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Agrobiodiversity and Local Knowledge Issues In Luang Prabang and Xieng Khouang Provinces

Assessment of the current knowledge, perceptions and roles of adults and children/adolescents in ABD resources, with a view of their future role as the centers of local knowledge and management of ABD

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Submitted by:
Mr. Marut Jatiket, Thai Education Foundation, Thailand
Mr. Sounduan Simsamay, Department of Education, Xieng Khouang

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Table of Contents

1. Introduction

1.1. Background

Lao PDR's rich biodiversity plays a key role in both the county's unmatched natural beauty and the livelihoods of its six million people. At the national level, non-timber forest products are calculated to be worth US$320 per year per rural household, making up 44% of subsistence value, 55% of cash income and 46% of the total household economy (Emerton 2005). Over the past five years, both government and private initiatives have responded to the importance of agriculture for income generation and profit, promoting coffee and tea exports, the establishment of rubber plantations, and fruit and vegetable production. The *National Biodiversity Strategy to 2020 and Action Plan,* released in July 2005, addresses conservation of forests and sustainable agriculture systems for forest protection and poverty reduction. Enhancing its commitment to conserving the country's biodiversity, Lao PDR also became a party to the Convention on Biodiversity (CBD) in 1966 and the Convention on the International Trade of Endangered Species (CITES) in 2004.

While increasing agriculture production and environmental protection are two important goals of the Government of the Lao PDR, the concept of increasing and utilization of a wide range of indigenous crops and non-cropped products as part of the overall agriculture system to fulfill these goals is not fully understood and appreciated. In addition to the provision of food items (both domesticated and non-domesticated plants and animals) agro-biodiversity provides income, materials, medicine, cultural/social inputs and ecological services. In order to successfully stimulate local communities in preserving agrobiodiversity, current knowledge, practices and the importance of ABD in livelihood strategies needs to be understood better. SDC will support partnerships to develop and pilot practical methodologies to engage organizations, communities and local government in agrobiodiversity conservation and utilization. One component of this is the understanding better the relationship between agrobiodiversity and sustainable livelihoods, the characteristics of agrobiodiversity within a wide range of farming systems and the specific gender roles as they relate to agrobiodiversity, all of which need a careful analysis. Much has been done in the uplands, therefore, the information available needs to be consolidated and gaps filled during the inception phase. An important gap is the current transfer of traditional knowledge on agrobiodiversity resources from the older generation to the younger generation.

1.2. Objectives

The main objective of this activity was to assess the current knowledge, perceptions and roles of adults, children and adolescents for the utilization agrobiodiversity resources, with a view of the younger generation's future role as the center of local knowledge and management of the agrobiodiversity resources.

1.3. Scope

The scope of this investigation was aimed to determine the current situation of:

1.3.1 ***The importance of agrobiodiversity to rural livelihoods***
Re-confirm the importance and the utilization of the agrobiodiversity to the communities' livelihood, the availability and accessibility of ABD in different geographical locations of the communities.

1.3.2 ***Is knowledge being transferred to the younger generation***
Assess and identify gap of knowledge passed on from older to younger generations, if any.

1.3.3 ***Methods used for transfer of knowledge and potential options***
Identify methods used for transfer/ passing on the knowledge and potential options.

1.3.4 ***Government Policy supporting ABD knowledge transfer***
Review and identify supporting educational policies for the development relating to agriculture, environment and biodiversity.

1.3.5 ***Opportunities to pilot ABD knowledge transfer mechanisms***
Review and identify institutional and opportunity to pilot educational programs on agrobiodiversity conservation and/or management particularly for Luang Prabang and Xieng Khouang Provinces.

1.3.6 ***Current project presence, strengths and limitations***
Identify and review current projects related to the agrobiodiversity, and the strength and limitations of these programs.

Target groups for the assessment included adults, young adults, school children, teachers and concerned agencies at local and national levels. *See Annex 1 for list of key informants.*

2. Methodology

2.1. Principles

In order to accommodate the particular conditions of the selected villages as well as human resources and time limitations, Participatory Rapid Appraisal was used for data collection and validation. Field walks, semi-structured interviews and group discussions were utilized with communities while validations were

conducted with concerned stakeholders. Review of relevant documentation and meetings with key informants at the national level helped determine specific areas of field investigations in potential project areas.

2.2. Indicators, source of data and instruments

To be in line with program objectives and the purpose of the assessment, the following key indicators, sources of data, and data collection instruments were identified.

Key Indicators/required data	Source of data	Instruments
The importance of agrobiodiversity to rural community livelihoods	• Policy level and key organizations • Adults • Children/ adolescents • Local agencies	• Meetings • Focus group discussions • Interview guidelines • Observations
• Is the current knowledge on ABD being effectively passed to the younger generation? How? • Type of knowledge not being passed on to younger generation and cause of disruption of information exchange. • In what ways does younger generation value local knowledge on agrobiodiversity? • Are there differences between knowledge transferred to girls versus boys? What are the implications?	• Adults • Children/ adolescents • Teachers/ school	• Focus group discussions • Interview guidelines • Observations
• What are the current interest levels and programs which support education on environmental, biodiversity and agriculture issues in Laos PDR? • Options for addressing the transfer and/or exchange of knowledge. • Institutional opportunities to introduce education components for the younger generation in Xieng Khouang and Luang Prabang. • Are there any on-going programs addressing the issue, what are they doing and what is the level of success?	• National level/ key organizations • Provincial and local agencies	• Meetings • Interview guidelines

2.3. Sample

The study was carried out by conducting focus group discussions in 2 Provinces, covering 5 main target groups namely primary and secondary students, young adults, the elderly generation and concerned agencies.

