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**Investigation of the current awareness gap of local people in
environmental conservation: A Case study in Shan State**

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ဒေသခံပြည်သူများ၏ ပတ်ဝန်းကျင်ထိန်းသိမ်းခြင်းဆိုင်ရာ အသိပညာနီးကြားမှု အခြေအနေကို လေ့လာခြင်း

ဒေါက်တာအင်ကြင်းခိုင်၊ လက်ထောက်ညွှန်ကြားရေးမှူး
နေအောင်၊ တောအုပ်ကြီး
ချမ်းမြေ့အောင်၊ တောအုပ်ကြီး

စာတမ်းအကျဉ်း

ဤစာတမ်းသည် သစ်တောထိန်းသိမ်းရေးနှင့် သဘာဝပတ်ဝန်းကျင် ကာကွယ် ထိန်းသိမ်း စောင့်ရှောက်နိုင်ရန်အတွက် အထောက်အကူဖြစ်စေသည့် ဒေသခံပြည်သူများ၏ လက်ရှိ သဘာဝ ပတ်ဝန်းကျင်နှင့် သစ်တောထိန်းသိမ်းကာကွယ် အုပ်ချုပ်ခြင်းဆိုင်ရာ အသိပညာ နီးကြားမှု အခြေအနေနှင့် လက်ရှိအချိန်အထိ သေချာစွာ မသိရှိသေးသည့် ပတ်ဝန်းကျင်ထိန်းသိမ်းမှုဆိုင်ရာ အသိပညာ ကွာဟချက်/လိုအပ်ချက်များကို လေ့လာဖော်ထုတ်ရန် ရည်ရွယ်ပါသည်။ လေ့လာ တွေ့ရှိချက်များအရ လက်ရှိဒေသခံပြည်သူလူထုသည် အပူချိန် မြင့်တက်လာမှုနှင့် မိုးရွာသွန်းမှု ပြောင်းလဲလာမှု အခြေအနေစသည့် ပတ်ဝန်းကျင်တွင် ပြောင်းလဲဖြစ်ပေါ်နေမှုကို သိရှိသော်လည်း သဘာဝပတ်ဝန်းကျင်ဆိုင်ရာ နီးကြားမှုကြောင့် အသိစိတ်ဓါတ် ရှင်သန်မှု အခြေအနေမှာ မြင့်တင် ရန်လိုအပ်နေကြောင်း တွေ့ရှိရပါသည်။ Likert analysisအရ သစ်တောထွက်ပစ္စည်းများ စနစ် တကျ ထုတ်လုပ်မှုမပြုနိုင်ခြင်းအတွက် သစ်တောအပေါ် သက်ရောက်မှုနှင့် အသုံးမလိုသော အမှိုက်များ စွန့်ပစ်မှုဆိုင်ရာ အသိပညာများကို မြှင့်တင်ရန်လိုအပ်ကြောင်းနှင့်၊ အသိပညာပေး ဟောပြောပွဲများနှင့် လုပ်ဆောင်ချက်များတွင် ပူးပေါင်းပါဝင်ဆောင်ရွက်မှု နည်းပါးနေသေးကြောင်း လေ့လာ တွေ့ရှိရပါသည်။ အထူးသဖြင့် သစ်တောပြုန်းတီးခြင်းနှင့် သစ်တောအတန်းအစား ကျဆင်း မှုကို ဖြစ်စေသော အကြောင်း အရင်းများနှင့် ၎င်းတို့ကို ဖြေရှင်းနိုင်မည့် နည်းလမ်းများ၊ ကာကွယ်မှုအစီအမံများနှင့် ဒေသခံပြည်သူအစုအဖွဲ့ပိုင် သစ်တောတည်ထောင်ခြင်း လုပ်ငန်းများ ဆိုင်ရာ အသိပညာ လိုအပ်ချက်များရှိနေသည်ကို တွေ့ရှိရပါသည်။ သို့ဖြစ်ပါ၍ အဆိုပါ လိုအပ်ချက်များကို ထောက်ပံ့ ဖြည့်ဆည်းနိုင်မည့် အသိပညာပေးဆိုင်ရာ ဟောပြောပွဲများ၊ လှုပ်ရှားမှုများကို အရှိန်အဟုန်မြှင့် ဆောင်ရွက် ရန် လိုအပ်ပါကြောင်း တင်ပြအပ်ပါသည်။

