray is an area where the forest has been cut and burnt for temporary cultivation of rice and other crops. The area should be classified as ray from the time of clear-cut until one year after it has been abandoned. Areas being prepared for clear-cut but not yet clear-cut and areas that have been abandoned for more than 1 year should not be classified as ray.

3. Other Wooded Areas

Other wooded areas are defined as areas with a certain cover of trees or shrubs but being unsuitable (too poor) for forest production. The tree cover is less than 20% (if it would be more it should be considered as current forest).

310. Savannah (SH)

The savannah is an area where the soil conditions are unsuitable for tree growth as well as agriculture production. The tree cover in the Savannah should be at least 1% but not more than 20%. The trees are drought resistant and mostly short with graminaceous and herbaceous plants forming an under-storey.

Savannahs should not be mixed up with those grass covered areas that sometimes occur after shifting cultivation. Normally, the savannah does not occur on steep slopes but in plain areas.

320. Heath, Stunted and Scrub Forest (SR)

This is an area covered with scrub and stunted trees. The soil is shallow and rocky.

4. Areas of Permanent Agriculture

Areas of permanent agriculture include areas for production of crops, fruit trees, etc. and areas permanently being used for grazing.

410. Rice Paddy (RP)

Areas permanently being used for rice cultivation. Old paddy that has been abandoned and not been in use for more than one year should not be classified as rice paddy.

420. **Agricultural Plantation (AP)**

Areas of agricultural land being used for production of other crops than rice, i.e. various kinds of vegetables, for fruit tree cultivation, etc. Plantations with cash crops, such as coffee, tea, cacao and cotton are also referred to this land use class.

430. **Other Agricultural Land (OA)**

Agricultural land being used for other agricultural purposes than agricultural crop cultivation, i.e. grazing of cattle, should be classified as other agricultural land, unless the tree cover exceeds 20%. In that case it should be classified as some type of current forest depending on the tree species composition.

5. Other Land Use

Areas with other land use include land that for various reasons is "non-productive" and areas being used for other purposes than agriculture and forestry.

510. **Baarren Land and Rock (R)**

Unfertile or seriously degraded land on shallow soil and rocky areas on which neither trees nor grasses can grow.

520. **Grass Land (G)**

Unfertile or degraded land on which no trees or shrubs grow. It might be an area that is too dry for tree growth that has been covered by grasses. It could also be an area that has originally been covered by trees which has been heavily disturbed by cutting and fire and gradually depleted. One reason for the absence of trees could be that so big areas have been deforested that the seed supply from surrounding forest has ceased. That type of grassland could be found on higher elevations in the northern part of Laos. Grassland could also occur on deep sand with a high moisture content.

530. **Swamps (SW)**

Swamps are areas where the soil is saturated with water. The soil may basically be fertile but the lack of oxygen limits its agriculture or forest-production capacity. The swamp could have a high ecological or environmental value and the flora and fauna may be rich.

The typical tree species found in the swamps are trees which can grow in water, i.e. *Adina cordifolia*, *Rhus succedanea* and *Barringtonia acutangula*.

540. Urban Areas (U)

Urban areas include all areas being used for permanent settlements such as villages, towns, public gardens, etc. It also includes roads having a width of more than 5 m and areas under electric high power lines. Any type of land under high power lines, except rice paddy, should be classified as urban areas.

550. Other Areas (O)

Any areas that cannot possibly be classified as any of the land use types 111-540 or 600 should be classified as other land.

6. Water

600. Water (W)

The land use class water includes rivers, water reservoirs (i.e. ponds and dams for irrigation and hydropower) and lakes. Water reservoirs and lakes should have an area of 0.5 ha and rivers should be at least 10 m wide to be classified as water. In other cases it should be joined to adjacent land use class.

**ANNEX-MI
MODEL AREA SELECTION**

ANNEX-MI MODEL AREAS SELECTION

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1. INTRODUCTION

This ANNEX-MI presents the results of the "model areas" selection for the feasibility study on the agricultural development.

For the first screening of potential areas for model development in each district, field survey was made to collect data and information on physical, social and economic conditions of each potential area, keeping the development objectives firmly in mind. After analysis of these data and information, discussion meetings with the government staff concerned were held for final selection of model areas. The meetings with the provincial office and the Ministry of Agriculture and Forestry were made on 21st and 27th March 1992, respectively. Then, the final selection of the proposed model areas in each district has been concluded as presented in this ANNEX-MI.

