COMPILATION OF SELECTED PAPERS

PRESENTED AT THE INTERNATIONAL WORKSHOP ON

EXPLORING DESIRABLE PATHS OF AGRICULTURE AND RURAL DEVELOPMENT IN ASIA: CHANGING LIVELIHOODS, INTERNATIONAL COLLABORATIONS AND TRANS-DISCIPLINARY CHALLENGES

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Contents

Preface

This book is the product of an international workshop held at the Royal University of Agriculture, Phnom Penh, on February 20-22, 2018. As you see in the workshop program on the next section, 24 researchers from five countries; Japan, Cambodia, Bhutan, Myanmar and Bangladesh, presented their studies having relations with agriculture and rural development in Asian countries. The first purpose of the workshop was to make the multi-scale comparative examination on the changing situation of agriculture and rural development in each county in the region. Moreover, it also aims to explore a future vison on the academic researches concerning agriculture and rural development, which will produce new knowledge and practice to make a positive difference to a community/society. Participants were very diverse in academic disciplines, areas of study, and research experiences, but all were aware of the necessity for innovating academic approaches with regarding the fact that traditional roles of rural communities such as a being a place of food production and a storehouse of traditional culture have changed already with the intensification and diversification of connectivity associated with globalization. In addition, both public opinion and policymaker in every country in recent years are more and more interested in the social contribution of academia and universities toward the creation of a better future. The workshop, based on the consideration on this critical atmosphere concerning academic researches on agriculture and rural development, had tried to produce a small but significant step for promoting the global discussion on the issue. It was very successful in stimulating questions and comments from participants.

The workshop would not have been possible without the generous and thorough support of Royal University of Agriculture, Cambodia. We would like to express our sincere gratitude to all the staff and students of the university who assisted us. We are grateful to the Department of Community Development, Faculty of Development Studies, Royal University of Phnom Penh, who sent representatives to the workshop. We specially appreciate the efforts of Sherubtsue College, Royal University of Bhutan, Yangon University and Hinthada University in Myanmar, and Bangladesh Agricultural University in Bangladesh to dispatch researchers to the workshop as well.

We hope that this book becomes a cornerstone for further developing discussions and collaborations on empirical study of agriculture and rural development in Asia.

KOBAYASHI Satoru

Acknowledgement

The workshop was supported by the projects mentioned below. We would like to express sincere thanks to all of them.

- Kyoto University Grand (ZENGAKUKEIHI): Academic Collaboration Promoting Project for extending Kyoto University's Area Studies Approach for setting up the practical issues with major traditional agricultural countries in Asia, Kyoto University, Japan
- Japan-ASEAN Science, Technology and Innovation Platform (JASTIP), Japan Science and Technology Agency, Japan
- Japan-ASEAN Platform for Transdisciplinary Studies, CSEAS, Kyoto University, Japan
- International Program of Collaborative Research, CSEAS, Kyoto University, Japan
- Grant-in-Aid for Scientific Research (A) "The Practice-oriented Area Study challenging to Global issues through Zaichi No Kyodo (Collaboration of Locally Existing) in Asia"（FY2015-2018）
- Grant-in-Aid for Scientific Research (B) "Exploring the Sustainable Humanosphere in Rural Cambodia through Interdisciplinary Research on Changing Connectivity and Livelihoods" (FY2015-2017)

Workshop Program

First day: 20 February 2018

No.	Times	Titles	Speakers	Facilitators
1	08:00-08:30	Registration and exchange name cards		Team
Opening Remarks				
2	08:30-08:45	Agricultural education of the Royal University of Agriculture	Prof. Ngo Bunthan	Dr. Kobayashi Satoru
3	08:45-09:00	Introduction of the workshop "Exploring desirable paths of agriculture and rural development in Asia"	Assoc. Prof. Kobayashi Satoru	Dr. Sanara Hor
Keynote speeches				
4	09:05-09:30	Sustainable Humanosphere Studies in CSEAS, Kyoto University	Prof. Kono Yasuyuki	Dr. Borarin Buntong
5	09:30-09:55	Synergy Research and Education for Economic Development	Prof. Men Sarom	Dr. Kobayashi Satoru
	09:55-10:15	Group photo and Coffee break		
Session1: University's roles for contributing to society through agricultural science and rural development				
6	10:15-12:00	Extension Approach of Bangladesh Agricultural University: history and current practice	Prof. Muhammad Salim, Bangladesh Agricultural University	Chaired by Prof. Dr. Preap Visarto, Vice-Rector, Royal University of Agriculture
7		RUA's research and extension: the challenge	Dr. Buntong Borarin, RUA	
8		The history, necessity, potential and role of the community development centers of Universities in Myanmar	Dr. Nilar Aung, Yangon University	
9		Gross National Happiness Development Center and its program of the Sherubtse College, Bhutan.	Mr. Sonam Wangdi, Sherubtsue College	
		Discussion, Questions and Answers	Participants	
15	12:00-13:30	Lunch		
Session2: Creation/adaptation of agricultural technologies and management				
10	13:30-14:50	Conservation agriculture for soil health improvement in Cambodia	Dr. Hok Lyda, RUA	Chaired by Dr. Nawata Eiji, Graduate School of Agriculture, Kyoto University
11		The Commercialization of Aromatic Rice in Cambodia: A Case Study of Boosting Food Production Project	Dr. Chan Phaloeun, General Directorate of Agriculture, MAFF	

12		Rice and black gram multiple cropping in Maubin, Ayeyarwady Delta	Dr. Ando Kazuo, Kyoto University	
		Discussion, Questions and Answers	Participants	
	14:50-15:10	Coffee break		
Session3: Livelihoods transformation in rural communities under globalization				
13	15:10-16:50	Rural urban migration and agriculture of Hinthada Township, Ayeyarwady Region	Dr. Myint Thida, Hinthada University	Chaired by Dr. Matsuda Masahiko, Ritsumeikan University
14		Migration of rural people from a village of Ayeyarwady Delta: a case study of livelihoods strategy	Mr. Okada Natsuki, Kyoto University	
15		Depopulation and abandoning of farm land in the villages of the east Bhutan	Mr. Rinchen Dorji, Sherubtse College	
16		Transboundary connectivity and Rural Development: A case study in Cambodia-Thai borderland	Dr. Kobayashi Satoru, Kyoto University	
		Discussion, Questions and Answers	Participants	
	16:50−17:30	Discussion, Questions and Answers for Session 1-3		

Second day: 21 February 2018

No.	Times	Titles	Speakers	Facilitators
Session4: Reexamining the reality of rural development and natural resource				
17	08:45-11:00	Cheroots in Myanmar: Rural Development behind the National Policy	Dr. Matsuda Masahiko	Chaired by Dr. Myint Thida, Hithada University
18		Land Resources Assessment for Agricultural Development in Cambodia	Dr. Seng Vang, CARDI	
19		Transformation of Cambodian agriculture: the role of financial institutions and land registration	Dr. Yagura Kenjiro, Hannan University	
20		Land resource management research in Ratanakiri province, Cambodia	Dr. Hor Sanara, RUA	
21		Reaffirming the necessity of an orthodox pathway based on ongoing multiple realities: A case study in a planned REDD+ pilot project area in central Cambodia	Dr. Kurashima Takayuki, Kyoto University	
		Discussion, Questions and Answers	Participants	
	11:00-13:30	Visit RUA research facility and Lunch		
Session5: Participatory approach of rural development				
22	13:30-15:10 15 minutes Presentation and	Practice in fields and services to rural areas by the students of faculty of regional collaboration, Kochi University.	Dr. Ichikawa Masahiro, Kochi University	Chaired by Dr. Kobayashi Satoru, Kyoto University

23	10 minutes Discussion for each	Participatory Learning and Action (PLA) by Students and Young Scholars of Bhutan in Japanese Depopulated Area: Its Implication for Challenging Global Issues.	Dr. Akamatsu Yoshio, Kyoto University	
24		Role of University in community development involvement: Revising Silk sector through provision of disease-free silkworm.	Mr. Dork Vuthy and Mr. Chap Nimol, Royap University of Phnom Penh	
25		An Observation of Rural Development in Trapeang Sankaer Fishing Community by the students of Royal University of Phnom Penh	Mr. Volin and Ms. Sothea, Royal University of Phnom Penh	
Session6: Institutional improvement of research and education in agricultural science and rural development				
26	15:10-15:40	Discussion 1: What is the university role supporting the societies?	Participants	
27	15:40-16:10	Discussion 2: What is the effective regulation and policy setting for the university to ensure sustainable agricultural and rural development?	Participants	
Closing Remarks				
	16:10-16:20	Remarks		

Third day: 22 February 2018

Field visit to RUA's stations in Kampong Cham Province and Tbongkhmom Province


Introduction
What does
Community
mean to us?

The Depopulation Problem in Rural Bhutanese Villages: Rethinking Development Priorities

Rinchen Dorji*

Abstract

Bhutan has seen unprecedented socio-economic development over the past four decades. This has led to increased living standards of the people while also creating many opportunities. More people than ever are now working in cities, earning their livelihood with comfort.

While development has brought all the comforts to the people, it has also led to numerous problems in society. With better opportunities and facilities in urban centers, thousands of people have been moving from villages to cities. People now choose to live in cities instead of working in their ancestral farmlands, leading to population congestion in cities while causing depopulation and abandonment of farmlands in the villages. If this trend continues at the current pace, more farmlands will be left fallow. This is a grave concern because while Bhutan is an agrarian country where 79 percent of the population depends on agricultural related activities, approximately only 7.8 percent of the land is arable. Thus, Bhutan optimally using the arable land to minimize total dependence on imports in order to have a favorable trade balance is very important. Therefore, revisiting our developmental priorities to encourage the rural population to stay in their villages and continue their agricultural work has become imperative. This paper will explore the causes of this influx of rural population into urban centers, including possible solutions to contain this ever-growing problem.

This paper is an outcome of my presentation 'Rural Depopulation in Bhutan,' presented during The International Workshop on "Exploring desirable paths of agriculture and rural development in Asia: Changing livelihoods, international collaborations, and trans-disciplinary challenges" held in Phnom Penh, Cambodia from February 20 to February 22, 2018. All the data and facts presented in the paper, however, are from researches already conducted by others. I have used them to compile a report on rural depopulation in Bhutan.

The proposed study will help contribute to our knowledge about the depopulation of rural Bhutan.