Investigation of the Current Awareness Gap of Local People in Environmental Conservation: A Case study in Shan State

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Abstract

The purpose of this study is to give the required information relating to the current environmental awareness level of local people living in and around forests and exploring the environmental awareness gaps with the aim to support the sound environmental management. The main focuses are to examine the current environmental awareness level and awareness gaps of the local people living in and around forests. The assessment of the environmental awareness by Likert scale and Likert data analysis pointed out that the respondents knew about the temperature change and rainfall variations but the environmental knowledge of the respondents was poor. Likert data analysis showed that upgrading the environmental awareness was needed especially for collection of forest products and throwing waste materials. The participation in extension programs and activities was weak although most of the respondents were interested in extension programs and activities. Among mass media, radio can be considered as the most suitable media for contributing environmental education. There were still the knowledge gaps such as weak in understanding of the knowledge and awareness relating on the drivers of deforestation and forest degradation, feasible measures to reduce those drivers, social and environmental safeguard and community forestry as well. This study pointed out that upgrading the awareness of local people and extension programs and public-based activities should be done for the mentioned awareness gaps.

Keywords: Environmental knowledge; Extension program; Knowledge gaps; Local people; Public-based activities; Mass media.

Investigation of the Current Awareness Gap of Local People in Environmental Conservation: A Case study in Shan State

1. Introduction

Environmental awareness can be defined as knowledge and motivation of environmental concern and sensitivity towards the environment and its problems whereas environmental knowledge can be considered as the basic understanding of the environment and its problems. One of the goals of environmental education by intergovernmental conference on environmental education is to foster clear awareness of, and concern about, economic, social, political and ecological interdependence in urban and rural areas (Intergovernmental Conference on Environmental Education 1977). Lack of knowledge and information about ecosystem and failure to use adequate information has been the major constraints for effective ecosystem management (MEA 2005). There have been so many evidences of deforestation caused by human activities and even the climate has been influenced by human activities (IPCC 2013). Human can make the climate to be better or worse than before.

When environmental awareness is combined with external situations and the opportunities to do, the state of environment of that area will improve directly or indirectly by doing a kind of manner (Olgyaiova et al. 2005). Moreover, higher education is associated with higher level of environmental awareness (Olli et al. 2001).

Globally, about one-third of the earth's inhabitants are depending directly on tropical resources for economic and subsistence needs (Vance and Iovanna 2006). Thus, if the local inhabitants are lack of environmental awareness, they can't do environmentally friendly manner for extracting forest resources. In Pakistan, the lack of awareness, motivation and institutional support has been found as the major factor that hindered the pace of forest conservation (Jan 2011). Additionally, the environmental awareness has a significant relationship with attitude (including both perception and behavior) of people (Omoogun and Odok Anthony 2013). Consequently, lack of the environmental awareness can lead to deforestation and forests degradation.

The intensity of impacts can be stronger and stronger when the rural population living in and around forests is larger and larger. In Myanmar, about two-thirds of the populations are rural people who are depending on the forests for their livelihoods (Ministry of Forestry 2010; Zin 2009). Moreover, the population rate has been increasing year by year and the total population of Myanmar has reached about 58.4 million (UNESCO 2013) with an annual growth rate of 1.29% at the national level by the survey in 2009 (Ministry of Health 2013). Additionally, poverty in rural areas was a major problem in Myanmar and rural poverty has been reached 29% of the population and that rural poverty contributes to 84% of total poverty (IHLCA project technical unit, Myanmar 2011).