SDC has proposed number of sites in both Xieng Khouang and Luang Prabang Provinces which served as guideline for validation of provincial level information. Additional sites were added based on the recommendations from local authorities.

A total of 10 villages visited, four in Luang Prabang and six in Xieng Khouang Provinces. See the table below.

Province	SDC	Additional Sites	Total Villages Visited	Remarks
Luang Prabang	Phonxay District 1. Ban Pak Nga 2. Ban Phak Hok 3. Ban Donkham	Phonxay District 4. Ban Huay Maha	4	Additional sites recommended by Head of Phonxay District Education Office
Xieng Khouang	Phoukoud District 1. Ban Sort 2. Ban Khueng 3. Ban Poung Mun 4. Ban Sak	Kham District 5. Ban Xang 6. Ban Na Phai	6	Additional site recommended by Provincial Deputy Director of the Non-Formal Education office

2.4. Data collection

The selection and arrangements for meeting with target groups were done on site due to limited or no communication available to schedule meetings prior to the arrival. Some limitations were encountered due to the busy schedule of farmers and unavailability of students during the weekend. Hence, the number of respondents in each group widely varied from 3 to 20 and the majority of meetings were held at nights or during lunch when farmers were available.

The consultant team was able to interview and discuss with 7 groups in Luang Prabang and 9 groups in Xieng Khouang Provinces.

2.5. Analysis of data

Number of respondents by target group and province

Target Group	Luang Prabang			Xieng Khouang			Grand Total	Percent
	Male	Female	Total	Male	Female	Total		
Primary students	11	9	20	15	10	25	**45**	***24%***
Secondary students	10	10	20	0	0	0	**20**	***11%***
Young adult	7	3	10	0	0	0	**10**	***5%***
Elderly group	20	15	35	63	13	76	**111**	***60%***
Total	**48**	**37**	**85**	**78**	**23**	**101**	**186**	***100%***

Qualitative data was preliminarily analyzed during the collection process by the evaluation team together with the groups providing input. This was done in order to obtain maximum input from stakeholders, giving them an opportunity to immediately reflect on the data and supplement this with their own interpretations and analysis. This also provided an opportunity for on-the-spot examination and clarification of the data from different sources for similarities and inconsistencies.

3. Findings

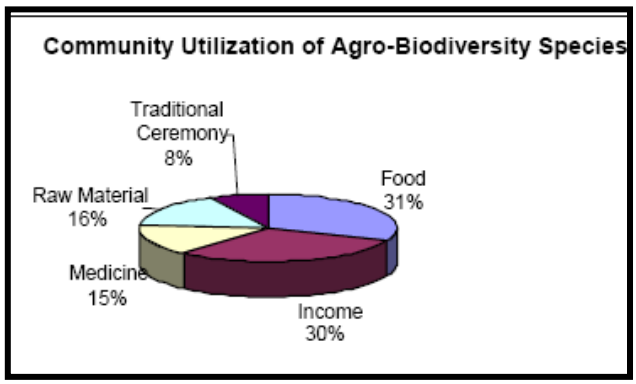
3.1. The importance and status of agrobiodiversity utilization by community

According to national statistics, the Laos PDR has abundant natural resources and agriculture is the main source of livelihood for Laos' population and economics at both the local and national levels. In the rural areas, people are dependent on non-cultivated agrobiodiversity resources, these being a major source for food, income, materials, medicine and social/cultural services.

Data[1] was collected from 10 villages about the utilization of agrobiodiversity species, both plants and animals, which were important to their livelihood security. It was found that:

53 different ABD species were identified, 68% of them were plants and 32% were animals which where used for food and income generation.

Approximately 60%f of species listed, such as bamboo, banana flower, rattan, fish, crab, snail, frog and etc. were used for both family food and income.



Approximately one third of the total species identified were for traditional medicine, raw material and/or used for traditional/cultural activities including clothes, basket weaving and various ceremonies.

Regardless of the number of categories used, it was evident that there was a considerable current knowledge of ABD utilization, particularly in poor and relatively isolated villages. The level of utilization in different categories varied based on family and community burdens.

[1] This data was used as the basis for further questions regarding knowledge about agrobiodiversity resources, and was not intended to be a comprehensive survey.

Although a low percentage of species were used for household materials, it was stated that they can still find them easily, particularly wood for household and fence construction or other purposes.

In Ban Sort, a very remote village, ABD species collected were rarely used for income generating due to the unavailability of public transportation and the long distances for commuting on foot.

Some species were scarce, such as traditional dyeing and weaving materials including silk worms and the natural color dyes from wood bark. Due to the availability of modern materials some people considered convenience, less effort and time were more important than self-production. Hence, traditional weaving by using natural materials were hardly found in the villages, however, a number of respondents in both younger and older raised concerns for preservation. Clothes and basketry weavings are still active in majority of villages studied but only for household consumption rather than as additional income. The market development for these products has been a key issue identified by all villages for economic production.