Keywords: *depopulation, migration, farmlands, agrarian, arable*

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Introduction

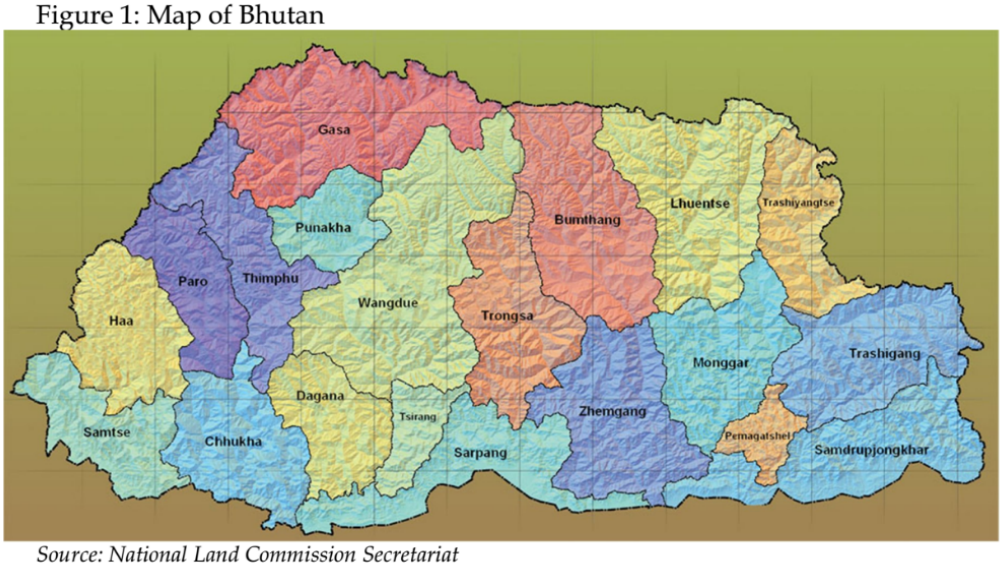
Bhutan is a small landlocked country situated between China and India. With an area of 38,394 square kilometers, Bhutan's east-west dimension, which is the longest, stretches approximately 300 kilometers, and 170 kilometers at its maximum north-south dimension. Located in the eastern Himalayas, Bhutan is primarily mountainous and heavily forested. Elevations range from 160 meters to more than 7,000 meters above sea level. Bhutan's highest peak, Jhomo Lhari, overlooking the Chumbi Valley in the west, is 7,314 meters above sea level. Bhutan shares a 470-kilometer-long border with Tibet, which is China's Xizang Autonomous Region, in the north and northwest, and a 605 kilometer border with the Indian state of Sikkim in the west, West Bengal in the southwest, Assam in the south and southeast, and Arunachal Pradesh in the east.

The form of government is democratic constitutional monarchy with His Majesty the king as the head of the state and an elected prime minister as the head of the government. For administration, Bhutan is divided into twenty districts, each headed by a governor.

The unique philosophy of Gross National Happiness (GNH), the brainchild of His Majesty the Fourth King of Bhutan guides Bhutan's development. GNH encompasses four pillars: sustainable and equitable socio-economic development, preservation and promotion of culture, conservation of the environment and promotion of good governance. GNH is based on the premise that true development occurs when material and spiritual development complement each other and highlight both the physical and mental well-being of the individual. His Majesty the Fourth King stresses that Gross National Happiness is more important than Gross National Product as wealth does not necessarily bring happiness to the people.

About 70 percent of the Kingdom is covered with forests. The constitution of the Kingdom of Bhutan mandates Bhutan to have at least 60 percent forest coverage at all times. Thus forest conservation has a high priority.

Figure 1: Map of Bhutan



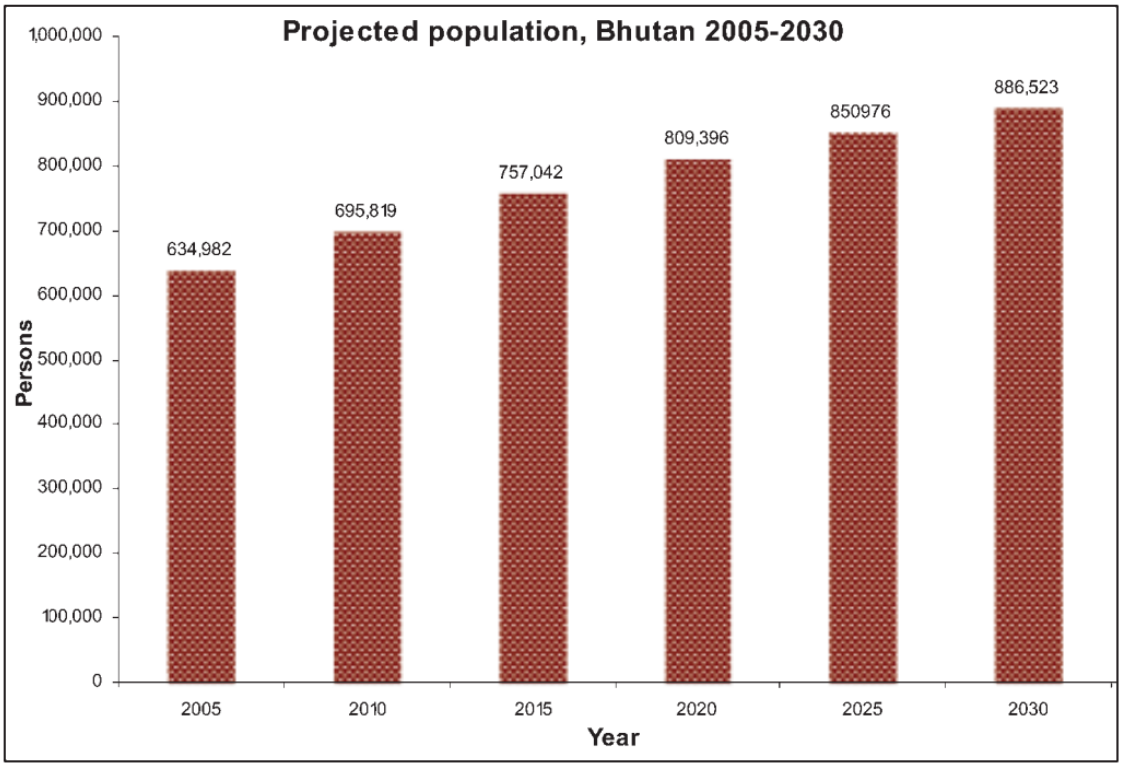
Source: National Land Commission Secretariat

Population

The principal source of data on population is the population and housing census, which is conducted every ten years. The Population and Housing Census in Bhutan was first conducted in May 2005 and then again in 2017. The results of the second census have not been released yet. The data presented here is based on the first census conducted in 2005. The census provides a complete count of the population according to a range of characteristics including demographics, health, education and other social aspects. The data are useful because they provide a range of current population data as well as creating a benchmark for making population estimates in non-census years and for population projections.

The statistics presented in this chapter are from the 2005 Population and Housing Census of Bhutan. The actual resident population enumerated as of May 30 and 31, 2005 is 634,982 persons with 333,595 males and 301,387 females. The urban population consists of 196,111 persons while 438,871 are in the rural areas. Based on the growth rate of 1.8 percent derived from population projections (2005-2030), the populations for 2016 and 2017 were projected at 768,577 and 779,666.

Table 1: Projected population of Bhutan



Rural Depopulation in Bhutan

Due to the rugged terrain, only about 7.8 percent of the total land area is arable, but the majority of Bhutan's population relies upon agriculture. However, rural-urban migration has increased to painful dimensions in Bhutan, leaving much agricultural land abandoned. According to the UN Human Development Report (2009), the rural-urban migration rate in Bhutan is one of the highest in the South Asian region at six percent. While most of Bhutan's population still lives in rural areas (69.1 percent), urban centers have emerged in recent decades in most districts and have attracted a considerable number of people (Ministry of Agriculture, 2005; Office of the Census Commissioner, 2005). Thimphu, the capital, is growing at seven percent per annum (MoA, 2005). The rapid influx of people from rural to urban centers is becoming a major issue in Bhutan and consequences are already being felt in both rural and urban areas. According to the Population and Housing Census of Bhutan (2005), lifetime migration from rural to urban areas stood at 111,770 people while people moving from urban to rural areas was 19,992 people, making the net migration rate to urban areas 91,778 people.

This movement of people from rural to urban Bhutan has been reported in mainstream media. Over a hundred families from Bidung Gewog migrated in 2009. In 2007, there were already around 90 empty houses. (BBS, 2013, March 29). In Tashigang, 983 of the total 8610 households are empty (Business Bhutan, 2016, February 20). Of 355 households in Tashiding Gewog in Dagana, 75 are empty (*Kuensel,* 2017, January 14). As of December 2016, over 15 acres of land in Zangthiy, Lauri Gewog in Samdrup Jongkhar were left fallow, as some of the villagers have left the village. (Business Bhutan, 2017, February 14).

"Rural-urban migration is increasing and along with it, the number of *gung-tongs* (empty households) is also increasing. Currently, a total of 4,269 households are registered as *gung-tongs* out of a total of 85,261 households in all 20 districts. Of them, 3,097 or 72 percent of total *gung-tongs* are in six eastern districts (Prime Minister's state of the nation report, 2016).

If this trend continues, and farmers and their children leave Bhutan's rural areas at the current pace, more farmland currently under cultivation will become fallow, increasing reliance on imports and worsening Bhutan's already negative trade balance. Migration from the rural areas will also dilute Bhutan's unique culture which is in large parts embedded in the agrarian lifestyle. Unemployment-related issues will continue to rise because neither public service nor the private sector, in its current state, can absorb the growing number of youth drawn to the cities. It is worrying to observe that, even as fertile land becomes fallow, Bhutanese are seeking livelihoods overseas in both professional and nonprofessional jobs, in often unknown circumstances.

Reasons for rural depopulation

Rural-urban migration is a global phenomenon and Bhutan is no exception. Rural depopulation affects many regions of the world as people move to cities, driven by social, economic and ecological factors (Grau & Aide, 2007; Rey Benayas *et al*., 2007; Robson & Berkes, 2011). Some of the most conventionally cited reasons for people moving from their villages in Bhutan to urban centers are economic reasons such as income disparity between rural and urban areas, better opportunities in urban centers, better health and educational facilities, human-wildlife conflicts and the hardships of rural life.

Measures taken to contain rural depopulation and The Way Forward

Rural infrastructural development

Rural areas being given high priority in infrastructural development is imperative as people move to urban centers looking for better facilities. Although experience has shown that infrastructural development alone cannot stop the influx of people from rural to urban centers, this development is crucial. Neglecting the rural areas will only increase the movement of people from these areas, thus increasing rural depopulation. One of the pillars of GNH, Sustainable and Equitable Socio-Economic development, ensures that developmental activities are shared equally. Guided by this GNH pillar, many developmental activities are occurring in rural areas. An unprecedented number of schools, hospitals and hundreds of kilometers of road are being constructed. Over 90 percent of rural homes have been connected with electricity. Most rural villages now have access to clean and safe drinking water.

Protecting rural farmers from human-wildlife conflict

As an agrarian-based society, almost 70 percent of Bhutan's population depends directly on crop and/or livestock production for their livelihood. However, most farming communities in Bhutan suffer from wildlife; crops are destroyed, domestic stock killed; sometimes homes are destroyed and people attacked. Such incidences have undermined livelihoods, resulted in lost lives and farmland abandonment. This damage, if not abated, could result in lower food security, reduced health, lower school attendance and still more farmland abandonment. Thus, the Royal Government of Bhutan has created strategies to help rural farmers contain their problems with wildlife. Compensation is one such intervention that is widely utilized around the world. This scheme, which is to compensate people for losses to wildlife, is used in some places where the farmers' crops and livestock are damaged by wildlife. This has helped farmers to regain what they have lost to sustain their livelihoods.

Electric fencing including solar battery operated fences is another solution to help farmers against wildlife. As of November 2015, the Department of Agriculture (DoA) and Department of Forests and Park Services (DoFPS) have established approximately 650 km of electric fencing, benefiting more than 3,744 households and protecting 7,698 acres of farmland in the country (The Bhutanese, 2016, February 27). The paper also reported that without electric fencing in the past, the ministry recorded

over 7,542 metric tons of cereal crop damage across the country due to wild animals, and approximately 493 livestock were reported to have been killed by predators. Thus electric fencing has been a great help for the farmers to protect their crops and livestock, ultimately preventing some people from migrating to urban centers.

