Analysis of Suitability of "Shifting Cultivation Stabilization Pilot Project" as an Alternative Development to Eradicate Cultivation of Narcotic Plants in Hounaphanh Province of Lao People's Democratic Republic

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ABSTRACT. *Subsistence farming in highlands does not generate sufficient income; hence cash crop is the opium poppy cultivation. Communities engaged in shifting cultivation do change locations of villages periodically, in search of fertile land. This practice of shifting cultivation results in degradation of soil fertility, erosion of land, rapid destruction of forest cover, pollution of water resources and finally environmental degradation. These communities do not have access to; primary health care, water and environmental sanitation, schools, agricultural extension services etc., and high level of opium addiction persists amongst inhabitants. Alternative development had been administered for; provision of a pure and adequate supply of water coupled with environmental sanitation, introduction of primary health care with a first-aid box with medicines and community mobilization along with participatory approaches to development, micro-finance for income generation activities and awareness raising for self management of village activities. Use of water for; drinking purposes, introduction of environmental sanitation, renewable power extraction for house lighting and for lift irrigation, including paddy cultivation and de-husking of paddy have tremendously contributed to rural development and eradication of opium poppy cultivation. Qualitative changes of beneficiaries such as knowledge, attitude, overall behaviour, leadership and sustainability were measured in the research and useful correlations were found, which should be utilized in alternative development. An index for measuring of sustainability of development was designed, showing encouraging results at mid-term of the project life.*

INTRODUCTION

Background of the shifting cultivation stabilization pilot project

Lao People's Democratic Republic (Lao PDR) - Laos is a land locked country surrounded by Thailand, Vietnam, P.R. China, Myanmar and Cambodia. The country has a population of about six million inhabitants and the land area is around 236, 000 km^2. Houaphanh is one of the eighteen provinces with nearly 270,000 people. Opium poppy cultivation is a serious problem in this province. This province was recorded to have had about 3500 ha under opium poppy cultivation in 1998, contributing 13% of the national total production of opium. Around 2.9% addiction rate was identified (UNODC, 2000).

The "Shifting Cultivation Stabilization Pilot Project" (SCSPP) is a unique development project involving community development, infrastructure improvements and constructions, rural institutional reinforcements, micro-finance for income generation,

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eradication of opium poppy cultivation and rehabilitation of drug addicts through community-based approach and the cooperation of beneficiaries (Provincial Government of Houaphanh and villagers). A loan from the Asian Development Bank (ADB) and development assistance from the United Nations Organization for Drugs and Crime (UNODC) has provided funds for project implementation. The project cost has been estimated to be nearly 10 million US dollars with an implementation period of six years, from the year 2000.

"Alternative Development" (AD) has been accepted as a process to prevent and eliminate the illicit cultivation of plants containing narcotic drugs and psychotropic substances through appropriately/specifically designed rural development measures in the context of sustained national economic growth and sustainable development efforts in countries taking action against drugs, recognizing the particular socio-cultural characteristics of the target communities and groups, within the framework of a comprehensive and permanent solution to the problem of illicit drugs (UNGASS, 1998).

This project envisaged alternative ways of development through self-reliance, good governance, rational utilization of human and natural resources and integration of participatory development patterns and process. The SCSPP area could be defined as a mountainous region where majority of the people are engaged in shifting cultivation. Different ethnicities live in scattered villages. Basically, the ethnic groups could be classified into four levels/classes *viz*. *Lao Soung* (high class), *Lao Theung* (middle class), *Lao Phong* (migrants) and *Lao Loum* (low class). These four groups have very different cultural practices, perceptions and habits.

Poor sanitation and hygiene, lack of pure and adequate supply of drinking water, non-existence of elementary medical facilities, inadequate education network, low level of agricultural extension services are some problems encountered in this project area.