> *"We normally look for foods from the fields, ponds or near the forest and if we can't find any meat for days or weeks, we may have to eat our domestic animals"* .
>
> A villager from Ban Phak Hok, Phonxay District, Luang Prabang Province

Phonxay, Luang Prabang

Location	Agrobiodiversity Species	
Lowland	**Density**	**Accessibility**
Ban Pak Nga	High	high
Ban Don Kham	High	high
Upland		
Ban Pak Hok	Low	low
Ban Huay Maha	High	low

The usage of ABD species for traditional medicine was widely discussed among the groups since most villages are still treating common ailments through traditional medicine. However, the availability of many of the herbal species used for traditional medicine is becoming dramatically reduced due to the expansion of farmland. In many villages, modern medical treatments are becoming more prevalent due to their convenience and accessibility. See Annex 2 for list of species and their uses

3.2. The availability and accessibility to ABD varies based on locations, conditions of the environment and village structure.

The availability and accessibility to ABD resources varies upon location and conditions. Villages located in the **lowland** which have considerable forest areas and river/water environments have greater levels of and accessibility to ABD species than those in other conditions. Ban Pak Nga and Ban Don Kham of Luang Prabang, for example, had higher density of ABD species and accessibility compared to those located in **upland areas**. Villagers are able to find foods from various nearby habitats. Moreover, some species are sold for family income. However, several species, particularly meat or fish, are becoming scarce due to the increased population and lack of previous experience and skills in natural resources management. Although there are designated aquatic

conservation areas which have been initiated and governed by community rules, communities have indicated their need for technical support in planning and management to strengthen their efforts.

Ban Pak Hok, an **Upland** village located on a high mountain ridge with some small remnants of forest with steep slopes and which required 2-3 hours walking distance to a small river had extremely low diversity of species including species important for domestic consumption. It was informed that both teachers and students mainly consumed vegetations and rice as main foods while meat was only consumed once or twice a month, at best. Most of the villagers' rice crops were damaged by drought and they were facing difficulties maintaining food availability as well as fodder production for goat rearing efforts supported by an international organization.

Conditions of the farming areas have also impacted the availability and accessibility of ABD resources. Lowland villages (Ban Khueng and Ban Sak in Phoukoud District of Xieng Khouang Province) in flat land with small hills terraced with rice fields, few or no forest areas, and with severe drought in the dry season were found to have low availability and accessibility to ABD resources. It was informed that even drinking water was insufficient or muddy in the dry season, resulting in a lack of water for domestic use. The number of species collected for food such as crabs, snails and fish were scarce in the dry season and it required much effort to find ABD foods, especially in Ban Sack which was observed to be particularly poor.

The population Structure of the villages was also found to be a significant issue regarding the utilization of ABD resources and conservation efforts. Villages with a majority of one ethnic population were much more interested in discussions and participation with community development projects. In contrast, Ban Huay Maha in Luang Prabang and Ban Sort in Xieng Khouang, the population which was comprised of two or more ethnics in the same village, appeared to lack unity and was more competitive among ethnic groups in terms of sharing and utilization of ABD resources for domestic consumption.

Disagreement and lack of cooperation were reported as major issues for natural resources management and community development efforts. The different views

and perceptions derived from cultural values, identities and traditional lifestyles which, in some way, no longer existed or was mixed and/or undergoing change. Villagers are strongly sensitive to their survival in new environments and need assistance to create common interests and cooperation which presents significant challenges to any projects undertaken.

3.3. Knowledge gap between adults and younger generation, strengths and limitations

All key informants acknowledged that knowledge among older and younger generations with regards to the utilization and management of ABD resources is being passed on and exchanged through parents' effort but a gap does exist and is expanding. This survey confirmed that nearly 100% of school children, both primary and lower secondary level, can list and are familiar with major species which are important to their livelihoods.

> *100% of secondary children know how to locate important [agrobiodiversity] species while 80% of male and 73% of female primary children could do so. Areas of traditional knowledge that have not been passing on at acceptable levels …. are traditional medicine and traditional weaving*

In addition, 100% of the secondary level children, both male and female, know how to locate the important species while 80% of male primary school children and 73% of female knew how to locate them. With regards to the uses of ABD species for food, only 50% of male and 95% of female from the secondary school know how to process them and more than half of both male and female from the primary school knew how to use them for food. While 73% of female from the secondary school indicated their ability to help parents produce household materials such as clothes weaving, basketry, and building of furniture and the house, a lower percentage of 40% male from the secondary school and some 20% of primary school children indicated their abilities. Areas of traditional knowledge that have not been passing on at acceptable levels (according to informants) are traditional medicine and traditional weaving. See Annex 3 for more details of ABD Knowledge and Skills Acquired by Young Generations

Children and the younger generation are aware of the needs for conservation by means of education in the school, experiencing first-hand the difficulties to find ABD resources and community conservation projects. The two major constraints reported by respondents were: i) parents and children lacked time and effort due to daily chores and schooling schedule; and ii) invasion of modernization and conveniences reducing the "need" to find the required items. Most parents also expressed that their children were not interested to learn or obtain traditional values and skills.