Table 2: Showing details of interventions and investment made by DoFPS since 2008

Activities	Distance (Km)	Cost (BTN)	Year	Location	Dzongkhag
Electric fencing	4.5	2,900,000	2009	Singhe	Sarpang
	2.55	116,000	2008	Taraythang	Sarpang
	2.114	809,000	2010	Umling	Sarpang
	10	651,000	2011	Lhamoizingkha	Dagana
	6.7	994,308	2010	Sipsoo	Samtse
	1.71	1,005,962	2011	Dina	Samtse
	0.8	470,625	2011	Jitti	Samtse
	5	16,91210	2011	Jomotsangkha	S/Jongkhar
Insurance		300000		Sipsoo	Samtse
		2,36,596		Lhamoizingkha	Dagana
		300,000		Lachenphug	S/Jongkha
		300,000		Dangchu	Wangdue
		315,359		Nubi	Trongsa
		225,000		Tsamang	Mongar
		300,000		Chimung	P/Gatshel
		300,000		Bjena	Wangdue
		300,000		Dhur	Bumthang
		300,000		Naji-Korphu	Trongsa

Note: Source: WCD, DoFPS. Insurance scheme is active only in Dangchu

Central Schools

The central school is a concept initiated by the current government in 2015. Today 60 central schools are spread across Bhutan, located outside of urban centers. The government started central schools as a strategic school-based reform program to provide more wholesome quality education at integrated and centrally located autonomous boarding schools as opposed to the many existing small and unsustainable schools all over the country. In the central schools, children are given everything they need in school, free of cost, including uniforms, stationery and food. The schools are to help improve

the quality of education; children can now stay and study in schools that required some to walk for hours before.

While central schools definitely help the rural populace to send their children to school, they also help in containing the problem of people moving into the cities. As people believe that quality education and exposure is better in urban schools, more people are opting to send their children to urban schools where handling the admission is very difficult as in Thimphu. The facilities and exposure now provided in central schools will help prevent rural to urban migration. The Honorable Prime Minister of Bhutan remarked: 'having central schools in rural parts of the country will greatly help our rural people. The children studying as dependents in urban schools can return to rural areas and stay close to their ancestral homes.' (Prime Minister's State of the nation report, 2016).

It is already evident from the central schools being overwhelmed with applicants that some of the people who moved into the cities for educational purposes for their children are now returning to their villages where their children can study in central schools free of cost.

Rural Economy Advancement Programme (REAP)

A pilot program targeting poverty alleviation, the Rural Economy Advancement Programme (REAP-I), was initiated in 2009 in the 10th five-year plan for the 14 poorest villages covering 10 districts to target extreme poverty that may not be adequately addressed by mainstream development plan programs. With the completion of REAP I in 2012, a terminal evaluation was implemented in 2013 to study the effectiveness of the program and to assess the value of increasing the program scale. The evaluation results have shown that the program was effective in reducing extreme poverty and recommended increasing the program scale in the 11th five-year plan (2013-2018). Recognizing the importance and effectiveness of the targeted poverty interventions, REAP-II is planned for 104 villages, covering all 20 districts.

Under the two phases of the Rural Economy Advancement Program (REAP), villagers were given loans at only seven percent interest without any security. This helped rural farmers to start productive activities including growing cash crops and vegetables, creating art and craft products and rearing livestock. Villagers who were interested were also provided free training on cash crops and vegetable

cultivation as well as for rearing livestock, poultry and fishery. Farming machinery was also supplied at subsidized rates.

Table 3: Supply of agriculture machinery

Dzongkhag	Number of machines
Dagana	3
Haa	2
Lhuentse	2
Punakaha	3
Sarpang	2
Trashyangtse	2
Trongsa	2
Zhemgang	2
Total	**18**

Table 4: Dairy farming

Dzongkhag	Number of Jersey Cow s/breeding bull supplied
Dagana	30
Chukhha	47
Lhuentse	22
Punakha	1
Sarpang	22
Trashyangtse	20
Trongsa	3
Trashigang	18
Zhemgang	4
Total	167

Figure 2: Vegetable farming

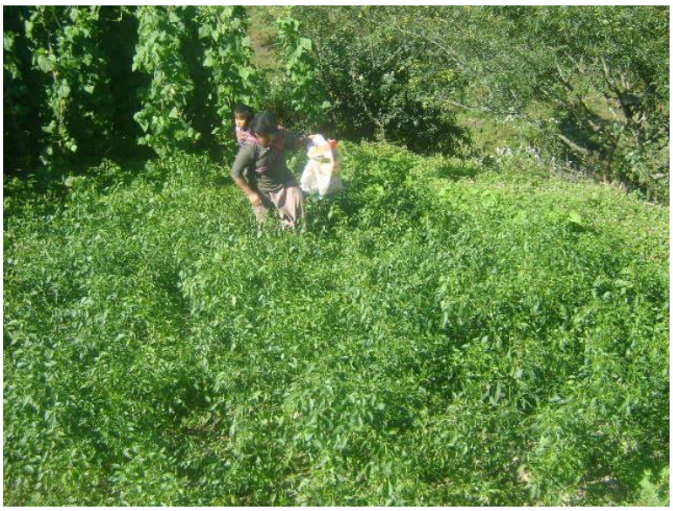


Figure 3: Cardamom plantation

Reports show that this program greatly enhanced the income generation among the rural populace, helping them to emerge from poverty. These people were otherwise potential migrators to urban centers, looking for better lives.

School Agriculture Program

The School Agriculture Program (SAP) is being introduced to all schools where students are engaged in agricultural related activities. The subject of agriculture is also incorporated into the school curriculum. The School Agriculture Program (SAP) is to impart basic knowledge and skills of agriculture sciences, produce fresh vegetables to supplement nutrition in school food programs and to create awareness about self-employment opportunities. Most importantly, SAP is to make the children appreciate agriculture so that when they grow up, they will take up agriculture as their profession. They also learn to respect the dignity of labor and value community service. The central schools in Bhutan now strive to grow their own vegetables and be self-sufficient.

In the long run, when today's children come to appreciate and embrace agriculture, it will have a great bearing on containing the movement of people from rural to urban areas.

Conclusion

While infrastructure developments like roads, schools, hospitals and banking facilities in rural places are an indispensable part of development, they are insufficient to contain the problem of people moving from rural to urban centers. This is evident from Japan. "To stop over-migration, the Japanese government tried several projects to eliminate the disparity between rural and urban facilities since the mid-1960s. However, no significant effects seems to have resulted" (Ando 2012). Despite all the basic facilities established, Japanese rural communities have witnessed an unprecedented level of rural depopulation. Many of the traditional houses and schools in rural Japan have been converted into community centers. Japan's case thus provides us with the opportunity to critically look at our current approach to solve rural-urban migration in Bhutan and ask if having all facilities in place is sufficient or if there is something more than just infrastructure development. We must rethink and reconsider the solutions for rural depopulation if developmental facilities and focusing on improving economic stability are insufficient. "Rural development is not about the issue of economic and materialistic development; rather it is the issue of emphasizing the values and life of rural society" (Ando 2012).

People today do not value rural life and society. Thus, the greatest change required is a change in the thinking of the people. We should bring back the glory associated with rural life. The perception of agriculture in Bhutan, especially among the youth, needs to change drastically. Today, farming is mostly seen as part of a lifestyle of the past. People do not understood that commercial agriculture offers a professional career and can be highly profitable. A shift from agriculture being seen as a traditional sector mired in poverty to a potentially lucrative and creative sector is necessary.

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Rural-Urban Migration and Agriculture: Hinthada Township, Ayeyarwady Region

Myint Thida[*], Moh Moh Khaing[**], Win Thanda Oo[***]

Abstract

This paper presents the rural-urban migration due to the low and irregular income from Hinthada Township agriculture. Productivity is low due to low investment and untimely rain; job opportunities are few. Agriculture mechanization leads to unemployment and most migrants moved to urban areas due to economic reasons. Possessing limited skills, they perform casual labor and female laborers work in industrial zones located in the Yangon Region. Most migrants are between 20 and 40 years old; a large proportion is female. Although they go to urban areas to obtain regular incomes, some migrants do not obtain regular incomes and do not regularly send remittances home. This paper explores the present situation of agriculture affecting migration to understand migration types and profiles and to examine the consequences. Primary data were mainly collected through interviews, questionnaires and focus group discussions. The quantitative-qualitative mixed method is applied in presenting the paper.

Keywords: *agriculture, machinery use, limited job opportunities, migration, income*

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Introduction

Agriculture is a major pillar of the Myanmar economy. Agriculture is one of the most important economic activities in Myanmar, contributing 37.8 percent of GDP and employing 70 percent of the labor force. Agriculture mechanization is gaining momentum; hand tractors were widely used due to the cheap prices and light tools in the 2000s. Agriculture machinery reduces the work of agricultural labor and unemployment is a major problem in rural areas.

Income derived from agriculture activities is also low. According to Todaro (1969) and Harris and Todaro (1970), rural-urban migration in less developed countries is related to the difference between the expected urban wage from migration and the agricultural wage. Limited job opportunities in rural areas also encourage migration; young adults move to urban areas to obtain regular and higher incomes, a better environment and higher living standards.

Migration is a recent phenomenon in developing countries including Myanmar where rural-urban migration started gaining momentum after the 1990s. People living in rural areas move to urban areas, especially Yangon, the major city of Myanmar. Due to job opportunities in the urban area and unemployment in rural areas, rural-urban migration became distinct in the last decade; irregular and low incomes from farming are the major pushing factors.

Lewis (1954) stated that rural-urban migration is a response to high demand for labor from the industrial sector. In Myanmar, after the transition toward market-oriented economy started in 1990s, the growth of the industrial sector became distinct. Industrial zones were established in cities such as Yangon, Mandalay and Mawlamyine. In Yangon City, Hlaintharyar, Shwepyithar, North Dagon, South Dagon and Shwepaukkan Industrial Zones were established. The growth and establishment of industrial zones affect rural-urban migration.

To present the problems with agriculture, which is the mainstay of the rural economy, including pushing and pulling factors as well as migration types and consequences, Hinthada Township, a major town located in the Ayeyarwady Region, was selected.

Study area

Hinthada Township is located in the northern Ayeyarwady Region and includes an urban area and 103 village tracts. Lying between the north latitudes of 17° 26′ and 17° 48′ and between the east longitudes of 95° 11′ and 95° 33′, the township is situated in the deltaic area and the existing physical conditions support agriculture. Hinthada Township is nearly 160 kilometers (100 miles) away from the Yangon Region.

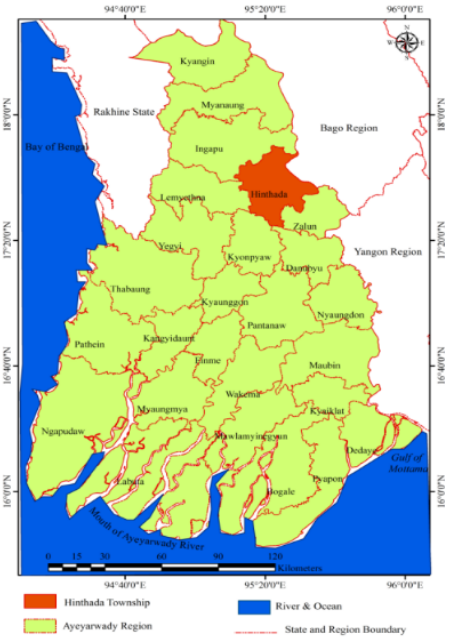


Figure 1: Hinthada Township location
Source: Myanmar Atlas (2002)

Aim and Objectives

This paper focuses on reducing the problems concerning migration. The paper explores the present situation of agriculture affecting migration in order to understand migration types and migrant profiles as well as to examine migration consequences.