2. SELECTION CRITERIA

For optimum selection of the model areas, the following criteria were formulated:

(1) Potential Accessibility via Roads

The province is currently served by the National Road No.2 which connects Xai, Beng and Hun districts from north to south. In order to obtain access to markets and to expect a good demonstration effect, road communication is essential. The situation in some potential areas can be improved by road construction. Where this is possible, potential access was also used as one of the criteria.

(2) Potential for Agricultural Improvement

This criterion covers the potential for agricultural improvement in the forms of increased rice production, and more profitable agriculture through introduction of horticulture, sericulture, inland fishery and livestock development.

(3) Potential for Irrigation Development

Since Oudomxay is a mountainous province, the area of flat land is limited. Therefore, careful identification of flat land and hill areas with a gentle sloping topography suitable for irrigation development is covered under this criterion.

(4) Potential Population Density

Areas with a relatively high population density are preferable to areas with a low population density, because economic return, social benefit, and reduction of environmental damage are all likely to be greater. Road construction often stimulates permanent migration of villages to sites adjacent to the new road. For this reason, an attempt is made to estimate potential as well as actual population density.

(5) Potential for having Direct Positive Effect on Environmental Problems

The long term objective of the project is to reduce environmental degradation through the control of slash and burn cultivation. Therefore, all project activities will have to be concentrated on the contribution to this objective. Areas with a potential for direct positive effect on environmental problems are to be preferred.

(6) Motivation of People

The basic ingredient for success of a model development is the cooperation of the local people. The people's involvement is essential for successful planning, implementation and subsequent operation and maintenance of the project facilities. In the view of the province, the purpose of the project is to make the people their own masters. Therefore, areas where the people's motivation is limited should be excluded from the selection.

(7) Balance of Ethnic Composition

In general, three ethnic groups are distinguished in the province, each having its own tradition and character. Since an overall objective of the project is to work with all three ethnic groups, areas where all three groups are represented are to be preferred.

(8) Province's Priority Ranking

The province authorities have detailed information on and ideas about the problems and potentials of the province. Therefore, their identification of potential areas is important as one of the criteria.

(9) Absence of Negative Effects on Other Projects and Areas

The project activities may influence the activities of the province or other agencies. Therefore, negative influence on other projects and areas must be avoided.

3. INITIAL SELECTION

Based on the results of field survey and by using the selection criteria as mentioned in Chapter 2, the initial selection of potential areas in each district was made for optimum selection of model areas to be proposed, as given below (see Fig. MI-1).

3.1 Xai District

In Xai district, there are three potential areas. They are Tham Nhuang, Nam Hin and Ban Thiao, and are all located near to Xai city.

3.1.1 Tham Nhuang Area

This area extends on both banks of the Nam Mao river, and the Road No.2 runs in the centre of the area. Therefore, accessibility to the markets and effects on demonstration are very good. The gross area for mapping is estimated at about 685 ha including 387 ha of existing lowland rice field and 298 ha of small hill area.

The existing paddy field is presently used for cultivation of wet season rice with a supplemental irrigation water from the people's weirs made of bamboo, wood and clay soil which are easily washed away at the flood time. The canals are also excavated by the farmers themselves. However, these irrigation system is still very primitive. A good site for construction of a permanent intake weir exists on the Mao river at about 2.5 km south from Xai city. In view of these situations, potentials for increase in crop production, especially rice, in this lowland area is high by providing the permanent irrigation system.

Most of the hill area adjacent to lowland is currently covered with grass and bush, except for some small farm plots. In these farm plots, farmers are growing wide varieties of vegetable with irrigation by bucket, using spring water coming down from the mountains. Vegetable being cultivated is tomato, beans, egg plant, cabbage, garlic, lettuce, cucumber and red onion. In addition, there are some ponds (7 m x 10 m in average size) constructed by the farmers themselves for their small-scale fishery and also for irrigation purpose. Potentials for improving the present upland agriculture in this hill area is also high through the opening of more farm plots from grass and bush land, and by constructing more ponds. In fact, farmers who are opening farm land from bush are seen in this area. To assist them, a simple pipe system may be considered for more effective use of the limited spring water for both irrigation and domestic use.

The number of villages related to this area is nine, consisting of eight Lao Loum groups and one Lao Theung group. The farmers are keen to increase their crop production, especially rice, with stable supply of irrigation water in both wet and dry seasons, because of good accessibility to Xai market. Therefore, the provincial office is keen to develop this area long since, giving the first priority.