In contrast, the survey suggested that the majority of children interviewed (*more than 50%)* expressed their interest to engage in conservation efforts and learn traditional values and skills such as cloth weaving, basketry, traditional medicine, or even building boats within an organized learning structure if given the opportunity.

Children stated that certain knowledge is going to disappear without the efforts of parents or elderly groups to transfer the knowledge to the younger generation. The younger generation also planned to use this kind of knowledge for generating supplemental income to assist their parents in the future.

More than 50% of children interviewed expressed their interest in learning traditional values and skills….and engage in conservation efforts.

The older generation also expressed deep concerns about the lack of ABD and traditional practices knowledge transfer to the younger generation, resulting in some knowledge and practices having already disappeared. They said that this was due to the lack of a person or project emphasizing the importance and existence of traditional values and practices for the utilization of ABD for their livelihood needs.

3.4. Gender

Men and women have both shared and differentiated roles with regards to their livelihoods, traditions and culture in rural communities of Laos PDR. Men and women are both engaged in cultivation efforts and ensuring adequate food resources for their families. Certain differentiated roles were perceived and generated from traditional and cultural mechanisms. Definitely, women are playing more significant roles on house work such as cooking, weaving, cleaning and baby sitting while men are mainly perceived to be responsible for demanding physical labor such as construction of the home, building weaving equipment, rearing livestock and hunting for exotic foods. Consequently, knowledge passing on to boys and girls is in conjunction with their respected different roles.

Even though school age children spend most of their time on studying, they assist their parents for various daily household choirs. In this way they are also obtaining knowledge and skills from both father and mother, and grandparent and. to certain extent through experience of practice. There was no difference of knowledge and skills for boys and girls to identify ABD species for their livelihood and some differences were reported with regards to household choirs. However, some girls reported that they helped their fathers when seeking foods and building

household products. A few boys were also learning weaving and cooking from their mothers, hence, there is no clear distinction or gap regarding knowledge between boys and girls for the youngest school children.

A clearer focus is more obvious for young adults when they begin accepting greater responsibility for their own lives, particularly among those who dropped out from secondary education and were pursuing their own livelihood goals. This group indicated their interest and need to learn from responsive training programs, particularly focused on agriculture and livestock, or through informal educational programs to help them to obtain specific skills which they have not obtained from parents or during school enrollment in order to be more competent [for their farming livelihood] and responsible in the conservation and management of ABD resources which directly impact on their current and future lives.

3.5. Current institutional policy and programs which support education on environmental, biodiversity and agriculture issues in Laos PDR.

The Lao PDR National Bio-Diversity Strategic Plan for 2020 and 2010 action plan indicates several strategies and activities aimed to create awareness on the importance of bio-diversity in reduction of poverty. It promotes the involvement of communities in planning, preservation and development of the educational curriculum and programs. The plans also aim to strengthen cooperation and collaboration among governmental agencies for the conservation and utilization of bio-diversity in a sustainable manner.

In addition, the National Charter of Teacher Competencies (2007), was developed to provide a framework for teacher development programs. The charter listed competencies of teachers in 3 major areas of teachers' character and professional ethics, knowledge of children and subject knowledge and practical teaching wisdom.

Key competencies related to ABD educational development are that teachers implement the national curriculum and know how to design local curricula and relevant activities, set learning objectives and outcomes that match the real-life situations of the students and provide children with learning opportunities both within and outside school hours.

Lao PDR education policy and system recently stated the importance of and support for the development of environmental and agricultural education and the preservation of tradition and culture from local wisdom through the introduction of local participatory curriculum development. Twenty percent of the content and teaching activities are earmarked for local designated curriculum while the remaining 80% of the content are mandated from the national level. Local curriculum policy provides

guidelines for developing content which is responsive to solving problems in the community, community development activities and areas of interest. The focus of content can be developed through inputs from community while national level mandated content also includes learning about agricultural skills, vocational training and the importance of preservation of natural resources and forests.

The policies also promote the application of child centered and experiential learning processes. These policies apply to both formal and non-formal education programs and development.

Non-formal education programs aim to provide knowledge for the out-of-school adults and young adults with an emphasis on literacy and livelihood skill training. While the skill training programs are mainly centralized in designated centers in a few selected Provinces, the outreach program is designed to increase access to and improve the educational quality for minority groups. Teachers, experts and sources of local wisdom are invited to teach the courses in the village and supposedly receive incentives from NFE offices. Agricultural, traditional, and various skill training programs can be initiated in the integration of the literacy and livelihood skills.

According to District agricultural extension officer, the Agricultural and Forestry Ministry also promotes community conservation of bio-diversity. Leaflets and guidelines were developed and passed on to villages with technical support from their extension officers. The Ministry of Public Health also promotes the preservation of traditional medicine practices but is still lacking resources for project implementation at the local level. The Lao Women's Union has also been implementing various trainings for health and basic livelihood skills as well as preservation of traditional practices such as weaving and basketry.