Methodology

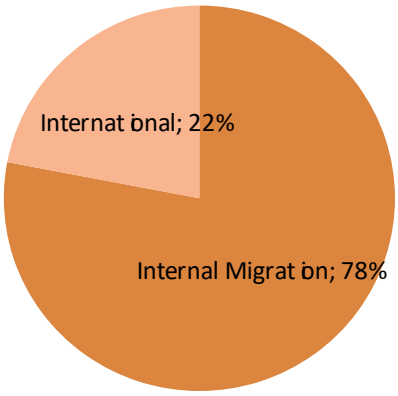
Among 103 village tracts of Hinthada Township, five village tracts, Pauktanlay, Zetawgone, Mayancho, Letpangone and Gyogone, were selected as sample villages. Data were obtained using a mixed methods approach comprising of questionnaire surveys and key informant interviews. Primary data were collected from 100 respondents (73 males and 27 females) who were purposively selected. Of the respondents, 64 percent own their farmland. The questions are related to pushing and pulling factors, migrant profiles, the differences in job opportunities in rural and urban areas, income differences and

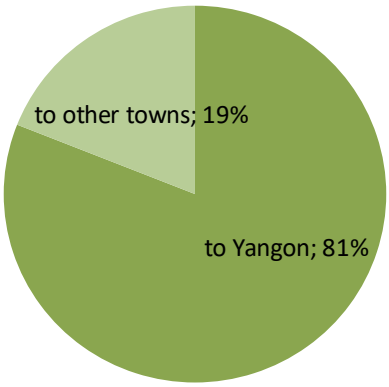
problems concerning migration in a rural area. To obtain a detailed understanding of migration, focus group discussion was conducted with village administration authorities and local residents. To present the paper, the qualitative and quantitative mixed method was used.

Results and Findings

Migration types

International migration is found because 22 percent of the migrants moved to other countries. Of these, 18 percent moved to neighboring countries such as Singapore, Malaysia and Thailand. Seventy-eight percent of the migrants moved to other cities and towns in Myanmar. Sixty-three percent moved to Yangon City because of many job opportunities.



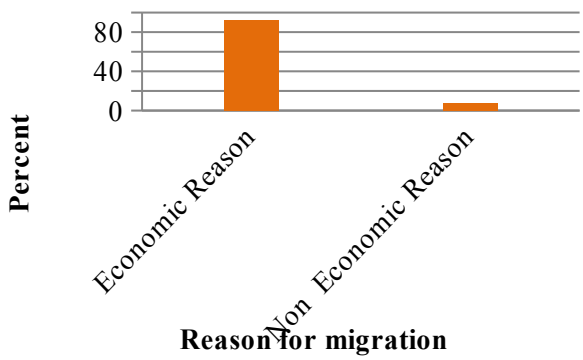


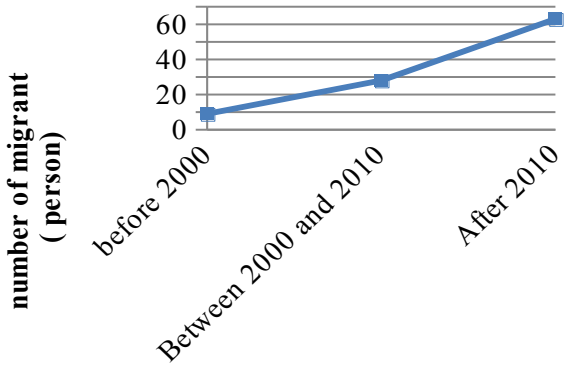
Migration causes

In the study area, two migration types are found. Economic reasons rank first with 92 percent of the migrants and the remaining eight percent is education related migration. This eight percent of the migrants move to Yangon City where half of them graduate and continue their studies in Computer Training Class and Economics such as LCCI (London Chamber of Commerce and Industry). While they are learning, they search for jobs to support themselves and work in weekends. The remaining four percent are university students.

Number of migrants

The number of migrants distinctly increased due to the higher pace of urbanization. Before 2000, only nine villagers migrated. Then, during the ten-year period between 2000 and 2010, the number of migrants tripled. Between 2010 and 2018, the number of migrants more than doubled, totaling 63.





Pushing and pulling factors

Major pushing factors include unemployment and irregular income which affect rural-urban migration.

Job opportunities in the area

In the area, job opportunities are limited. Agriculture and brick making are the major economic activities in the area.

Agriculture

Agriculture is a major part of the economy in the area but only provides low and irregular income due to high risks and low yield. Low and irregular income derived from agriculture is one pushing factor affecting migration. Most farmers grow pulse as well as rice (paddy-pulses system) because summer paddy cultivation requires much investment. Although paddies are mainly cultivated in the rainy season, the yield per unit area is approximately three tons per hectare. Pulses are extensively cultivated in the cool dry period, but price fluctuation reduces the return for pulse cultivation.

Agriculture machinery is also gaining momentum in Hinthada Township. Most farmers use tractors in plowing and combined harvesters for reducing labor costs double-cropping and finishing in time to

avoid the untimely rain. Therefore, the working period shortened and unemployment problems became significant.

Photo 1. Using a combine machine for harvesting (27.11.17)

Photo 2. Brickmaking (28.1.18)

Brick making is the non-farm activity in the area. In the off-season period, young adults earn income for their manual labor in brick making. Their daily income is 4000 kyats per capita. Brick making is mainly performed in the dry period and does not provide regular income for rural residents. Most of them are smallholder farmers and they cultivate paddies in the rainy season.

Working calendar

	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr
Paddy cultivation												
Pulse cultivation												
Brick making												
Furniture making												

Working period of local residents in Hinthada Township

Source: Interview (November 2017)

In the rainy season, traditional rain-fed paddy cultivation is practiced. Although the growing period is nearly four months, the total period for monsoon paddy cultivation takes over five months. The labor requirement starts in May for land preparation and plowing and ends in November for harvesting. Daily workers earn a low and irregular income of only 4000 kyats per day, which is insufficient to support themselves. Pulse cultivation is mainly in the cool dry period as the farmers conduct double-

cropping. Pulse cultivation requires much labor and is advantageous for casual labor, but the work period is only from November to March. Brick making is seasonal work between January and April. The daily income of a brick maker is 5000 kyats.

Pulling Factors

The nearness to Yangon City is a major advantage for the area because the study area is located in Ayeyarwady Region, which is 160 km (100 miles) away from Yangon Region. Hlaingtharyar Industrial Zone is the largest industrial zone in Yangon and was established in 1995. Over 650 factories operate in this industrial zone; the area has many job opportunities. The factories in the area attract female workers and all females older than 18 can obtain jobs regardless of their education.

Migrant Profiles

Gender

Forty-two percent of the migrants are male and 53 percent female. Young rural women moved into the urban labor market following the recent establishment of industrial zones around Yangon, the capital (Chaw Chaw, 2007). Job opportunities for females are higher in the Yangon Region and a greater number of female laborers are needed in most factories such as garment and food-stuff factories.

Education level and job types

Eighty-seven percent of the migrants have limited education. The migrants with some high school education are the highest with 51 percent, but only 13 percent have graduated. Migrants who have graduated work as government employees and earn regular incomes. The migrants with less education work as housemaids, housekeepers in hotels, casual labor and in restaurants and factories in industrial zones within Myanmar.

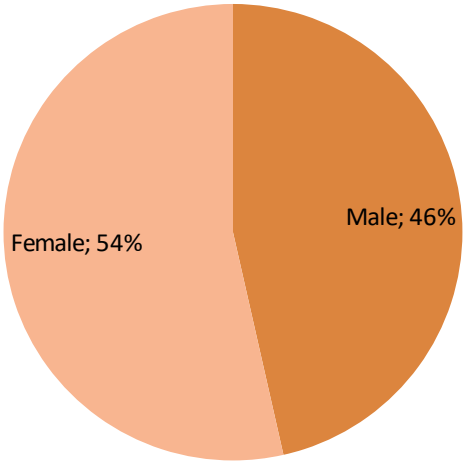


Figure 6: Migrant gender
Source: Questionnaire results

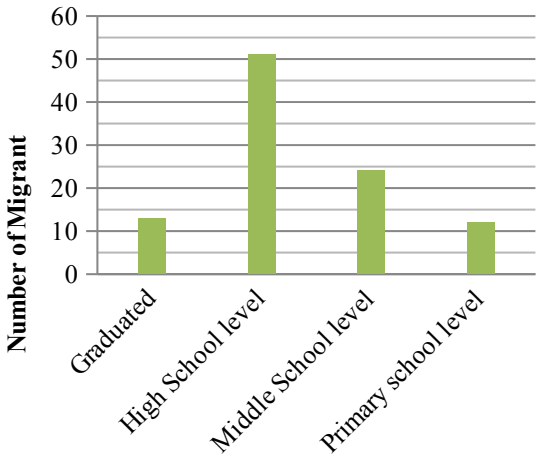


Figure 7: Migrant education
Source: Questionnaire results

Ages

The typical rural-urban migrant in less developed countries (LDCs) is 15-30 years old (Lipton, 1980). In the study area, according to the field survey, 52 percent of the migrants are between 20 and 30 years old because all persons above 18 years can find jobs in an industrial zone and other economic activities. However, 31 percent of the migrants are under 20 years old because some migrants who are under 18 can work in commercial areas and construction sites.

Income

Income varies with job types and work places. Those working abroad earn a high income of over 500,000 kyats per month. International migrants need large capital investment and high skills.

Those who work in Myanmar earn more than 200,000 kyats per month. They need limited skills because they work as blue collar workers.

Forty-two percent of the migrants are employed as casual labor and construction workers who do not earn regular incomes. The migrants working in restaurants and hotels earn regular incomes; those who work as casual labor, housemaids and in factories earn irregular income. They are always looking for better jobs and higher income through middlemen, relatives and friends.

Remittance

Like income, remittance varies because of different incomes and costs. International migrants send remittances back once every three months. Twenty-seven percent of the internal migrants do not send back remittances regularly due to low incomes and the high cost of living in urban areas. They send remittances back mainly on special occasions such as Thidingyut, New Year and when their family members are in ill health. As the young adults move to other areas, their families encounter high labor costs for farming (World Bank, 2005).

Migration consequences

Labor shortages are one consequence of rural-urban migration. Due to labor shortages, labor costs are high.

In 2005, the labor cost was 1000 kyats per day, which has increased to 4500 kyats per day. Therefore, the labor cost increased 4.5 times during a more than 10 year period. It also increases the cost of crop production and decreases economic returns derived from crop cultivation.

Conclusion

Hinthada Township is located in a deltaic area and agriculture is the mainstay of the economy. Unfortunately, agriculture productivity is low and only provides irregular low incomes to the rural residents. Farmers mainly cultivate paddies in the rainy season but the economic return is low due to untimely and irregular rain high labor costs. In the dry season, they cultivate pulses but the return is low due to price fluctuations. Therefore, income derived from agriculture is low although agriculture is a major pillar of the economy in the area.

Brick making is also performed in the dry season but only provides irregular income as the work is limited to that season. Agriculture machinery use is gaining momentum, causing a short working period and resulting in increased underemployment, which leads to rural-urban migration in the study area.

Most migrants are female because factories located in the large industrial zone within Yangon fringe area mainly attract female laborers. Some male migrants work as casual laborers. Most are unskilled laborers and do not obtain regular incomes. Although they send remittances to their families, it is used

for daily consumption, health costs and education for the youths. Therefore, the socioeconomic conditions of the people remain low in Hinthada Township.

In the future, rural-urban migration will gain momentum because of the quick pace of urbanization; rural depopulation problems will increase. Therefore, suitable ways to avoid rural depopulation problems and to upgrade agriculture are necessary. Supporting technology to obtain high yields and reduce losses are also necessary as well as establishing a vocational school and small and medium enterprises to reduce the migration pace. Moreover, existing infrastructure, especially road infrastructure, should be upgraded to support the local economy. Research covering the dropout rate in education, farmer perception on agriculture, local resources and more are also needed to fulfill the needs of the local residents in Hinthada Township.