3.1.2 Nam Hin Area

This area is located at about 1 km west from Xai city, and covers about 300 ha of gross area. Although its location is near to Xai, construction of an access road is required for successful development of this area.

Most of lowland which extends on both banks of the Nam Hin river is currently used for cultivation of wet season rice with supplemental irrigation, because a permanent concrete weir is already constructed by the government. The weir is still in good condition, except for damaged protection walls which can be repaired with a very small investment. Regarding the irrigation canal network, however, only a main canal with a total length of about 2 km is excavated, which is very primitive. Access road to the weir and for O & M of the main canal is also very poor with a small foot path only. Despite the fact that some amount of water is still available at the weir site, the weir and the canal are not used for irrigation in the dry season. As a result, completely no crops are seen in the lowland.

In view of these situations, potentials for agricultural improvement in this area is also considered to be high, especially for increase in rice production, by rehabilitating the weir and the main canal as well as by constructing additional canals such as secondary and tertiary network.

Three villages, all Lao Loum group, are related to this area. Although there are some small Lao Theung villages in the hill area adjacent to lowland, most of them is not engaged in rice cultivation in the lowland. They cultivate some vegetable without irrigation in small farm plots.

The provincial office has no plan to rehabilitate and expand the existing irrigation system. May be, the office considers that the present irrigation system is enough for its purpose.

3.1.3 Ban Thiao Area

This area is located at about 6 km south from Xai city along the Road No.2, and extends on both banks of the Mao river. The gross area for mapping is estimated at about 60 ha, of which 50 ha of lowland is presently used for wet season paddy with a supplemental irrigation. The farmers construct the simple weirs, and also excavate the canals. However, the weirs are easily washed away by floods, and re-constructed by farmers mostly every year.

Only one Lao Loum village is related to this area. Although the potential area for development is small as compared with others, the office gives the priority to this area, because the farmers is keen to have a stable supply of irrigation water in both wet and dry seasons.

3.2 Beng District

In Beng district, there are two potential areas, which are Beng area and Nam Met area.

3.2.1 Beng Area

This area extends on both banks of the Nam Beng river, and is located at the administrative centre of Beng district. Since the left bank area elongates along the Road No.2, accessibility is very good. However, construction of an access road including a bridge on the Nam Beng is required to approach to the right bank area. The gross area for mapping of both areas is estimated at about 537 ha including 291 ha of existing lowland rice field.

The left bank area is currently used for wet season rice with a supplemental irrigation from the Nam Hao river, a tributary of the Nam Beng. Most of the right bank area which has rather undulating topography is used for cultivation of rainfed rice. Farmers also cultivate tobacco, garlic and sesame in very small farm plots. Slash-and-burn cultivation is seen in many of the hills around this area for cultivation of upland rice.

The available water resources for development of this area are Nam Beng, Nam Hao and Nam Phao. Among them, the Nam Beng is the main source. The Nam Hao and the Nam Phao also have some amount of water even at the end of dry season, which can be used for expansion of irrigated agriculture in the future.

The number of villages related to this area is 14, including ten Lao Loum villages and four Lao Theung villages. The Lao Theung group is mostly engaging in slash and burn

cultivation. The Lao Loum group is also cultivating upland rice in the hills, but the area of slash and burn cultivation by this group is still limited.

Potentials for agricultural improvement with stable irrigation is high in terms of high population density as well as of controlling the slash and burn cultivation. Therefore, both the provincial and district offices are keen to improve the present agriculture in this area.

3.2.2 Nam Met Area

This area is located at about 40 km south from Xai and at about 20 km north from the Beng district centre along the Road No.2. Therefore, accessibility is very good. The area extends on both banks of the Nam Met river, a tributary of the Nam Beng, and covers about 140 ha of gross area. Out of 140 ha, 120 ha of lowland are presently used for wet season paddy with a supplemental irrigation from the Nam Met. Simple weirs and canals are constructed by farmers themselves, but the weirs should be re-constructed mostly every year. The river water available from the Nam Met seems to be enough for irrigating the whole lowland even in the dry season. Crops grown by farmers other than rice are garlic and cotton.