Because of these reasons, most of rural people have relied solely on forest resources for their survival (National Commission for Environmental Affairs 2009). However, unsystematic usages of forest resources without having environmental knowledge and awareness will lead to deforestation and forest degradation. So, upgrading environmental

awareness of forest dependent community has been played crucial role for sustainable forest management in Myanmar.

Although the management laws, rules and systems that have been regulated have the inclusive of upgrading the awareness of the local peoples, only a few studies have characterized on this aspect. Thus, the information relating to this field is still limited. This study mainly focuses on the current environmental awareness status of local people by with the aims to provide the basic information for sound forest management.

2. Materials and Methods

The survey was carried out in Southern Shan state of Myanmar where the second largest lake, Inlay Lake, is situated. The location of the study site can be seen in Figure 1. Those areas are very important for conservation and protection against depletion. Different ethnic groups, mainly, Pa-O, Taung-Yo and Da-nu ethnic groups are living in the study area. Most of the areas are watershed areas and the environmental friendly manners of local people living in those areas are very crucial for not only watershed conservation but also reducing deforestation and forest degradation. We assessed the environmental awareness of the local people and the knowledge gaps to develop.

Secondary data collection and preliminary survey were done by desk-review, office records, and group discussions with local people, government staffs and NGOs. Based on the secondary data collection and preliminary assessment, we set up the core area of research work and research frame as well. A total of 250 households were covered by the survey. Systematic random sampling method was used and the structural interview with open ended and closed ended types questionnaires was performed (Neuman 2006; Becker and UBA-team 2011). The advantages of face-to-face interviews are getting the highest response rates, permitting the longest questionnaires and allowing the interviewers to observe the surroundings and to use non-verbal communication with visual aids (Becker and UBA-team 2011). Besides, face-to-face interviews could eliminate the problems of incomplete questionnaires or misunderstanding of the questions by respondents (Neuman 2006).

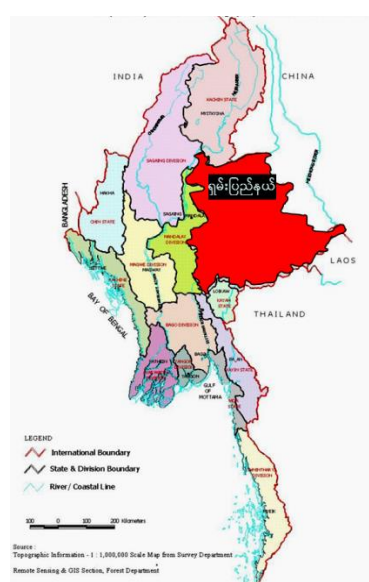


Figure 1. Location of study area of Shan State in Myanmar

The questionnaires were set out by dividing four sectors: opinion on the changes of local surrounding condition (sector 1); environmental knowledge (sector 2); participation (sector 3); and factors (mass media) that help to contribute the level of awareness of local people (sector 4). The five point Likert scale method was used for questionnaires of all sectors. For all sections, both Likert type analysis and Likert scale analysis were specifically done by different way of statistics to get relevant results (Boone and Boone 2012; Bertram 2012). Mann-Whitney U test was used for individual item analysis. SPSS and SAS software were applied for data analysis.

3. Results and Discussions

3.1 General knowledge

The important step of upgrading environmental awareness is to reveal the current awareness level of the communities. During the previous years, the extension programs and environmental conservation awareness raising activities have been emphasized by the Forest Department (Ministry of Environmental Conservation and Forestry 2012). To know the condition of environmental awareness of local communities is useful for awareness activities handled by Forest Department. Therefore, this study discovered the current awareness level of the local communities.

According the results, the environmental awareness of the local communities was low although they knew the fundamental conditions such as temperature changes and rainfall variations during the recent decades. The results showed the mean value ($\pm$ SD) of knowing the local surrounding conditions (4.05 ± 0.34) by Likert scale analysis indicated that the respondents in the study area noticed about the changes of temperature and rainfall. This finding was similar with the case found by Kumar 2013 in India.