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Cheroots in Myanmar:
Rural Development behind the Government Policy

Matsuda Masahiko*

Abstract

Cheroot, *seboleik* in Burmese, is a traditional and unique tobacco product made of tobacco and *thanatphet* (*Cordia dicotoma* Forst.) leaves in Myanmar. This paper examines the development process of production centers of the two materials for cheroot making, using information obtained by field surveys. The two centers were very different in ecological and cultural settings but have created strong interdependence between them. The centers had continuously grown, even under contrary agriculture policy and during political instability; the rural development was purely led by the local residents.

Keywords: *Burma, Pao, Thanatphet, Tobacco*

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1. Cheroot smoking in Myanmar

Myanmar has a traditional and unique tobacco product: cheroot. In Burmese a cheroot is called *seboleik*, which means light-tasting rolled tobacco. The cheroot has been smoked widely in Myanmar regardless of age, gender and ethnicity, although the majority of cheroot smokers are normally elderly men (Figure 1). Cheroot are more popular than commercial cigarettes in rural areas.

The cheroot contains leaves, stems and roots of the tobacco plant and wood chips from trees for fragrance. Local Myanmar varieties of tobacco are used for cheroots. Cured tobacco leaves are chopped and scented with vinegar, which is made from the sap of Palmira palm, banana, pineapple or tamarind. The chopped stems and roots are also scented and roasted. They are wrapped by a leaf of *thanatphet* (*Cordia dicotoma* Forst.) plant, with a filter made of maize husks (bract).

This paper focuses on commercialized cheroots. The commercialized cheroot, which is wrapped in *thanatphet*, is popular and available everywhere in Myanmar and is consumed in great volume at the present. People in Myanmar also smoke homemade rolled tobacco, which is rolled in materials including newspapers, banana leaves and maize husks. They all are also included among s*eboleik* in a broad sense. The commercial cheroot looks like a cigar at a glance, but is completely different from the cigar, which is made solely of tobacco leaves. The cigar is called *sebyinleik* in Burmese and means strong-tasting rolled tobacco.

The main materials in the cheroot are tobacco and *thanatphet*. The two materials are produced in different regions and by different ethnic groups. Tobacco is mainly grown in the central part of Myanmar where mainly Burmese, the ethnic majority, live. *Thanatphet* is grown in the mountainous region where the ethnic minorities commonly live. This paper outlines the cheroot and its industry in Myanmar, and examines the independent development process of production centers of the two main materials for cheroot making, considering the national agriculture policy and politics. Field information and statistical data used here were primarily obtained by surveys in Myanmar from 2007 to 2017. This paper is largely adapted from Matsuda (2014) and original discussion on rural development is newly added.

2. Burmese cheroot making and tobacco farming in central Myanmar

Myingyan Township, located in the central dry zone of Myanmar, is the best-known production center

for both tobacco leaves and cheroots. Many people in Myingyan, mostly Burmese, engage in tobacco farming and/or the cheroot industry; local residents call the township tobacco town.

The Myanmar cheroot industry is concentrated in Myingyan. The number of cheroot making companies, *seleikkoun*, in Myingyan has been gradually increasing for the last few decades. The cheroot industry in other regions of Myanmar, in general, has been decreasing or has become a sub-center depending on Myingyan. Mandalay is probably the second largest center of cheroot production and approximately 15 companies were working in 2009, but the owners said that the industry was in a downward trend. Bago was also well-known for cheroot making in lower Myanmar and approximately 20 companies were producing their own brand in 2011; most of them use ready-made materials purchased from the manufacturers in Myingyan.

Over 200 cheroot manufacturing companies are probably operating in Myingyan town. There were at least 60 large scale companies with their own brand of cheroot with small subcontractors under them in 2010. A large-scale cheroot company can produce more than 150 thousand cheroots per day. Each company has acquired specific regions as their steady markets; Myanmar has no cheroot brands sold across the entire country. Most of the large companies have continued to purchase cured tobacco leaves from specific villages, each company working with different villages. The cheroot companies provide processed materials including mixed and processed tobacco, filters and *thanatphet* leaves which were purchased from the mountainous region to the workers in the villages to handle most of the wrapping process (Figure 2). Commission brokers link cheroot companies and villages; the cheroot companies commission villagers with the piecework of making cheroots.

Tobacco is a major cash crop in Myingyan Township. Local Myanmar varieties of tobacco called *seywegyi*, *bamase*, and *myanmase* have been grown more widely in Myingyan than a *bagyiniya* (Virginia) variety which was introduced into Myanmar from the USA in the 1930s and used for cigarettes. According to official statistics from the Ministry of Agriculture, Livestock and Irrigation (MOALI), the sown area of the local variety of tobacco in Myingyan Township was 7,842 acres in 2009-2010. The area was the largest in Myanmar and accounted for approximately 24% of the national total sown area.

Tobacco is sown both in the upland fields (*ya*) and alluvial lowland fields (*kain*) in Myingyan. Farmers said that the former was generally higher quality and lower yield than the latter. Sowing tobacco starts

in August in nurseries and the seedlings are transplanted into the fields in September and October. The leaves are harvested from December to February. Harvested tobacco leaves are dried outside in the sun for a few days and inside for approximately three months. Then, the cured tobacco leaves are classified by quality and sold to cheroot manufacturing companies (Figure 3).

Although tobacco farming has been developed and is an important income source for local residents, Myanmar government policy has not supported the industry. The central government sometimes hindered tobacco farming in Myingyan during the 2000s. The agriculture policy of the previous government had prioritized rice production all over the country, probably in order to maintain a low and stable price of rice for social stability then. To achieve the chief objective in the agriculture policy, increasing rice production and attaining regional self-sufficiency, the government had a planned economy, especially for the politically important crop: rice. The government had set a production target for rice at the township level and led farmers to follow the policy. Even in the central dry zone where agricultural fields suitable for rice farming are limited from the agro-ecological viewpoint, increasing rice production had been driven by the government, especially since the late 1990s (Matsuda 2009). The planned sown area of rice in Myingyan Township was 2.68 times as large as the actual sown area in 2009-2010 and 1.85 times in 2010-11 according to the MOALI statistics. These areas probably indicate the strong political pressure for expanding the paddy fields in Myingyan Township in the late 2000s. According to local officials, the central government planned to replace tobacco with rice in lowland fields which were potentially available for rice production. Tobacco was thought of as an obstruction to rice production and the government called tobacco a restricted crop.

However, the tobacco farmers did not simply follow the rice-oriented agriculture policy and tried to maintain tobacco production, working against the policy and the strong pressure from the central government. The statistics from MOALI state that the sown area of tobacco was more than that of rice in the previous years, but decreased 73 percent from 2000-2001 to 2009-2010 and was replaced by rice in the late 2000s. That may have been an “achievement” of the national policy. However, the number of tobacco products changed relatively little from the previous years in the statistics, which indicated only a 39 percent reduction during the same period. All cheroot companies said that they had never faced any tobacco leave shortages then. The rice-oriented agriculture policy was changed and relaxed after a

democratic government was newly established in 2011; the sown tobacco area became greater than rice again after 2011-2012. Tobacco farming in Myingyan has developed in spite of the central government's policy.

3. Pao *thanatphet* production in a mountainous region

Thanatphet has been produced in the mountainous region of Myanmar and shipped to central Myanmar for cheroot making. *Thanatphet* has been widely planted as a perennial crop on the Shan Plateau at least since the British Colonial Era and used as a cheroot wrapper. Its cultivation and marketing were often found in descriptions of gazetteers published in the 19 century due to its importance as a revenue source for the colonial government. The recent production center is in Southern Shan State. According to MOALI, the planted area of *thanatphet* in Southern Shan State was 53,633 acres in 2009-2010, accounting for 98 percent of the total Myanmar *thanatphet* crop.

In Southern Shan, *thanatphet* has been grown mainly on the hillsides and is sometimes found in home gardens as well. The leaves can be harvested the second year after seedlings are planted. The harvest period is from June to September, which is the rainy season, and the leaves are picked twice a month. Manure and chemical fertilizers are used for *thanatphet* cultivation and pesticides are usually applied. Agrochemical use started by the 1950s (Maung Khun Nwe 1973). The harvested leaves are pressed and dried on stoves in villagers' houses (Figure 4). The processed leaves are classified by size and sold in central Myanmar for cheroot making.

Kyautaloungyi Sub-township, a southern part of Taunggyi Township located in Southern Shan State, is a well-known center of *thanatphet* production. Pao, an ethnic group, has lived there and grown *thanatphet* for a long time (Maung Khun Nwe 1973), which has been important in their livelihoods. Matsuda (2010) described *thanatphet* farming and its position in the livelihoods in a hillside village of the sub-township as follows. Many households, 29 out of a total of 36, grew *thanatphet* in the village and nearly half of the *thanatphet* farming households (13) have a stove for drying in their houses. Some households (5) have continued *thanatphet* production since the 1950s. *Thanatphet* production was a basic income source in the village. The villagers said that the area and amount of the production had originally been less than the present level in the 1950s when subsistence rice farming in shifting

cultivation had been important for their livelihood. *Thanatphet* planting had expanded when commercial crops and continuous upland farming had also increased there in the 1960s-1970s. Then, in the 1980-1990s, most of the villagers had engaged in *thanatphet* production at the present level. Although the villagers enjoyed a boom in garlic, which was intensively cultivated in the dry season in irrigated upland in the 2000s, they kept producing *thanatphet* as well until now.

The production center of *thanatphet*, Kyautaloungyi, was politically unstable for a long time. After the independence of Myanmar in 1948, ethnic armed groups against the central government had occupied their territories in rural areas in order to secure their autonomy. In Shan Plateau, military conflicts occurred between the ethnic groups and the national army; political tension was also high for a long time. The production center was the same, and the area was occupied by the Pao National Organization (PNO), an anti-government Pao organization. The ceasefire agreement between the PNO and the central government was signed in 1991. Then, the area was authorized as Special Region No. 6 and the PNO received some administrative autonomy. Even after the agreement, entry into the area was controlled by the PNO until 2011 when the democratic government established. Now, the area is a Self-Administered Zone established by the 2008 Constitution.

Although the political tension between the PNO and the central government was especially high before a ceasefire agreement in 1991, the *thanatphet* distribution from the production center to central Myanmar was not interrupted. The local residents continued their business in spite of the situation. According to Maung Khun Nwe (1973), the distribution of *thanatphet* from Shan State only stopped during the Japanese rule in World War II. Additionally, in the Socialist era, the central government intervened and started to control the *thanatphet* trade in 1963 (Maung Khun Nwe 1973). However, delivery to the government at the fixed price did not work well and the system was abolished in 1966 and *thanatphet* was liberalized again (Maung Khun Nwe 1973).

4. Co-evolution of the production centers

The two production centers of the major cheroot materials, Myingyan for tobacco and Southern Shan for *thanatphet*, have created a strong and closed interdependence between them. They need each other to exist because both materials are only used for making cheroots. The local tobacco variety is primarily

consumed for cheroots, although it is partly used as an ingredient for betel chewing. It is indispensable for cheroot making because the introduced variety of tobacco is not appropriate for cheroots. *Thanatphet* is only utilized for cheroot wrappers, indicating that the centers, disparate in ecological and cultural settings, are economically linked together.