Two Lao Loum villages are related to this area, and these groups are also doing slash-and-burn cultivation in hill areas. Although our interview with farmers is still limited, most of farmers show their hope to improve the present agriculture, stopping slash and burn cultivation, when stable supply of irrigation water is made available for both wet and dry seasons. However, the district office has no plan for such an agricultural improvement at present.

3.3 Hun District

In Hun district, there are two potential areas, the Nam Kham and the Nam Heng areas.

3.3.1 Nam Kham Area

This area is located in the upstream of the Nam Kham river, a tributary of the Nam Beng, and covers about 686 ha of gross area for mapping. The access to this area from the Road No.2 is a village road, about 3 m in width and 2 km long, which should be rehabilitated.

The gross area includes about 264 ha of lowland extending on both banks of the Nam Kham river and 422 ha of hill area. The lowland is used for cultivation of rainfed paddy.

Most of the hill area is used for slash and burn cultivation. The water source for irrigation development in this area is the Nam Kham, but available river water in the dry season is very limited, only for domestic use by the villagers. The possibility of irrigation development would be to secure stable supply of supplemental irrigation for wet season paddy. In addition, construction of small water ponds to store rain water may be considered for small-scale irrigation to vegetable and some other cash crops as well as for fishery.

The villages related to this area are seven, consisting of one Lao Loum villages and six Lao Theung villages. The Lao Theung groups were moved from the mountain areas by the government arrangement. Some of the families in these villages also migrated from Phongsali province. Since the present paddy field in this area is therefore not enough to supply foods for all of the families, the farmers are opening bush land for paddy cultivation. In this view, various assistances to these farmers are necessary to increase their crop production. The district office also has a plan to develop this area.

3.3.2 Nam Heng Area

This area is located at about 110 km south from Xai and at about 15 km south from the Hun district centre. This area is proposed by both the provincial and district office with a high priority. The area extends on the left bank of the Nam Beng and on the right bank of the Nam Heng river. The area consists of flat land with bush which can be opened for paddy field and small hill areas. The area is currently used for slash and burn cultivation. The gross area for mapping is estimated at about 700 ha, out of which about 150 ha could be used for paddy cultivation.

The water source for agricultural development in this area is the Nam Heng river. In order to supply irrigation water to potential land for agriculture, dam and reservoir will have to be constructed on the Nam Heng because of the elevated land in general.

Three villages are related to this area. One village consists of Lao Loum group only, but the other two are composed of Lao Theung and Lao Sung ethnic groups.

4. FINAL SELECTION

The final selection of the proposed model areas in each district was made through further analysis of data and information in accordance with the selection criteria. The results of analysis is summarized in Table MI-1 to Table MI-3 and location of the model areas is shown in Fig. MI-1.

4.1 Xai District

As seen in Table MI-1, the first priority may be given to Tham Nhuang area with very good accessibility and good effect on demonstration. In addition, sufficient river water could be obtained from the Nam Mao river for irrigation of lowland, and the hill areas could also be irrigated by using spring water. The people related to this area as well as the district and provincial office are keen to develop both lowland and upland areas. Finally, this area is recommended for the feasibility study.

Although the provincial office has no plan for rehabilitation of Nam Hin area at present, the area also has high potential for possible early implementation in the near future, because the permanent weir is already available.

4.2 Beng District

In Beng district, the first priority may be given to the left bank area of the Beng with very good accessibility and good effect on demonstration. In addition, potential population density is high because of the district administrative centre, and potential for having effect on environmental problems that are slash and burn cultivation is high. Therefore, the left bank area covering about 537 ha of gross area is proposed for model area in this district (see Table MI-2).

The composition of lowland and hill area in Nam Met area is compact as a model area for demonstration. In this area, potential for having direct effect on the control of slash and burn cultivation is high, because farmers hope to improve their agriculture with a stable supply of irrigation from the Nam Met river. Although the district office has no plan to develop this area at present, further study will be required as one of the agricultural development in the future.

4.3 Hun District

The first priority for agricultural development in this district is given to Nam Heng area by the district office. Since farmers related to this area are currently engaging in slash and burn cultivation, potential for having direct effect on the control of such a cultivation is high, if irrigated farming were developed economically. It seems, however, that construction of irrigation system including dam and access road to the Road No.2 would be costly. Therefore, it is better to keep this area as one of the potential areas to be studied under the Master Plan.