The statistical results for classifying the opinions of local people among different variables for changes in surrounding condition can be seen in Table 1. None of the significant evidences on the awareness of temperature and rainfall change across gender was found.

Table 1. Statistical results for general knowledge of local people on the changes of temperature and rainfall.

No.	Variable	Valid number	Median/ Mode	Range	Interquartile range	Frequency distribution (%)
1	Temperature	4	4	1	1	59.0
		5				41.0
2	Rain	5	5	1	1	52.0
		4				48.8

3.2 Knowledge and awareness gap

Although the local people know the increase in temperature and the rainfall pattern changes, they were not able to distinguish the link between forests and climate change. Only about 20% of local people replied the relation of climate change and forests. Therefore it is not very surprising the REDD+ is a new terminology for local community three years ago. Soe and Yin (2009) also highlighted that most of the local people had limited or lack of

knowledge about environmental problems such as global warming, biodiversity loss. Our results showed that there is still necessary to improve the knowledge and awareness of local people in environmental conservation. Fifty one percent of the respondents did not understand the relationship between the climate change and forests. About 85% of the local communities accepted and knew themselves that they have limited knowledge and awareness. The understanding of the relationship between climate change and forests is shown in the following chart (Figure 2).

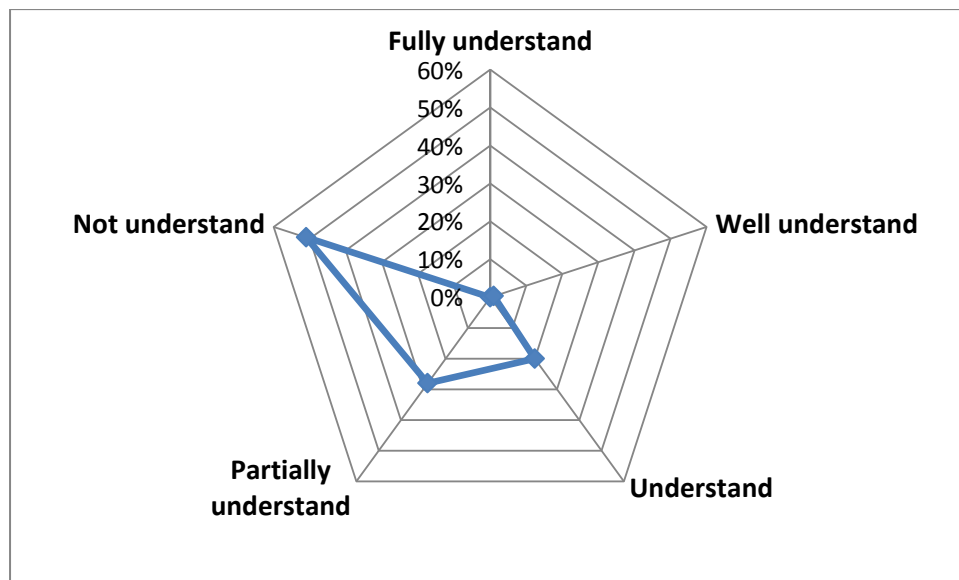


Figure 2. Statistical analysis of the understanding of the relationship between climate change and forests

Sub analysis of Likert type data showed that most of the respondents were lack of knowledge about the damage to the stream by throwing waste materials into streams. Only 20.52% of respondents knew not to throw away the waste materials into the stream. Similar result was found in the collection of forest products in continuous and several times are harmful to forests. Only 30.30% of respondents knew the harm to forests by collecting forest products in continuous and several times whereas 69.7% of respondents did not agree the damage to forests by doing this kind of manner or did not know how to collect the forest products systematically. They were also weak in understanding of the knowledge and awareness relating on the drivers of deforestation and forest degradation, feasible measures to reduce those drivers, social and environmental safeguard and community forestry as well (Table 2).