The interdependence between the two different centers can be described as a consequence of co-evolution. As the cheroot industry developed and became concentrated, the production centers of the materials changed and their interdependence increased. Cheroot making changed from subsistence to a commercial enterprise. Then the cheroot industry and tobacco farming in rural area were gradually concentrated at Myingyan. *Thanatphet* came to be produced more intensively in Southern Shan and its importance in earning livelihoods was increased in Pao villages; they became major producers of *thanatphet* in Myanmar. The cheroot related industry should be a chief component in the rural development of the two centers: Myingyan and Southern Shan.

The firm bond between the two centers was a strong barrier against external dividing forces under political tension to realize stable economic connection. Even when political relations between the ethnic organization in the *thanatphet* center and the central government were hostile, good economic relations were maintained by the local residents. However, this could also be a weakness in that they have a common destiny. If one should face serious difficulties and the local industry declines for any reason, the other would also be affected by that negative impact.

In recent years Myanmar society and the economy have been changing faster than before, and the industry and relevant rural areas should adapt to the new environment in the near future. The local cheroot industry in Myanmar has developed in its own way and the production centers of materials have co-evolved until now, competing with cigarettes in the Myanmar domestic market. Asia has some examples of traditional tobacco industries that experienced modernization and they may provide ideas for the Myanmar cheroot industry in the future. Indonesia has a unique local tobacco, *kretek*, which contains cloves. The *kretek* industry have flourished by shifting to a cigarette-like *kretek*. Originally wrapped mainly in maize husks, it has been replaced by cigarette papers and the production process has been mechanized (Horii and Akasaki 2008). Whereas, Indian local tobacco, *bidi*, is rolled with the leaves of particular plants like Myanmar cheroot while *bidi* in Bangladesh is wrapped by papers at the present

(Dr. Muhammad Salim, personal communication, 2018).

5. Rural development according to local resident initiatives

The rural development accompanied by the cheroot industry in Myanmar is an obvious and concrete example purely led by local residents. Unsupported by the government and sometimes opposed by the government, tobacco farming in Myingyan had faced the challenges of both rice-oriented and anti-tobacco agriculture policies of the previous government, but was still developed by the local residents. Even with political instability, *Thanatphet* trading was also sustained by the common people.

Local resident initiatives could be a fundamental component of sustainable and desirable rural development. The Japanese One Village One Product (OVOP) is a well-known model for rural development in Asia. The movement started officially in 1979 in a prefecture in Japan and expanded domestically and internationally, such as the One Tambon One Product Project (OTOP) in Thailand. Financial or institutional support from the public sector are often found in these cases and are sometimes built into the projects. Cooperation between the government and the people, of course, is generally expected for successful results. However, the origin of the OTOP movement was a farmers' trial against the national agriculture policy of the Japanese government. The villagers had decided to prioritize the regional economy on perennial crop production instead of rice farming in the 1960s (Matsui and Yamagami 2006). The Japanese government had focused on promoting rice production then, but the local residents had decided to go the opposite way with their own initiative. Outsiders, including government agencies and universities, should play supporting roles in rural development. They can encourage and facilitate local initiatives, propose technical options (which can become part of the local strategies, if suitable), support adaptation to a new environment if the local society faces to difficulty due to rapid socio-economic changes and make additional contributions.

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Figure 1. Burmese man smoking a cheroot. (Myingyan Township, Mandalay Region, in August 2017)

Figure 2. Cheroot making in a village. Chopped tobacco leaves and other ingredients were being wrapped in a shaped *thanatphet* leaf. (Myingyan Township, Mandalay Region, in August 2017)

Figure 3. Classification of cured tobacco leaves in a village. (Myingyan Township, Mandalay Region, in August 2017)

Figure 4. Pressing and drying *thanatphet* leaves by the stove. (Kyautaloungyi Sub-Township, Southern Shan State, in August 2013)

Transformation of Cambodian Agriculture: Roles of Financial Institutions and Land Registration

Yagura Kenjiro*

Abstract

Over the last decade, Cambodian agriculture has undergone significant changes including commercialization as well as the adoption of labor-saving and capital-intensive technologies. Data indicate that the commercialization has been promoted by technological changes, and the capital-intensive ones are in line with the increased rice prices and rural wage rates. Both the commercialization and the technological changes also require better access to credit for farmers as well as traders of agricultural inputs and outputs, which have been facilitated by financial institutions and land registration. In Cambodia, financial institutions have drastically increased lending to the agricultural sector. Land registration implemented by the government in the last decade has promoted this process by making it easy for borrowers to use their land as loan collateral. Land registration may also increase land prices, thus enabling borrowers to obtain large loans. Field data indicate traders of agricultural inputs and outputs have relied on loans from financial institutions for working capital and funds for facility investment. Financial institutions have also promoted the sale of agricultural machines by providing credit to buyers in the form of installment payments and by guaranteeing payments from agricultural machine dealers to manufacturers.

Keywords: *Commercialization, Technological change, Financial sector, Land titling*

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Introduction

During the last decade, Cambodian agriculture has undergone significant changes, notably commercialization and the adoption of labor-saving and capital-intensive technologies. Changes in prices of inputs and outputs have partially contributed to the commercialization and technological changes, but the price mechanism alone was insufficient to cause the drastic transformation of the agricultural sector, as argued below.

This study demonstrates crucial roles played by financial institutions and land registration in the recent transformation of Cambodian agriculture by drawing on national and provincial-level statistics as well as information collected through the author's field survey.

Recent Transformation of Cambodian Agriculture

Commercialization in Cambodian agriculture is represented by increasing production of upland cash crops such as cassava and maize, especially in provinces in northwestern Cambodia such as Battambang, owing to the abundance of arable land, better soil and easier access to the Thai market. Among upland cash crops, cassava production has increased the most dramatically, the harvested area jumping from 30,000 hectares in 2006 to 388,000 hectare in 2016 (Food and Agriculture Organization n.d.).

Commercialization has also been observed in the rice sector. Rice exportation has increased to a large degree although precise statistics are unavailable because a large amount of rice is exported to neighboring countries through unofficial routes. This increased exportation is possible thanks to a significant increase in rice production from 2.5 million tons in 1990 to 9.8 million tons in 2016 (Food and Agriculture Organization n.d.), which has resulted from increases in both planted areas and yields.

One major technological change in Cambodian agriculture in the last decade is increasing agrochemical use. For example, the amount of chemical fertilizer used has tripled between 2008 and 2015 (Fig. 1), which contributed to the increased rice yields as well as the rapid expansion of cash crop production mentioned above.

Increasing use of machinery is another noticeable technological change, which is inferred from the increased exports of agricultural machines from Thailand to Cambodia (Fig. 2). The more direct evidence is the data presented in Fig. 3, which show that in Pursat province the proportion of the area

of rice fields plowed by machines during the rainy season has increased from under 50 percent in 2010 to nearly 100 percent in 2016. In addition, according to the author's field observations in Pursat and Takeo provinces, an increasing proportion of rice is also harvested and threshed by combine harvesters. Figure 3 also shows that during the same period, an increasing proportion of rice fields in Pursat province are planted by broadcasting rather than transplanting.

These technological changes are characterized as increasing use of capital goods and decreasing use of labor, and thus thought to have increased agricultural production by boosting both land and labor productivity. The increase in production enables farmers to sell a larger proportion of their output. The commercialization, therefore, has been promoted by the technological changes.

Price Mechanism Bringing about the Transformation

As argued and demonstrated by previous studies such as Ruttan and Hayami (1972), technological changes in agriculture are stimulated by changes in prices of inputs. Farmers adopt technologies which provide them with greater income or profit. This indicates in relative terms that they adopt technologies which use less inputs with price increases while using more inputs with price decreases. In addition, the increase in the price of outputs provides farmers incentive to increase the use of variable inputs such as fertilizer.

This kind of price mechanism can explain why Cambodian farmers began to adopt labor-saving and capital-intensive technologies as described above. First, the real wage rate in the rural area has increased in recent years as shown in Fig. 4. The increased wage rate makes hiring workers to do manual farm work such as transplanting and harvesting costly, which encourages farmers to adopt labor-saving technologies.

Rural wage rates increase if the labor supply decreases and/or the reservation wage increases in the rural area. These changes are caused by increased labor migration from rural to urban areas in Cambodia and international migration.

The increase in rural-urban migration is indicated by the increase in the number of workers in garment and footwear sectors, the leading manufacturing industries in Cambodia, from approximately 300,000 in 2010 to over 600,000 in 2016 (International Labor Organization 2017, Fig. 6). Garment and footwear

factories are primarily located in urban areas such as Phnom Penh and most of the workers in the factories have migrated from rural areas. Figure 4 also shows that the rural wage rate has increased following the increase in wage rates in the construction and garment sectors. The construction sector is another sector concentrated in urban areas absorbing migrant workers from rural areas. Migration to Thailand, where workers can earn a higher income than in Cambodia, has also increased, as indicated by an estimate that the number of Cambodian nationals in Thailand has increased from 153,000 in 2000 to 805,000 in 2015 (Department of Economic and Social Affairs, Population Division 2015). The data suggest that a large number of rural workers have moved to an urban area or Thailand to earn a higher wage, leading to an increase in the rural wage rate. The increase in labor migration from the rural areas also causes labor shortages in the rural areas, forcing farmers to use labor-saving technologies.

The use of chemical fertilizer may also stimulate increased rice prices. As indicated in Fig. 1, the producer's price of rice shows an increasing trend between 2006 and 2011, and during the same period, the use of chemical fertilizer also increased significantly.

The Role of Financial Institutions

The price mechanism as described above, however, cannot fully explain the technological changes. For example, while the producer's price of rice has increased, the price of chemical fertilizer has also increased to a large degree in the last decade,[1] possibly offsetting the incentive for farmers to increase chemical fertilizer use.

More importantly, except broadcasting as the rice planting method, farmers need funds to adopt the labor-saving and capital-intensive technologies mentioned above. Funds are necessary to buy chemical fertilizer and agricultural machines. Retailers or dealers of chemical fertilizer and agricultural machines, from whom farmers buy those inputs, also need funds to purchase them from wholesalers or manufacturing companies. Commercialization is also only possible when crop traders have sufficient

[1] According to information collected by the author in Takeo province, the retail price of urea per bag (50kg) was around 30,000 riel in 2002, but it has increased up to 90,000 riel in 2014.

funds to buy crops from farmers, as cash-strapped farmers need to get paid upon the delivery of the crops.

The problem is that in most cases both farmers and traders need funds before they get paid for selling their products. Without their own sufficient funds, they need to borrow money to use as funds. This strongly suggests that financial institutions have played critical roles in transforming Cambodian agriculture by helping farmers and traders to secure funds in some way.

Various data support this proposition. First, commercial banks and microfinance institutions in Cambodia have significantly increased their loans to the agricultural sector in the last decade (Fig. 5). In addition, microfinance institutions have increased the average loan size per borrower dramatically from a mere 143 USD in 2005 to 1,140 USD in 2014 (Cambodia Microfinance Association n.d.).

The increasing loan disbursement may have promoted the use of chemical fertilizer. Farmers can buy fertilizer with funds they borrow from financial institutions. In addition, according to information collected by the author from fertilizer stores in Pursat province, the stores often sell fertilizer to farmers on credit for the promise that the farmers will pay after harvesting their crops.[2] Sales on credit are possible because fertilizer stores also borrow money from financial institutions, or because they can also buy fertilizer from wholesalers on credit. Although information on wholesalers is unavailable, wholesalers may also be able to obtain loans from financial institutions to sell fertilizer to retailers on credit.