On the other hand, Nam Kham area has already rainfed paddy field, and also has hill area. Some of the farmers were moved from the mountains and came from other province. Potential population density is high, which means that they need more production of food crops. An access road to the district centre exists, though it should be rehabilitated. Since the river water from the Nam Kham is limited, more effective use of such a limited water, together with various types of agricultural development, should be studied and demonstrated in both lowland and hill area. From these points of view, it is recommended to propose this area as a model area in this district (see Table MI-3).

4.4 Discussion Meetings with Government Staff Concerned

The first discussion meeting with the provincial office was held on 21st March 1992 in the presence of the First and Second Vice Governors of the Oudomxay province as well as of other staff concerned. The study team explained them about the team's findings regarding the selection of model areas. There were some discussions and exchange of information on all the potential areas identified by the team. Finally, the provincial office has agreed three model areas proposed by the team. In this meeting, the office expressed that the first priority be given to Tham Nhuang area in Xai district among the three model areas.

On 27th March 1992, the study team submitted the technical note to the Deputy Director of the Cabinet, Ministry of Agriculture and Forestry, and explained him the team's findings related to the selection of model areas. The Deputy Director then explained the same findings and the team's recommendations to the First Vice Minister. Principally, the three model areas selected by the team has been agreed by the Ministry.

Table

Table MI-1 Analysis of Potential Areas in Xai District

Selection Criteria	Tham Nhuang	Nam Hin	Ban Thiao
(1) Potential Accessibility via Roads	Very Good (5)	Good (4)	Very Good (5)
(2) Potential for Agricultural Improvement	Very High (5)	High (4)	High (4)
(3) Potential for Irrigation Development	Very High (5)	Very High (5)	High (4)
(4) Potential Population Density	High (4)	Moderate (3)	Moderate (3)
(5) Potential for having Direct Effect on Environmental Problems	Moderate (3)	Moderate (3)	Moderate (3)
(6) Motivation of People	Very High (5)	Moderate (3)	Very High (5)
(7) Balance of Ethnic Composition	Good (4)	Moderate (3)	Moderate (3)
(8) Province's Priority Ranking	The First (5)	No Plan	The Second (4)
(9) Absence of negative Effects on Other Projects and Areas	Absence	Absence	Absence
	This potential area takes 36 counts in total for the eight selection factors.	This area takes 25 counts in total for the seven selection factors.	This potential area takes 31 counts in total for the eight selection factors.

Remarks: Five (5) counts for very good or very high.
 Four (4) counts for good or high.
 Three (3) counts for moderate.
 Two (2) counts for low.
 One (1) count for very low.

Table MI-2 Analysis of Potential Areas in Beng District

Selection Criteria	Right Bank of Beng Area	Left Bank of beng Area	Nam Met
(1) Potential Accessibility via Roads	Moderate (3)	Very Good (5)	Very Good (5)
(2) Potential for Agricultural Improvement	High (4)	Very High (5)	Very High (5)
(3) Potential for Irrigation Development	Moderate (3)	Very High (5)	very High (5)
(4) Potential Population Density	Moderate (3)	High (4)	Moderate (3)
(5) Potential for having Direct Effect on Environmental Problems	High (4)	High (4)	High (4)
(6) Motivation of People	Moderate (3)	High (4)	High (4)
(7) Balance of Ethnic Composition	Moderate (3)	Good (4)	Moderate (3)
(8) Province's Priority Ranking	The Second (4)	The First (5)	No Plan
(9) <u>Absence of negative Effects on Other Projects and Areas</u>	Absence	Absence	Absence
	The right bank area is given 27 counts in total for the eight factors.	The left bank area takes 36 counts in total for the eight selection factors.	This potential area is given 27 counts in total for the seven selection factors.

Remarks: Five (5) counts for very good or very high.

Four (4) counts for good or high.

Three (3) counts for moderate.

Two (2) counts for low.

One (1) count for very low.

Table MI-3 Analysis of Potential Areas in Hun District

Selection Criteria	Nam Kham Area	Nam Heng Area
(1) Potential Accessibility via Roads	High (4)	Moderate (3)
(2) Potential for Agricultural Improvement	High (4)	Moderate (3)
(3) Potential for Irrigation Development	Moderate (3)	Moderate (3)
(4) Potential Population Density	Very High (5)	Moderate (3)
(5) Potential for having Direct Effect on Environmental Problems	High (4)	High (4)
(6) Motivation of People	High (4)	High (4)
(7) Balance of Ethnic Composition	Very Good (5)	Very Good (5)
(8) Province's Priority Ranking	The Second (4)	The First (5)
(9) Absence of negative Effects on Other Projects and Areas	Absence	Absence
	This area is given 33 counts in total for the eight selection factor.	This area takes 30 counts in total for the eight factors.