Table 2. Level of understanding of local communities on environmental conservation

No.	Key areas	Level of understanding of local communities		
		Weak	General	fully
1.	Climate change and forest			
2.	REDD+ concept			
3.	Damage to the stream by throwing waste materials			
4.	Drivers of deforestation and forest degradation			
5.	Feasible measures to reduce the drivers of deforestation			
6.	Social and environmental safeguards			
7.	Community forestry			

3.3 Participation

The mean value ($\pm$ SD) of local people's interests (3.84 ± 0.22) showed that the respondents were interested in environmental conservation activities. But for assessing their participation on programs and activities, the result (2.92 ± 0.41) showed that they attended the extension programs and activities often. Moreover, Likert type data analysis showed that around 70% of the respondents were interested in extension programs and doing things that help to protect the environment. But the percentage of respondents who are interested in extension programs was higher than the percentage of respondents who are very interested in doing activities. The levels of interest of local communities were in a range of "little interested" to "very interested".

For local people's participation on extension programs and activities, 43.5% of the respondents often participated in extension programs and 44.2% of the respondents usually participated in such programs. Most of the respondents who usually and often attended preferred getting souvenirs, using multimedia in the extension programs. However, most of the respondents did not usually participate in doing things that helped to protect the environment. Only twenty percent of the respondents usually participated in such activities. Most of the local people have time obstacle to learn or attend public talks because of their daily life strike for poverty. The level of interest of local people and the percentage of local people in each level of interest is shown in Table 3.

Table 3. The level of interest and participation of local people in the study areas.

No.	Variable	Valid number	Median/ Mode	Range	Interquartile range	Frequency distribution (%)
1	Interest in extension program	4	4	2	0	70.1
		5				10.7
		3				19.2
2	Interest in activities	4	4	2	0	68.5
		3				23.7
		5				7.8
3	Attending extension program	3	3	3	1	43.5
		4				44.2
		2				10.3
		5				2.0
4	Participation in activities	3	3	2	1	43.9
		2				35.6
		4				20.5

3.4 Factors (mass media) that help to distribute the awareness to local people

Mass media are one of the effective tools that help to distribute and upgrade the level of awareness of local people (Sudarmadi et al. 2001; Kumar 2013). Generally, most of the rural people listened to the radio programs in Myanmar. Because of the big difference of rural and urban economic development, poverty was mostly found in rural areas and the poverty level was higher in the rural areas where the villages were situated in the remote areas from urban areas. The results showed that the radio could be used as the effective mass media to distribute the environmental awareness to local people. But still it is difficult in some places because only BBC and RFA lines are available in some regions. The television is the second useful mass media for distribution widely although some places are limited to watch the television. Pamphlets expressing with lots of pictures could also be useful when visiting the villages for extension programs.

4. Conclusion

The knowledge and awareness is a basis foundation for enhanced participation which is leading to the successful completion of the activities or programs. The higher the level of knowledge and awareness, the better the achievement of the targets we can get. The environmental awareness of the local community is very fundamental for the future conservation activities. Without their interests and improved knowledge, any success work could not be found. Therefore, it is essential to know how the status of the local people in environmental awareness is moving on and what the gaps of knowledge and awareness are. By knowing this, the conservators can understand and prepare the necessary strategic action plans to fulfill the knowledge gap.

According to the survey, most of the local people have limited knowledge and awareness of environmental conservation, more specifically, the exemption relating on temperature rises and forest area decline, about 80% of the local communities need to

improve the knowledge and awareness of environmental conservation. Among this, 85% of the local communities accepted and knew themselves that they have limited knowledge and awareness.

Some of those people give attention on climate change adaptation and mitigation although they did not know how to do it. Most of the local people have time obstacle to learn or attend public talks because of their daily life strike for poverty. They spent most of their time in the forests to collect forest products or works for their livings, and so they relinquished the opportunities to attend extension programs and activities. The conservators or foresters who will educate and do the extension activities should schedule only after the preliminary assessment and stakeholder consultations in the targeted areas. Moreover, the extension There are no significant evidences of opinion on environmental conservation, participatory approach for forest conservation, benefit sharing, REDD+, community forestry instruction, and feasible measure to reduce the drivers of deforestation and degradation.

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