The mechanization of farm work is also facilitated by financial institutions in two ways. First, for agricultural machine dealers in Pursat, 50 to 60 percent of agricultural machines they sell are paid for in installments. In the installment payment plan, financial institutions pay the price to the dealers upon the sale of machines, and farmers (i.e. buyers) pay the financial institutions in installments. Agricultural machine sales could increase with this payment plan even if both farmers and machine dealers have insufficient funds.

Second, the payment by machine dealers in Pursat to an agricultural machinery manufacturing company in Thailand is guaranteed by a Cambodian commercial bank using a Letter of Guarantee (L/G).

[2] The information was collected from five fertilizer retailers in Pursat province on August 16-18, 2017.

In this arrangement, if a dealer cannot pay the manufacturing company, the bank will pay the company in place of the dealer, the cost being covered by selling the land the dealer offered as collateral. This apparently facilitates the purchase of machines by the dealers from manufacturers.

Financial institutions also promote commercialization by providing loans to crop traders and rice mills. For example, two rice mills in Pursat that the author visited on August 15-16, 2017 routinely obtain loans from a commercial bank to buy paddy rice from farmers and rice collectors. They also borrowed from a bank to replace or expand their facilities. For upland crops, a trader in the Phnom Kravanh district of Pursat province who buys upland crops such as cassava from farmers also borrowed 10,000 USD from a microfinance institution.[3] Cassava collected by such traders in Pursat province is mostly sold to silos on the Cambodia-Thai border that export cassava to Thailand. The silos also obtain loans from banks to buy cassava from traders.[4]

Land Registration

The data and information presented above indicate that increased loans from financial institutions to farmers and traders have promoted the transformation of Cambodian agriculture. The question is how financial institutions could do so; one answer is increasing the availability of funds. Disclosed financial information shows that loanable funds of Cambodian financial institutions have increased significantly in the last decade owing to capital inflow and borrowing from foreign sources as well as an increase in deposits collected domestically.[5]

Another possible factor is the land registration program. Land registration matters because in Cambodia borrowers primarily offer land as collateral to financial institutions for loans. Following the enactment of the Land Law in 2001, the Cambodian government implemented a systematic land registration program. In the program, each land parcel people have occupied and used as their de-facto property is surveyed and registered with a cadastral map; a land title certificate is given to the de-facto landowner if the conditions required by the law are met. Land registration based on Order 01, which

[3] Information based on an interview with the trader by the author on December 28, 2016.
[4] Information based on an interview with the manager of a silo in Battambang province by the author on December 29, 2016.
[5] Based on National Bank of Cambodia, *Supervision Annual Report* for 2005-2016.

started in 2012, further expanded the geographical coverage of the registration and boosted the number of registered land parcels. As a result, 63.6 percent of the estimated number of land parcels in Cambodia have been registered as of the end of 2016 (Ministry of Land Management, Urban Planning and Construction, 2017).

Previous studies demonstrated theoretically and empirically that land registration or land titling gives landowners better access to credit.[6] In Cambodia, the land registration increases lending by financial institutions in two ways. First, land registration makes loan applications easier. In fact, financial institutions in Cambodia have given loans to customers who do not have land title certificates. In such cases, however, loan applicants who want to offer land as collateral must have documents proving they own a certain land parcel on a de-facto basis[7] as well as signatures of local government authorities such as the village and commune chiefs. Financial institutions also need to exercise some caution in confirming whether applicants really own the land parcels they offer as collateral in such cases. With a land title certificate, the application process is greatly streamlined because the certificate alone can prove applicant ownership of the land parcel.[8]

Second, land registration may increase land prices, enabling loan applicants to increase the size of their loans because financial institutions limit loan sizes according to the pledged asset values. For financial institutions in Pursat province, where the author visited in August 2017, the loan limit is set at 67 to 80 percent of the pledged asset value. The significant increase in the size of the loan per borrower from the microfinance institutions mentioned above required the land price increasing to a large extent.

Land registration can increase the land price for several reasons. First, as Binswanger and Rosenzweig (1986) argue, land prices reflect the benefit of owning land in the form of better access to credit if the land is used as loan collateral. Land registration, by facilitating loan applications as mentioned above, increases the economic benefit of owning land, which is factored into the land price. Second, land registration makes the land ownership more secure and decreases the risk of land being

[6] Feder and Nishio (1998) present a theoretical framework and review of previous empirical studies of this issue.
[7] An example of document used in such case is a ticket given from the local authority when it surveyed the land parcel in the early 1990s with an intention to register (but registration did not proceed after then).
[8] This proposition is based on information collected by the author from staff members of financial institutions in Pursat province on August 15-16, 2017.

grabbed by other parties. As demand for such land parcels increases, land prices will also increase (Feder, Just, and Zilberman, 1985).[9]

The second reason indicates that the effect of land registration on land prices would be strong in frontier regions where many people immigrated from other regions and cleared land for farming relatively recently. In such regions, mutual trust among people may be weak; people may not have common recognition of who owns or occupies which land parcel. Under such situation, conflicts among people or with outsiders over land ownership would happen much more frequently than where people settled and cultivated land for many years.

Although official statistics on land prices in Cambodia do not exist, data collected by the author indicate land registration positively affects the land price in at least some regions. For example, according to a farmer in the Viel Veng district, a frontier region in Purat province, the price of upland fields in his village was only several hundred USD per hectare before land registration, but increased to 2,000 to 4,500 USD per hectare after land registration in 2012.[10]

Even in regions with long histories of settlement and cultivation, the land price has increased significantly in the past several decades. For example, in two villages the author surveyed in Takeo province, the price of rice fields was 800 to 1,000 USD per hectare in 2002, but became as high as 4,000 to 20,000 USD per hectare in 2014. In one village in Bakan district, Pursat province, the price of rice fields jumped from a mere 200 USD per hectare in 2000 to 6,000 USD per hectare in 2016. Though the surge in land prices seems to have been caused by factors other than land registration because land prices started to increase even before land registration, the increase in land prices has certainly enabled increased loan amounts.

[9] As argued by Feder (1987), enhanced security of ownership owing to land registration can also lead to higher land price by increasing land improvement investment by farmers such as installing irrigation facility. But this mechanism is not mentioned as a factor of increasing land price in the present paper because in Cambodian case, land price has increased even where such investment is not made.

[10] Information based on an interview with the farmer by a team of researchers including the author on March 14, 2016.

Conclusion

In the last decade, Cambodian agriculture has undergone significant changes including commercialization as well as the adoption of labor-saving and capital-intensive technologies represented by mechanization and increasing fertilizer use. For both the commercialization and the technological changes to occur, farmers, as well as traders of agricultural inputs and outputs, need better access to credit, which has been facilitated by financial institutions and land registration.

Commercial banks and microfinance institutions in Cambodia have drastically increased lending to the agricultural sector. Land registration implemented by the government in the last decade promotes this process by making it easy for borrowers to use their land as loan collateral. Land registration also increases land prices and thus enables borrowers to obtain larger loans as financial institutions set loan limits according to the pledged asset values. Field data indicate traders of agricultural inputs and outputs have relied on loans from financial institutions for working capital and facility investment. Financial institutions have also promoted the sale of agricultural machines by providing credit to buyers in the form of installment payments and by guaranteeing payment from agricultural machine dealers to manufacturers.

The argument above is hypothetical as sufficient supporting evidence still needs to be obtained. Systematic empirical investigation needs to be conducted to more closely examine the relationship between commercialization, technological changes and increasing access to credit, as well as the effect of land registration on land prices and credit access.

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Reaffirming the necessity of an orthodox pathway: A case study in a planned REDD+ project site in a Cambodian frontier area

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Abstract

This article focuses on the latest global mechanism of "Reducing emissions from deforestation and forest degradation in developing countries" (REDD+) to address tropical deforestation. One methodology characteristic of this is to reduce deforestation through supporting frontier farmers that have problematic land use practices. Here we consider incentives for alternative land use practices among the farmers, especially in relation to support for agriculture and natural resource utilization. After examining the results on agricultural household income change during the nine years of Cambodian frontier farmers, who have expanded their arable lands into forests, we explain the type of support activities REDD+ projects need to be performed in the frontier areas. The farmers, living at the site of a planned REDD+ project, had experienced broad changes in household income and structure during the nine years owing to the rapid expansion of the cultivation of cash crops. Our results indicate that practical supports for curbing further deforestation on the frontier need to consider transition related to land use and household income. Support to encourage the land-intensive cultivation of higher value-added crops and the exploration of more expensive non-timber forest products using advanced technologies should be examined to discourage forest-destructive land use practices in the area.

Keywords: *Household income, Agricultural practice, Frontier farmer, REDD+ project, Cambodia*

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Introduction

Many international organizations have implemented pilot projects for "Reducing emissions from deforestation and forest degradation in developing countries" (REDD+) in tropical regions since the late 2000s. Although almost all international organizations have implemented support activities to invite local farmers to sustain their livelihoods under the projects, only a few organizations have tried to understand how the farmers have changed their land use and agricultural practices, in which they have often tended toward commercial farming, before the support activities. Furthermore, few organizations have tried to understand how the farmers have changed their incomes and income structures due to their arable land expansions into forests in frontier areas.

Frontier areas, the focus of this article, comprise the second of three forest-agricultural land transitional stages proposed by Angelsen and Rudel (2013): (1) core forests, (2) frontier areas and (3) forest-agricultural mosaics. They explain that frontier areas have the following characteristics: the population density is low to medium; market access is medium; land tenure is insecure; and governance is tenuous. Chomitz *et al.* (2007) organized forests over the world in terms of spatial typology, instead of considering transitional changes, defined frontier areas as frontier and disputed areas, characterizing them as areas where the pressures for deforestation are increasing and agricultural land is expanding. These frontier areas are worth examining with a REDD+ project, because they can, in theory, yield significant returns regarding the forest carbon balance if the project comes to fruition. In addition, the ways for REDD+ developers to induce local farmers to stop their problematic land use and agricultural practices must differ from those in other areas.

As with other development assistance programs, to support alternative land uses and agricultural practices, REDD+ projects need to consider the historical background and existing situation to provide effective assistance for recipient communities. Even if REDD+ project developers unilaterally consider the offered assistance valuable for the community members, the majority of members are unlikely to be motivated to embrace alternative practices if the type and amount of assistance for each member do not meet their situations and expectations. Thus, accurate information on communities and insights based on such information need to be obtained and developed to encourage truly functional assistance through REDD+ projects.

This article focuses on incentives for REDD+ projects to change land use and agricultural practices among farmers who earn their livelihoods at the frontiers of forest clearing and arable land expansion. Specifically, we clarify the change and structure in the household income experienced by Cambodian frontier farmers, in addition to those in land use and agricultural practice. Then, we suggest what principles regarding support activities, particularly for agriculture and small-scale forestry, should be considered by international organizations and each government for REDD+ projects in frontier areas in order to reduce the arable land expansion of farmers into forests.

Material and Methods

1. Research site, the reasons for site selection and a brief history of the area

We examined data obtained from central Cambodia, specifically three villages in the eastern part of Kampong Thom Province (Figure 1). We selected these villages for the following reasons: cultivated land for commercial crops had expanded over the past decade; a household income and livelihood study was conducted in the area approximately 10 years ago (McKenny *et al.* 2004), which provided empirical data for temporal comparisons between the household incomes of the villages; and a REDD+ pilot project had been planned by international organizations and the Cambodian government, targeting an area adjoining the villages as the core.