Lack of access roads hinders agriculture production and livestock development, as markets cannot be reached. Non-availability of basic sanitation and medical facilities do affect the communities very badly. As a result, for all ailments opium has been the herbal medicine used, aggravating the health and addiction situation. Lack of schools has prevented the mountainous communities from acquiring proper education to enter vocational or other training schools. These matters have compelled the villagers to practice shifting cultivation as a means of their subsistence. Special attention has been paid by SCSPP to grow export oriented plants, flowers, herbal/medicinal plants *etc*. in micro-agriculture systems and subsistence/shifting cultivation farming areas, to enable farmers improve their living standards with the additional income generated.

Although livestock (buffaloes, cattle, pigs, poultry, goats, horses *etc.*) are found in most villages, animal production in the project area remains at a much lower level, compared to other provinces. Consumption of milk of animals, or the leather production are unheard in the villages, although, every household possesses one or several types of animals.

Project objectives

Specific objectives of the SCSPP (UNODC, 2000) can be summarized as follows;

- Formation of 52 village committees and training of their members in management.
- Awareness raising on drug control activities, elimination of opium poppy cultivation in 2,256 households and rehabilitation of 300 drug addicts in project target villages.

- Training of 650 farmers for creation of revolving fund and disbursement of US dollars 157,000 to 52 villages for income generation activities.
- Provision of 30 water supply schemes to villages with community participation.
- Provision of permanent irrigation facilities to 200 ha of paddy fields to increase food security.
- Construction of 1,400 latrines in households with community participation.

In order to direct project interventions to attain proper impacts and planned results, a research was launched.

The main objectives of the research are to; (i) to assess the AD process (intervention logic) of SCSPP, (ii) evaluate the human resources development by measuring the level of knowledge, attitudes, leadership and overall behavior, and (iii) formulate guidelines and recommendations for effective design, implementation and evaluation of "Alternative Development Projects".

MATERIALS AND METHODS

The International conference on the role of AD in Drug Control and Development Cooperation in Feldafing, Germany Feldafing Declaration (UNGASS, 1998) confirmed that alternative development often succeeded in eliminating illicit drug crops whilst at the same time improving the living conditions of the people living in the project area. Literature review was carried out and AD projects implemented in Thailand, Myanmar, Vietnam, P.R. China, Laos and South America were studied, before formulation of research methodology.

"Alternative Development" (UNODC, 2000) could be briefly defined as income generation and other social development measures initiated to change the livelihood system in a sustainable manner, by using resources rationally, to enhance living standards of the beneficiaries. The AD approach is to make people aware of detrimental effects of opium use and addiction and through community participation, introduce alternative income generation activities (replacing opium) and rehabilitation of drug addicts.

In measuring knowledge level of individuals, thirteen categories were considered, devoting three questions for each category. Knowledge level of communities measured considered five relevant categories.

Location of the study

The research was conducted in 26 villages out of 52 target villages, confined to 2,256 households of SCSPP. Project is situated in Xam Neua district of Houaphanh province of the Lao PDR. A northern province, Houaphanh has a population of 260,000 inhabitants, scattered in eight districts. Fifty-two project target villages were administratively divided into two sub-project areas (Local development centers), Nam Ven and Nam Ham, containing 28 and 24 villages, respectively.

Selection of study villages and field research

Fieldwork consisted of empirical investigations (Bernard, 2000) as well as analytical reflection. Information collection was carried out using individual questionnaire designed

(Bery, 2003) and administered, separately for each sub project area. Key informants representing social groups within the community and ordinary households from each village were randomly selected and interviewed. Investigations emphasized on the changes in perceptions, attitudes, practices, knowledge, overall behavior and leadership qualities of the community. Sustainability of development was measured using sustainability index. A sustainability index was designed containing four categories as; rural institutions/governance, infrastructure services, revolving fund for village income generation, and conservation and scientific exploitation of natural resources such as land, water, Non-Timber Forest Products (NTFP) *etc.*

Sampling

Quota sampling was adopted to reflect the same pattern as for the whole population of 15,000 beneficiaries. Quota sampling is the sampling equivalent of stratified sampling with the added requirement that each stratum is generally represented in the sample in the same proportion as in the entire population (Bailey, 2002). The size of the quota sample was 26 villages, reflecting the total number of beneficiaries. The unit of analysis (measure at grass root level) was chosen as the household in consultation with stakeholders. Six respondents from each village were selected (a total of 156 respondents from sample villages), consisting; leadership personnel, women, youth and veterans/erudite.