Given these specific supportive policies from various governmental and non-governmental agencies, the communities themselves strongly expressed their interest to initiate and further strengthen the improvement of ABD conditions since they are aware of the importance and realize impacts to their livelihood and future generations. See Annex 4 for details of Species Preliminary Identified by Communities

3.6. Options for addressing the transfer and/or exchange of knowledge

Various options were identified and discussed with communities, schools and local governmental agencies to promote the transfer and/or exchange of knowledge between adults and younger generations. Potential options are as follows:

Option 1: School Curriculum and Project

As mentioned above, national education policies allow schools to partly develop their own curriculum and promote active learning methods such as child centered, team work, and project or studies focused on topics related to agriculture, environment, and cultural preservation. The schools and community members interviewed both expressed strong interest in developing and

supporting educational programs aimed at creating mechanisms for transfer and/or exchange of local knowledge, particularly for ABD conservation and/or management as well as traditional practices which are being lost. Schools can also invite local community members to teach children in some topics and/or have students learn from local wisdom through a hands-on approach and/or engage in documenting, monitoring and experiments on various ABD conservation efforts.

Option 2: Community Training Program

Community Training Programs have been implemented by various local agencies. Concerned agencies such as the agricultural extension, the non-formal education, public health or the Laos Women's Union and Lao Youth Union had expressed interest to collaborate and support the initiative of ABD related activities since they are mandated by policies but still lacking of both technical and financial supports. This type of program can directly support the out-of-school young adults and adults groups as part of knowledge management.

Option 3: Community Projects

The majority of communities visited expressed a strong interest to initiate and/or strengthen ABD conservation and/or management projects that lead to maintaining the existence and availability of resources on a sustainable basis for their livelihoods and passing of knowledge on to younger generations. Certain species deemed important to their livelihoods were preliminary identified by some villages.

3.7. Institutional opportunities to introduce education components for the younger generation in Xieng Khouang and Luang Prabang

With regards to the introduction of education components for the younger generation in agriculture, environment and ABD activities, strong interest was expressed from provincial, district education offices, schools and the communities visited. They were highly interested to collaborate and support the initiatives through educational development programs for both selected schools and out of school groups. Although, there has been some small support from international communities toward the educational development programs related to agriculture, environment or agrobiodiversity, much assistance and support for innovations are needed to lead and fulfill the expected results of the policies.

Local agencies, such as the agricultural extension, public health and Lao Women's Union, also welcomed such projects and would support its development since it was considered part of their normal responsibilities. Despite their strong interest for collaboration, certain agencies such as the Agricultural Extension (DAFEO) in Phonxay District is currently overwhelmed with current international projects being undertaken. Their role in supporting the initiation of the ABD project may be limited.

Non-Governmental agencies are currently operating and implementing their projects in both Provinces of Luang Prabang and Xieng Khouang. Several international organizations are implementing various agricultural related projects there while only a few international organizations, such as The Consortium and UNICEF, are supporting small projects with a few schools near the town of Xieng Khouang. No activities were reported in the District of Phoukoud. Opportunities to introduce ABD educational project activities with The Consortium in Xieng Khouang Province may be possible with some technical support on the development of ABD activities needed. There was no apparent local non-governmental agency working in either Province. See section 3.8 for more details.

3.8. Are there any on-going programs addressing the issue, what are they doing and what is the level of success?

Various programs have been and are being implemented both at the national level and in the Provinces of Luang Prabang and Xieng Khouang but only a few related directly with ABD conservation and educational programs.

At the national level:
The Teacher Development Program is being implemented under the Teacher Education Strategy 2006-2015 and action plan 2006-2015. This comprehensive teacher development program aims to improve the quality of teaching and learning and emphasizes the development of teachers' knowledge and skills of basic subjects and teaching and learning processes. The program receives aid and loans from various agencies such as SIDA, ABD, World Bank and from the governments of Australia and Japan. The program is operating at the national level and 9 selected Provinces, including Luang Prabang and Xieng Khouang.

The Non-Formal Education center organized a national workshop to draft various topics for local curriculum which some are related to ABD. They have trained their provincial officers from 8 Provinces under the support by UNECEF. The Basic Education division conducted training for teacher trainers for 5 Provinces from Xieng Khouang, Luang Prabang, Saravan, Champasak and Vientiane for supervisors which expected coaching support for schools to develop their own curriculum. Even given the supportive educational policies for the development of responsive curriculum for school, training and piloting at the schools level has not been realized in Luang Prabang Province due to the shortage of funding from the provincial office.

International and local non-governmental organizations have also supported and developed related ABD projects and activities.

IUCN explicitly integrated Agrobiodiversity as part of the Strategic Framework 2007-2011. Major emphasis includes increased knowledge base for better understanding of agrobiodiversity and demonstrated wise-use of ABD for improving livelihoods. IUCN activities were focused on protected-areas and community projects related to the utilization and protection of the non-timber products and biodiversity in the southern provinces of Laos PDR.

WWF has been working with communities on management of habitats for fisheries near protected areas in southern provinces and promotion of non timber products such as rattan in central provinces. WWF is also developing guidelines for NGOs in Laos PDR on how to incorporate environmental component into various projects as well as working with the Participatory Development Training Center (PaDeTC) for developing a tool kit for teachers about on environmental education on wetlands to be tested in 3 schools in Vientiane.

The Wildlife Conservation Society (WCS) has also been working on conservation since 1996. The emphasis was on protection of endangered species and conservation of natural resources in Borikhamxay, Huaphan, Luang Prabang and Vientiane. WCS promotes involvement of communities in identifying surrounding biodiversity species uses for community livelihood and conservation of species such as frogs which increased eight times as a result. Dissemination methods used included posters, puppet shows and mobile units. WCS was in the process of developing a curriculum for schools in 2001 but had never been finalized.