Remarks: Five (5) counts for very good or very high.

Four (4) counts for good or high.

Three (3) counts for moderate.

Two (2) counts for low.

One (1) count for very low.

Figure

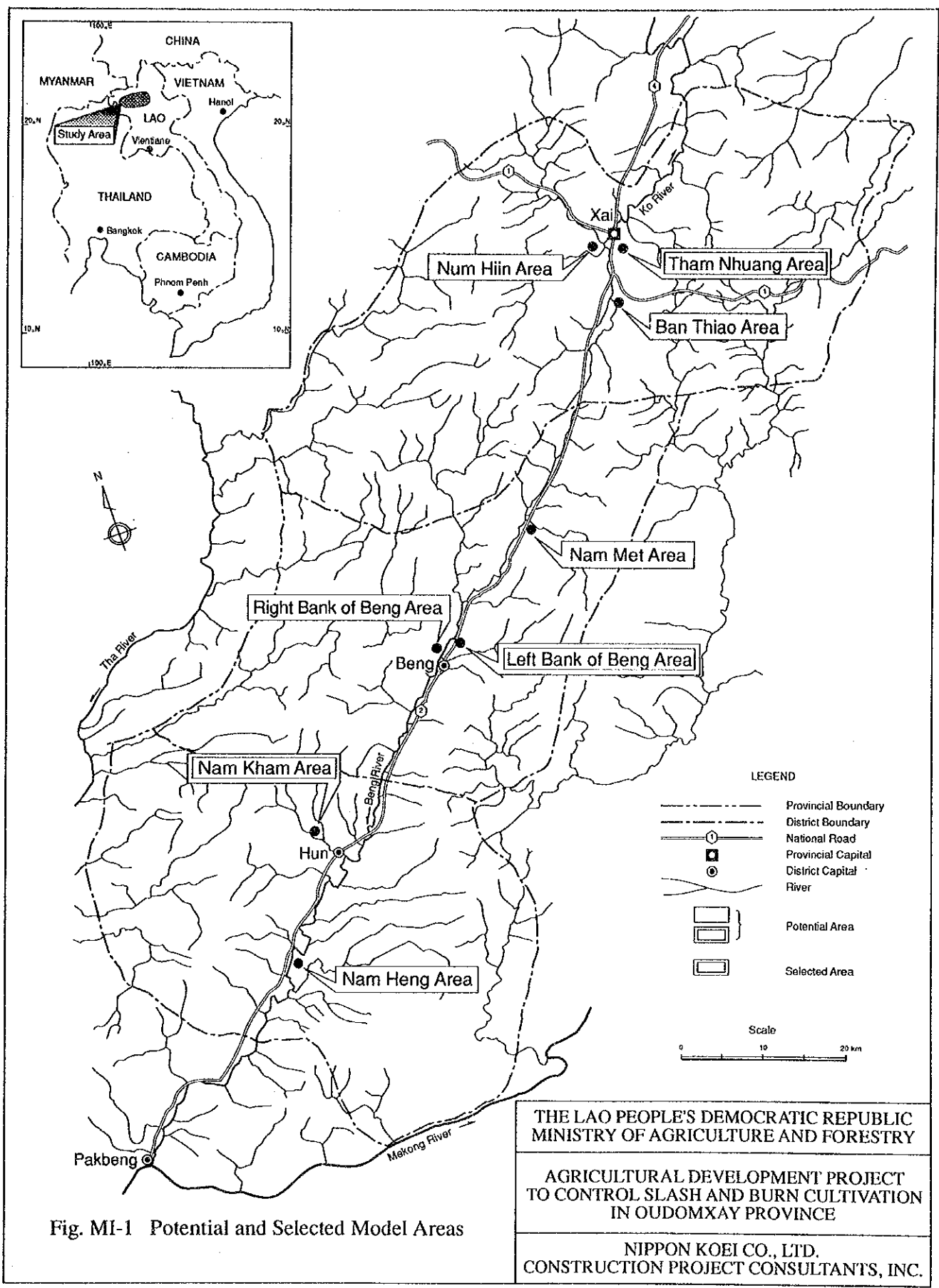


Fig. MI-1 Potential and Selected Model Areas

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