Measurements

Variables such as knowledge, attitude, leadership, overall behaviour and sustainability were selected to measure the influence of project interventions. Knowledge level of individuals considered the following 13 categories; 1. Project (SCSPP) objectives, 2. Health and opium use, 3. Natural resources, 4. Soil fertility and soil conservation measures, 5. Rural credit, 6. Land use planning, 7. Marketing, 8. Livestock management technologies, 9. Weaving and handicrafts, 10. Health benefits of clean water, 11. Health benefits of latrines, 12. Income generation enhancement due to provision of rural tracks and roads and 13. NTFP contribution to family income. The measurement of knowledge was scaled as low, medium and high. In order to measure attitude level of beneficiaries, twelve categories were investigated; 1. Participatory community development, 2. Primary health care, 3. Drug control activities/rehabilitation of drug addicts, 4. Opium poppy elimination, 5. Livelihood system, 6. Human resources development, 7. Products development and marketing, 8. Attitude for community development, 9. Community infrastructure improvements, 10. Opium use for health, 11. Socio-economic development of the community and 12. Perception for paddy cultivation. The attitude level of beneficiaries has been categorized as; low/unchanged (0 to 8), satisfactory (9 to 17) and high/good (18 to 24). In order to determine the change in leadership as sequence of project interventions, assesment was based on six categories; 1. Community participating in decision making, 2. Income generation of the community, 3. Governance of the community, 4. Participatory approaches to development, 5. Livelihoods improvements and 6. Opium poppy eradication. Scoring was as follows; unchanged/low (0 to 4), satisfactory/medium (5 to 9) and high/good (10 to 12). Five indicators were used to measure overall behavior; 1. Community participation, 2. General hygiene of household, 3. Drug abuse control, 4. Suitable and sustainable farming methods and 5. Rural credit and revolving fund for income generation. Overall behaviour was categorized according to following score; low/unsatisfactory (0 to 3) , satisfactory/medium (4 to 7) and high (8 to 10).

Data analysis

The focus of this study was at household and community, as well as at the grass root institutional level. The qualitative and quantitative study approach of the research allows the explanation of behavioral patterns of the beneficiaries of target villages in complex situations. Data were analyzed by using Statistical Package for Social Sciences (SPSS). To analyze the data, descriptive statistics, chi-square, correlation and 't' test were used.

RESULTS AND DISCUSSION

Background

Majority of the target villages (44 out of 52) are situated in remote mountainous areas with very limited arable land (less than 0.5 ha/household). The population of 26 study villages consists of all four ethnicities amounting to 8,432 inhabitants in 1,213 households. An average family consists of about six members.

The livelihood system is based on shifting cultivation mainly producing paddy for their staple diet rice. Arable land contained in a small valley of a village depends on the topographical conditions. All sample villages grew opium poppy as a cash crop, amounting to a total of 15.2 ha. In certain instances, it was grown in small quantities (around 50 to 60 m^2/household). In addition, crops grown on subsistence scale included; corn/maize, cassava, garlic, black ginger, cabbages, beans, cucumber, ground-nuts, chillies, taro, pineapples, vegetables, pumpkins, sweet potatoes, asparagus, fruit trees such as apricots, plums, peaches, pears and guava. The average land area of highland cultivation per family was around 0.5 ha.

Livelihood system and its integration with the alternative development model

Nooyens and Meijers (2001) indicated that the level of positive and negative influence of AD could be identified through the analysis of a number of selected parameters/variables relevant to the project beneficiaries.

Knowledge

In the project and study villages the beneficiaries have been engaged in shifting cultivation practices, subsistence agriculture including small-scale animal raising. The geographical isolation prevents beneficiaries from having access to; information, technological development, education, agricultural extension, rural credit and social services such as primary health-care, water supply, grid-supplied electricity *etc*. Traditional practices continued unabated without change in knowledge for adoption of technological developments. Change in knowledge of beneficiaries is of utmost importance to achieve objectives outlined in SCSPP module.