The Participatory Development Training Center (PaDeTC), a well established Laos NGO, is leading the development to improve the quality of education for youth development, and promoting development-related small and medium enterprises (SMES) in keys areas to help the poor to help themselves. PaDeTC has extensive experience working to develop participatory, child centered and experiential learning process with schools and the Ministry of Education. Various learning materials and training handbooks were produced and disseminated. The SMEs aim to build community capacity for economic independence and to reduce the rate of rural-urban and cross border migration of Laos people in search of jobs overseas. Promotions of income generation activities include fish raising, silk worm raising, weaving and sewing. Environment awareness trainings were conducted on waste recycling, household waste management, fuel efficient stove, village forestry and embankment piling. Business development on management training, club establishment, micro-finance service and marketing promotion were also trained to assist communities.

Community Development and Environment Association (CDEA) is another local Laos NGO who has recently been piloting the school and community ABD conservation project with 3 communities near Vientiane province. CDEA has been working with the Laos Women Union Association on micro finance and vegetables organic productions.

In Phonxay District, Luang Prabang Province, various projects are being implemented by local and international organizations as follows:

Agriculture and extension:

- Research and pilot projects on livestock, feed, and rubber by SIDA
- Promotion of livestock through loans by World Vision
- Livestock and feed by ABD
- Livestock of fish, goat and cash crops by CESVI
- Promotion of livestock feed by EU

Public Health:

- Training health officers and volunteers on District health surveillance, basic household medicine and supplies, and support travel cost by ABD.
- Household medicine supplies by World Vision.
- Funds, materials, transportation and medicinal supplies for students/school by UNICEF.
- Water sanitation, basic household medicine, sexual disease by Laos Red Cross.

Lao Women's Union:

- Food processing, silk worm raising with supported by CESVI.

In Xieng Khouang Province, the Consortium supported the development and dissemination of the curriculum on unexploded ordinance (UXO) and currently is supporting Xieng Khouang Educational Office to pilot livelihood projects such as agriculture, frog and fish rearing, grafting, ginger drink, and sweets in 5 schools near the town of Xieng Khouang.
It was reported that no projects are currently implemented in visited villages of Phoukoud District.

4. Conclusion and Recommendations

The results of this study indicate and that Agrobiodiversity plays a vital role in livelihood security of Lao PDR rural communities. Rural communities depend on ABD resources for food, income, medicine, raw materials and for traditional and cultural practices as part of their daily life.

The availability and accessibility of ABD resources vary upon geographical location of the villages. Villages located in lowland surround with various habitats and forests have higher density of ABD species available for communities, compared to those located upland. Drought, destruction of forests, seasonal availability of water sources and/or habitats impacts on the availability, accessibility to ABD resources and the living conditions of communities. Domestic animals are used only when ABD species were unavailable, as income or for special events.

Mixed ethnics groups in villages indicated some degree of competition over the use of ABD resources, the lack of unity and a challenging situation regarding the ability to work together and/or cooperate on common community development projects and efforts.

Much assistance and effort is needed to create awareness on the importance of ABD resources and management to ensure the future availability of resources to contribute to the community's livelihood in the next generation.

Priority should be made to initiate projects both in villages where availability and accessibility to ABD resources for livelihood is low, thus directly improving their livelihood conditions as well as villages with higher density and accessibility to ABD resources should to quickly develop success models for ABD conservation and management projects for dissemination.

Currently, the knowledge of ABD and it's uses are being passed onto younger generations through the family setting. Younger generations can identify important ABD species as well as the uses and some level of related skills for processing. Out-of-school young adult groups in rural communities are in need of knowledge and skills related to ABD and management since they are building their own family livelihood strategies and have insufficient time to obtain knowledge from the elderly compared to children in schools.

The knowledge gap is increasing due to a lack of interest to pass on knowledge, lack of time, and conveniences from modern technologies. Both adults and children are beginning to be aware of the needs to preserve traditional knowledge and practices since some of them have already disappeared. Considerable interest was expressed to initiate education programs through formal and/or informal structures which provide mechanisms to transfer or pass on knowledge, particularly on ABD conservation, management and traditions.

Importantly, there is a current opportunity for school curriculum to be developed through community inputs on ABD resources and management. School children could play active roles to periodically survey the status of local ABD resources, monitor and studies various species in community projects.

Training of traditional practices, such as weaving, natural dying, silk worm, medicine, basketry can be arranged, both by school or non-formal education programs, by inviting local wisdom resources to teach the course. The course could also be organized at the most convenient time for groups of learners.

Initiation of participatory community agrobiodiversity conservation and management projects are much needed to improve the livelihoods and existence of important species. Some current conservation efforts also indicate the needs for technical support to strengthen their programs and increase accessibility to those resources for their livelihood.

Lao PDR Educational policies provide strong support for the development of educational programs which aim to create awareness, knowledge and skills related to agriculture, environment and biodiversity. Some efforts were made at the national level to draft the curriculum and training of selected provincial staff. However, support to school implementation of such policies is minimum or non-exist in most Provinces. The lack of technical support to both provincial and district and schools was reported to be much needed. Strong interests were expressed to collaborate and support the development of ABD related educational programs at all levels.