Alton (2004) has shown that the change in knowledge comes from many influential factors. Two aspects in change in knowledge have been recognized to be knowledge change of individuals and change in knowledge of communities, as perceived by individuals.

Overall score for thirteen categories of knowledge level for each respondent was categorized according to the score; low/poor (0 to 8), satisfactory/medium (9 to 17) and high/good (18 to 26). In knowledge change of individual, the first place in high score has been obtained by the category - objectives of SCSPP (42.9%), while the second place has been

obtained by rural credit (13.5%) and the third place has been occupied by both categories; health benefits of clean water and income generation due to rural tracks (12.8%). Table 1 gives the distribution of respondents according to score on individual knowledge.

Table 1. Distribution of respondents according to score on knowledge-individual (N= 156).

	Knowledge category	Number of respondents*		
		Low/poor	Satisfactory	High
1	Project (SCSPP) objectives	0	89 (57.1)	67 (42.9)
2	Health and opium use	17 (10.9)	123 (78.8)	16 (10.3)
3	Natural resources	68 (43.6)	87 (55.8)	1 (0.6)
4	Soil fertility and soil conservation	80 (51.3)	76 (48.7)	0
5	Rural credit	62 (39.7)	73 (46.8)	21 (13.5)
6	Land use planning/ land allocation	83 (53.2)	73 (46.8)	0
7	Marketing	124 (79.5)	31 (19.9)	1 (0.6)
8	Livestock management technologies	127 (81.4)	29 (18.6)	0
9	Weaving and handicrafts	40 (25.6)	104 (66.7)	12 (7.7)
10	Health benefits of clean water	0	136 (87.2)	20 (12.8)
11	Health benefits of latrines	8 (5.1)	148 (94.9)	0
12	Income generation due to rural tracks	28 (17.9)	108 (69.2)	20 (12.8)
13	NTFP contribution to family income	74 (47.4)	80. (51.3)	2 (1.3)

Note: *Values in the parentheses are the percentages.

As for the overall knowledge score, in the high category, a negligible portion of respondents (0.6%) has been found, while medium and low categories have 55.7 and 43.7% respondents, respectively. It could be seen that knowledge change takes time to reach, but efforts made could generate results as shown by categories; project objectives and health benefit from clean water. In these categories, there were no low scores, showing that a positive change had taken place, attributed by awareness raising and active community participation.

Changes in knowledge occurring in individuals and communities have shown significant disparities, within project villages, as well as with outside control villages. Comparison of data for villages with and without donor interventions has clearly revealed that outside development interventions in villages do have a positive impact, especially in matters relevant to qualitative aspects of life of villagers/beneficiaries.

Using the categorization (low/satisfactory/high), 73.3% indicated that the individual knowledge level was satisfactory in Nam Ven sub-project, against 46.9% by Nam Ham. The knowledge of the community was 73.0% in Nam Ven against 32.9% of Nam Ham. This clearly shows that there is a disparity of knowledge change in the two sub-project areas, needing targeting of identified beneficiaries and giving proper attention on qualitative aspects of livelihood improvements to vulnerable beneficiaries.

Change in community knowledge in Nam Ven sub-project area has been higher by about 34% (Nam Ven - 85.9%, Nam Ham - 51.9%) and Nam Ham has been only 10.5% higher than villages with donor interventions (terminated more than five years ago). As anticipated, villages without donor interventions do not show any change in knowledge during the period of comparison.

Table 2. Level of knowledge - community (N = 156).

No.	Category	Frequency	Percentage
1	Low (0 to 8)	68	43.5
2	Medium to high (9 to 26)	88	56.5
	Total	156	100.0

Note: Mean = 9.47; Range = 2 - 17.

According to the scaling of knowledge of community (low, medium and high) given in Table 2, practically all respondents fell into low and medium (low-68, medium-87, high-1, out of 156 respondents) categories.