Concerned local agencies such as the Ministries of Agriculture, Public Health and the Laos Women's Union also expressed a strong interest to support the development of ABD related projects.

ABD Educational projects can be initiated through partnerships with educational agencies and with some level of collaboration and support from other local concerned agencies for implementation. Institutionalize the project through local curriculum development in schools supports the development of educational innovations that are greatly needed.

Important considerations for initiation of ABD related programs

Capacity for ABD project development:
Technical support to develop and/or strengthen capacity on ABD resources management and education program were reported as needed for both government and non-government agencies. *Recommendations were made that participatory training on ABD education projects should be made at the community level and should include teachers, local agencies, communities as well as provincial education trainers to ensure linkage with national policies collaborations and on-going supports needed.*

Local and international non-government agencies can promptly help facilitate the initiation of ABD related projects through collaboration and support from governmental agencies. *The level of collaboration and support from local governmental agencies vary in different Districts and Provinces due to their current projects and workloads undertaken and thus, implementation plans and strategies would need to be adjusted accordingly.*

Sustainability: Many projects implemented by governmental agencies through the support from international agencies were discontinued due to the lack of governmental agency's capacity and financial resource's to maintain and sustain long term implementation of efforts made. *Attempts should be made to involve communities and local governmental agencies in planning and development of projects to solicit collaboration and support from within governmental agencies and systems.*

External financial support needed for government officials to assist the project implementation should be in line with the normality of governmental system to minimize the dependency on external budgeting sources.

Ownership: Initiation of ABD related projects by community involvement in planning, implementation and evaluation promotes local ownership to sustain project activities. Selection of international organizations as implementing partnership may impede on sense of ownership when funding ceases or is unavailable compared to the local non-governmental organizations who may carry on projects through other support.

Annexes

Annex 1: List of key informants

National level

Government of the Lao PDR

1. Mr. Saengthong Norlintha, Director of the Department of the Non-Formal Education, the Ministry of Education
2. Mr. Bounkong Thummavong, Director the Non-Formal Education Center
3. Ms. Michele Willsher, Project Adviser, Teacher Training Enhancement and Status of Teachers Project, The Ministry of Education
4. Mr. Inthasone Phetsiriseng, Advisor, Educational Reform Program, the Ministry of Education

International Organizations

1. Mr. Arthur Crisfield, World Education
2. Mr. Troy Hansel, Deputy Country Director, WCS
3. Mr. Xiong Tsechalicha, Senior Programme Officer, IUCN
4. Ms. Pauline Gerrard, Programme Manager, WWF
5. Mr. Joost Foppes, Senior NTFP Advisor, SNV

Local Non-Governmental Organizations

1. Mr. Sombath Somphone, Director, the Participatory Development Training Center (PaDeTC)
2. Mr. Khantone Phamoung, Director, the Community Development and Environment Association (CDEA)

Provincial and District Levels

1. Mr. Eung Lorsavanh, Director of Luangprabang Education Office
2. Mr. Soulisak Maly, Head of Teacher Training Unit, Luangprabang Education Office
3. Mr. Humpaeng Kaewvijit, Head of Phonxay District Education Office, Luangprabang province
4. Mr. Sichan Ladsamee, Head of Public Health office, Phonxay District, Luangprabang province
5. Mr. Khamputh Kaewbunta, Agricultural and Forestry Extension officer, Phonxay District, Luangprabang province
6. Ms. Chansamorn Chittaporn, Director of Phonxay Lao Women Union Association, Luangprabang province
7. Ms. Saisamone Mungnormek, Assistant Director of the Xieng Khuang Education Office
8. Mr. Soundeuan Simsamay, Xieng Khuang Provincial Educational Officer/ teacher trainer

Annex 2a: Frequency utilized non-cultivated species mentioned by communities in survey in Xieng Khouang and Luang Prabang provinces

	Plant	Frequency	Animal	Frequency
1	Edible vegetables	18	Fish	12
2	Bamboo & shoots	10	Snail	11
3	Edible bracken	6	Crab	11
4	Herb	5	Frogs	10
5	Mushroom	4	Birds	7
6	Honey orchid	4	Squirrels	4
7	Sweet vegetables	3	Wild boar	4
8	Mai Pradoo	3	Wild animals	3
9	Mai Pong	3	Mole rat	2
10	Mai Bong	3	Shrimp	2
11	Cotton	3	Silk worm	2
12	Water weed	2	Jungle fowl	2
13	Mai Paek	2	Raccoon	1
14	Mai Hok	2	Eel	1
15	Jungle vine	2	Deer	1
16	Chinese cabbage	2	Ground hog	1
17	Blow gun tree	2	Turtle	1
18	Bitter gourd	2	Skink	1
19	Banana flower	2	Cricket	1
20	Yellow wood	1	Kok insect	1

Annex 2b: Use of non-cultivated Plant species by communities in survey in Xieng Khouang and Luang Prabang provinces

List of plant species	Purposes of utilization				
	Food	Income	Medicine	Material	Traditional ceremony
Bamboo/Bamboo shoot	/	/	/	/	/
Banana flower	/	/	/		/
Chili	/	/	/		/
Rattan/ Rattan shoot	/	/	/	/	
Wild potato	/	/	/		/
Bad smell vegetable	/	/	/		
Edible bracken	/	/	/		
Mushroom	/	/	/		
Nungdum Tree	/		/	/	
Pumpkin	/	/			/
Sweet vegetable	/	/	/		
Tiger power tree			/	/	
Banyan tree		/		/	
Cassia				/	/
Chinese cabbage	/	/			
Chinese chive	/				
Lettuce	/	/			
Maize	/	/			
Morning glory	/			/	
Pradu tree		/		/	
Rice	/	/			
Spinach	/	/			
Tae kha tree		/		/	
Water weed	/	/			
Wild palm tree	/	/			
Egg plant	/	/			
Gourd	/	/			
Peanut	/	/			
Blowgun tree				/	
Hing tree				/	
Hok tree				/	
Honey orchid	/				
Jungle vine			/		
Pack tree				/	
Parsley	/				
Yellow wood		/			
Total number of plant species listed=36	***25***	***24***	***12***	***13***	***6***

Annex 2c: Use of non-cultivated Animal species by communities in survey in Xieng Khouang and Luang Prabang provinces

List of animal species	Purposes of utilization				
	Food	Income	Medicine	Material	Traditional ceremony
Fish	/	/			
Crab	/	/			
Snail	/	/	/		
Tadpole	/	/			
Frog	/	/			
Rat	/	/			
Wild boar	/	/	/		
Bird	/	/			
Squirrel	/	/			
Jungle fowl	/	/			
Turtle	/	/			
Kok insect	/	/			
Cricket	/	/			
Larvae	/	/			
Shrimp	/	/			
Raccoon	/	/			
Eel	/	/			
Pradu tree		/		/	
Tae kha tree		/		/	
Banyan tree		/		/	
Cassia				/	/
Chinese cabbage	/	/			
Rice	/	/			
Lettuce	/	/			
Maize	/	/			
Spinach	/	/			
Chinese chive	/				
Morning glory	/			/	
Hok tree				/	
Hing tree				/	
Pack tree				/	
Blowgun tree				/	
Jungle vine			/		
Honey orchid	/				
Parsley	/				
Total number of animal species listed=17	***17***	***17***	***2***	***0***	***0***

Annex 3: ABD knowledge and skills acquired by the young generation

	Ban Pak Nga, Primary School				Ban Don Kham, Secondary School			
	Able to find		Utilization		Able to find		Utilization	
Knowledge Of Species	M 11	F 11	M 11	F 9	M 10	F 10	M 10	F 10
Mai Pong	8	6						
Pak Vain			11	9				
Herb	1		1					10
Mai Kor	9	4	9	4				
Bamboo								
Mai Doo								
Frog							10	10
Fish	11	9	9	9	10	10		
Snail							0	8
Crab	11	9	8	6	10	10	10	10
Kham	11	9						
Por Sa	11	9	8	4				
Total	80.5	73.0	69.7	59.3	100	100	50	95
Skills Acquired								
Basket weaving			1	0			3	10
Spinning wheel			5	6				
Clothes weaving				1				10
Make Fence							10	10
Build home							3	4
Build hut							4	0
Make cotton clothes sew							5	10
Total			18.2	25.9			41.7	73.3
Interest to learn from old generation								
Clothes weaving		7						
Basketry	9	6						
Traditional medicine	10	1			10	10		
Build home					10			
Build loom					2			
Animal raising					x	x		
Sewing						x		

Annex 4: List of species preliminary identified by communities as knowledge important for younger generation

Province	Village	Plant	Animal	Knowledge to pass on to children
Luang Prabang	Ban Pak Nga		Fishery	Traditional medicine
	Ban Huay Maha	Herbs	Fishery	Animal raising, basketry, traditional medicine and ceremonies
	Ban Don Kham		Fishery	Silk worm, traditional medicine and ceremonies
	Ban Phak Hok			
Xieng Khouang	Ban Sort	Blow gun tree	Fish	Vegetables growing, traditional medicine
	Ban Kheung	Mai Paek, Mai Hing	Fish	Traditional medicine and clothes weaving
	Ban Xang	Blow gun tree	Fish	Handicraft, traditional medicine, ceremonies
	Ban Poung Mun	Mai Paek	Fish, Frog	Lao Wind Pipe (klan), weaving
	Ban Na Phai			Folk music and instrument

Annex 5: List of documents reviewed

1. The National Biodiversity Strategy 2020 and 2010 Action Plan, Lao PDR
2. Teacher Education Strategy 2006-2015 and 2006-2010 Action Plan, Lao PDR
3. National Charter of Teacher Competencies, Ministry of Education, 2007
4. IUCN Strategic Framework 2007-2010, Conservation for Sustainable Livelihoods in Lao PDR – Refresher Thinking
5. Review & Report on the Grade 5 Integrated Life Skills Curriculum, Xieng Khouang Province, Lao PDR, by Ken Kampe, The Consortium, March 2005
6. Poverty Eradication through Educational for Sustainable Development, Sombath Somphone, 20/01/2007
7. Developing Youth in Leadership for Sustainable Living, Key Note Address by Sombath Somphone, Director of Participator Development Training Centre, Lao PDR
8. Various projects and organizations' brochures