In the age group 25 to 30 years (Table 3), out of 65 respondents, one was in high, 39 and 25 medium and low knowledge categories, respectively. As for the ethnic group LL, out of a total of 108 respondents, high-1, medium-59 and low-48. Education level, training provided and occupation of respondents when matched against change in knowledge did not reveal any significant or unusual patterns.

Table 3. Analysis of knowledge change according to age group and ethnicity

No.	Description	Number of respondents*		
		Low/poor	Satisfactory/medium	High/good
1	Respondents	69 (44.2)	86 (55.1)	1 (0.64)
2	25 to 30 age group	25 (16.0)	39 (24.9)	1 (0.64)
3	Lao Loum ethnicity (LL)	48 (30.7)	59 (37.8)	1 (0.64)

Note: *Values in the parentheses are the percentages.

Attitude

Attitude plays an important role in behavioral change of beneficiaries, especially for stabilization of shifting cultivation, eradication of opium poppy cultivation, and socio-economic development of communities. In order to measure the level of attitude change, each of twelve categories contained three questions; each category was assessed to be unsatisfactory /unchanged, satisfactory or high/good. Overall assessment for each respondent was obtained by the score received from twelve categories. High change in attitude has taken place in opium elimination category (10.9%) the second and third places have been occupied by drug control

activities (10.2%) and community development (8.3%), respectively (Table 4). Attitudinal changes have not been recorded in the following categories; livelihood system, human resource development, product development and marketing. Attitude level (satisfactory) of the two sub-projects; Nam Ven (73.9%) and Nam Ham (32.6%) indicated a disparity.

Table 4. Distribution of respondents according to individual attitude scores (N=156).

No.	Attitude category	Number of respondents*		
		Unchanged/low	Satisfactory	High/good
1	Community development	21 (13.4)	118 (75.5)	13 (8.3)
2	Primary health care	36 (23.0)	119 (76.1)	1 (0.6)
3	Drug control activities	57 (36.5)	83 (53.1)	16 (10.2)
4	Opium poppy elimination	47 (30.1)	92 (58.9)	17 (10.9)
5	Livelihood system	84 (53.7)	72 (46.1)	0
6	Human resource development	113 (72.3)	43 (27.5)	0
7	Product development and marketing	133 (85.1)	23 (14.7)	0
8	Community development	101 (64.6)	54 (34.6)	1 (0.6)
9	Infrastructure development	52 (33.9)	92 (58.9)	12 (7.7)
10	Opium use for health	66 (42.2)	88 (56.3)	2 (1.3)
11	Economic development	86 (55.0)	70 (44.8)	0
12	Perception for paddy cultivation	102 (65.3)	54 (34.6)	0

Note: * Values in the parentheses are the percentages.

According to the scaling of attitude of community (unsatisfactory/unchanged, satisfactory or high/good) given in Table 5, nearly half the respondents fell into low and the balance into satisfactory to high levels.

Table 5. Attitude score of community.

No	Attitude	Frequency	Percentage
1	Low (0 to 8)	74	47.4
2	Satisfactory-High (9 to 24)	82	52.6
	Total	156	100.0

Note: Mean = 6.62; Range = 1-12.

The change in attitude score (satisfactory and good) of Nam Ven had reached 81.4%. while Nam Ham attained 33.3% (Table 6). Difference of levels of attitude in the sub-projects is significant, indicating a higher level in Ven (t = 16.476, mean of Ven = 10.58, Mean of Ham

= 4.0, $p<0.05$). Disparity in attitude change could be due to better access and conditions available for exchange of information. Attitude change score in villages with donor interventions (61.2%) had been practically double that of Ham (33.3%). This could be due to the result of community development activities commenced in donor villages about ten years ago.

Table 6. Comparison of attitude status (per cent of responses) within the two sub-projects and with control villages (with and without donor interventions).

No.	Attitude	Ven	Ham	Donor Interventions
1	Unchanged/low (0 to 8)	18.6	66.7	38.8
2	Satisfactory (9 to 17)	73.9	32.6	51.3
3	Good/high (18 to 24)	7.5	0.7	9.9
	Total responses	780	480	504

Associations of qualitative changes in beneficiaries

Statistical tests had been carried out to determine the associations of various categories such as; knowledge of individual, knowledge of community, attitude, overall behaviour, leadership, sustainability, education *etc.*

Knowledge

- Association of knowledge of individual with knowledge of community has been significant (Pearson Chi-Square value = 112.752, df = 1, $p < 0.05$). Individual with high knowledge perceives the community knowledge to be high.
- Association of knowledge of individual with overall behaviour has been significant (Pearson Chi-Square value = 113.168, df = 2, $p < 0.05$).
- Association of knowledge of individual with leadership has been significant (Pearson Chi-Square = 110.801, df = 1, $p < 0.05$).

Attitude

Statistical tests had been carried out to determine associations of attitude category against; education, leadership, knowledge of individual, overall behavior, and sustainability.

- Association with education has been significant (Pearson Chi-Square = 8.987, df = 1, $p < 0.05$). In communities with low education level, having limited facilities for education, association of attitude and education should convince project formulators to include education in the AD model.
- Association with leadership has been significant (Pearson Chi-Square = 113.952, df = 2, $p < 0.05$). Test on association of knowledge versus overall behavior has revealed to be

significant. It could be deduced that an association exists between knowledge, attitude and overall behavior.

- Association with knowledge of individual has been significant (Pearson Chi-Square = 112.138, df = 2, $p < 0.05$).
- Association with overall behavior has been significant (Pearson Chi-Square = 105.590, df = 2, $p < 0.01$). Attitude has direct relevance to overall behavior as shown here, which could be put to good use in AD activities.
- Association with sustainability has been significant (Pearson Chi-Square = 109.930, df = 1, $p < 0.05$). Test on association of knowledge versus attitude has shown to be significant. It is evident that a relationship exists between knowledge, attitude and sustainability.

Leadership

Statistical tests were conducted to determine association of leadership category versus the following; education, overall behaviour and sustainability.

- Association with education has been found to be significant (Pearson Chi-Square = 8.984, df = 2, $p < 0.05$). Existence of an association of leadership with education should be a case to be studied for future application in the AD model.
- Association with overall behavior has been found to be significant (Pearson Chi-Square = 105.368, df = 4, $p < 0.05$).
- Association with sustainability is significant (Pearson Chi-Square =107.074, df = 4, $p < 0.05$). This association had been identified to be an encouraging indicator of sustainability, as many and varied project interventions executed involved leaders and the community.

Sustainability

Sustainability index (SI) has shown associations with education, knowledge of community and overall behavior.

- Association with education is significant (Pearson Chi-Square= 7.930, df = 2, $p < 0.05$).
- Association with knowledge of community has been significant (Pearson Chi-Square = 38.717, df = 2, $p < 0.05$).
- Association with overall behavior has been significant (Pearson Chi-Square = 123.466, df = 4, $p < 0.05$).

CONCLUSIONS

Livelihood analysis had not been paid proper attention in implementation of the project. As a result, the project activities especially targeting vulnerable groups were not properly directed to the needy qualified beneficiaries. Qualitative changes of beneficiaries were achieved far below the expected level. More relevant and appropriate work for AD (agro-forestry, community forestry for energy, reforestation with benzoin plants *etc*.) could have been attempted/developed to ensure sustainable environmental measures in communities.

Change in overall behaviour and leadership have been drastically slow, clearly indicating areas of intensive action demanded. Sustainability index had shown clearly, positive results, as a result of rural institutional building, human resource development, specific training for micro-credit, infrastructure maintenance, and land use planning. Knowledge in respondents had considerably changed in areas of project interventions, where proper awareness, advocacy

and training were provided. Effective qualitative changes in beneficiaries such as knowledge, attitude, overall behaviour, leadership and sustainability could contribute tremendously, if necessary attempts are made in project implementation.

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