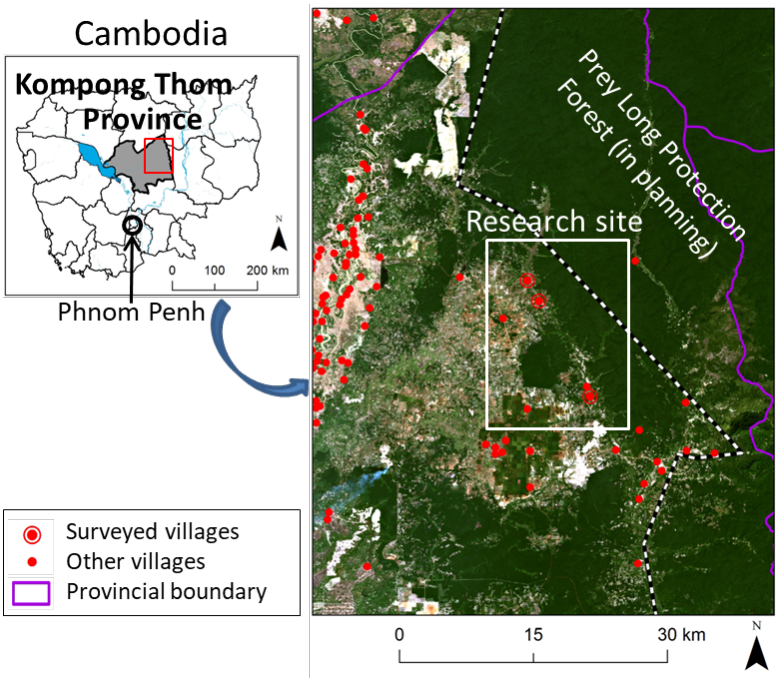

Figure 1. The research site

Source: True-color band combination from Landsat 8, taken in January 2014.(Cited from Kurashima *et al.* 2014. Prey Long Wildlife Sanctuary zone, which was in planning in 2014, was designated there in 2016).

Drastic expansion of cultivated lands can be identified from two satellite images taken in the dry seasons of 2003 and 2014 (Figure 2). Black and green areas indicate forest, and white and light red areas indicate cleared land. These images show the extensive forest clearing and arable land expansion that occurred around the three villages during the decade. According to the information from many informants and our field observations, the expansion of cassava cultivation had been the main change driver in land use around the three villages. Leading contributors to these land use changes were both old- and new- settlement farmers who were living in the villages.

In the mid-1990s, much of this area was demarcated as a logging concession zone by the Cambodian government, and part of the forest was selectively logged by contractors until the early 2000s. Subsequently, some degraded and intact upland forests, which had been originally or newly occupied or purchased from local occupants, had been opened up by old- and new-settlement farmers to grow cash crops. Then, the Cambodian government designated the eastern area of the three villages as a Wildlife Sanctuary zone in 2016 after the international organizations successfully lobbied the government, although the REDD+ pilot project which had been attempted to be introduced there since the mid-2010s still remained in planning, even in the beginning of 2018.

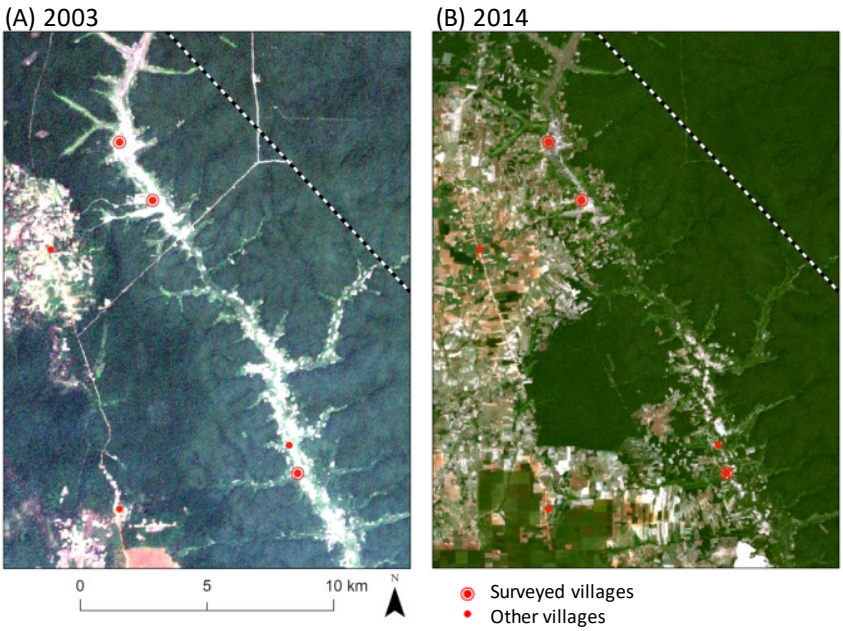

Figure 2. Land cover change from early 2003 to early 2014 around the research site.

Source: True-color band combination of (A) Landsat 5 TM taken in February 2003; and (B) Landsat 8 taken in January 2014. (Cited from Kurashima *et al.* 2014. Prey Long Wildlife Sanctuary zone, which was in planning in 2014, was designated there in 2016).

2. Data collection and interpretation methodology

The data for this study were obtained primarily from the household survey conducted in the latter half

of 2013 based on information from 2012. In addition, village leaders were interviewed in 2013 regarding the land use history and villager livelihoods. In total, 146 households, over 30 percent of the total households in each village, were surveyed for this study. This is comparable to the ratio surveyed by McKenny *et al.* (2004), although that study surveyed only 85 households due to the smaller number of households in 2003. To facilitate comparisons between the two surveys, many questions were similar to those used in McKenny *et al.* (2004). Also, some data accounting methods, *e.g.,* the value of rice produced for household consumption was factored into household income, were used here to correspond with the data interpretation by McKenny *et al.* (2004)

Results

1. Changes in average household income and percentages obtained from each source

Real average household income has increased notably during the nine years (Table 1). The increases derived primarily from higher income from the cultivation of Other Crops and Business/Wage Labor. The contribution of Other Crops to the average total household income was 12 percent in 2003, which was much smaller than those from Rice, Resin and Other NTFPs. However, the contribution from Other Crops was 43 percent in 2012. Similarly, the Business/Wage Labor proportion was very small in 2003 but increased notably by 2012. The combined income from cultivation of Other Crops and Business/Wage Labor comprised two-thirds of the average total household income in 2012. Correspondingly, the income contribution from Rice declined during this period.

Table 1. Average total household incomes and income sources in 2003 and 2012.

Target Year	**2003**[1] (N = 85)		**2012**[2] (N = 146)	
Source of income	Mean (USD)	Percent of total (%)	Mean (USD)	Percent of total (%)
Rice	199	37	93	10
Other crops	66	12	412	43
Livestock	32	6	29	3
Resin	116	22	156	16
Wildlife	20	4	27	3
Other NTFP	91	17	3	0
Logging	NA	-	11	1
Business/ Wage labor	9	2	226 (176/50)	24
Fishing	4	1	NA	-
Total	538	100	957	100

[1]McKenny *et al.* (2004). [2]Kurashima *et al.* (2014). The income values for 2012 are adjusted for inflation between 2003 and 2012 (2003 = 1; 2012 = 1.789).

2. Comparison of the income and structure of the highest and lowest 25 percent of household income groups in 2012

To analyze the imbalance of income and structure among households in 2012, we focused on the lowest and highest 25 percent of household incomes (Table 2). We clarified the average total household incomes of these two groups, as well as the sources and percentages of the factors in total household incomes. The results demonstrate that a large total average income gap exists between the two groups, and that such a gap primarily comes from the difference in the proportion of income acquired from Other Crops by the households in the two groups. The group with the highest incomes earned over half of their average total household income from Other Crops, and earned five times the percentage more from Other Crops than did those with the lowest incomes. Moreover, three-fourths of the average total household income of the high earners came from cultivating Other Crops and Business/Wage Labor.

3. The most important reason for the income gap between the highest and lowest 25 percent of household income groups

Cassava was the most extensively planted Other Crop. Cashew nuts were the next most planted but occupied much smaller areas (Kurashima *et al.* 2014). These crops were cultivated for sale rather than household consumption. The highest 25 percent of earners had noteworthy growth in the proportion of income derived from these cash crops, particularly cassava (Table 3). In contrast, the lowest 25 percent of earners was very different. The lowest 25 percent of earners had much less income from cassava cultivation than did the highest 25 percent of earners, due primarily to lower benefits per household and smaller farm holdings per household, rather than insufficient work at commercial cultivation (Table 3).

Table 2. Average total household incomes and sources in 2012 for the lowest and highest 25% of households.

Target Year	**2012**[1] (*N* = 146)				**2012a**[1] (Nominal incomes) (*N* = 146)	
	Lowest 25%		**Highest 25%**		**Lowest 25%**	**Highest 25%**
	Mean (USD)	Percent of total (%)	Mean (USD)	Percent of total (%)	Mean (USD)	Mean (USD)
Rice	52	21	117	5	93	210
Other crops	22	9	1,199	53	39	2,146
Livestock	0	0	81	3	0	145
Resin	75	30	266	12	134	475
Wildlife	21	8	18	1	38	31
Other NTFP	3	1	7	0	5	13
Logging	2	1	17	1	4	31
Business/ Wage labor	76 (37/39)	30	562 (520/42)	25	135	1,005
Fishing	NA	-	NA	-	NA	NA
Total	251	100	2,267	100	448	4,056

[1]Kurashima *et al.* (2014). The income values for 2012 are adjusted for inflation between 2003 and 2012. For the method, see Note 2 in Table 1; the 2012a values are nominal incomes without any adjustments.

Table 3. Upland farm holdings and cassava cultivation in 2012 for the lowest and highest 25 percent of households.

Target Year	**2012a**[1] (*N* =146)	
Landholding/ Cultivation	**Lowest 25%**	**Highest 25%**
Upland Farm-holding households (%)	97	100
Area (ha)		
Mean	2.6	5.4
SD	1.8	4.3
Minimum	0.0	1.0
Median	2.0	4.0
Maximum	9.0	24.0
Cassava-cultivating households (%)	65	92
Value per household (USD)		
Input cost: mean (median)	191 (0)	855 (230)
Output value: mean (median)	259(150)	2,750 (1500)
Benefit: mean (median)	68 (0)	1,895 (900)

[1]Kurashima *et al.* (2014). The 2012a values for input cost, output value and benefits are not adjusted.

Discussion and Conclusion

As Chomitz *et al.* (2007) pointed out, agricultural lands are expanding and the pressures of deforestation are increasing in frontier areas. These characteristics of the areas cause the prerequisites of better REDD+ activities that differ from those in two other areas, i.e., core forests and forest-agricultural mosaics, both of which are under more stable land uses than in the frontiers, even though each belongs to different stages of forest-agricultural land transition.

Based on the results of our case study related to agricultural household income and structure in Cambodia, frontier farmers, particularly poorer households, can have more incentives to further expand their arable lands for cash crop cultivation into forests. Differently, from core forest areas, commercial farming has grown popular even for the poorest households in frontiers. Nevertheless, poorer households receive much less benefit from their farming than richer households. Most poorer households own smaller areas of arable land than richer households. Also, few poorer households hold enough monetary stock to improve their existing arable lands with low productivity. Consequently, poorer households are likely to consider expanding their lands into forests as a rational option for them to earn more income than the status quo.

In frontier areas where groups of farming households have these incentives to encroach upon forests next to their smaller and less productive arable lands, REDD+ project developers need to determine and establish effective support activities for motivating the farmers to leave the forest alone. Then, what practical options do the developers can have? In order to consider this question, we should reexamine forest-agricultural land transitional stages again. Since commercial farming is already prevailing on the frontier, unlike in core forests, REDD+ project developers need to consider how more efficient and productive agricultural practices can be pursued for the farmers, particularly poorer households, under the farming system. For instance, support to encourage the land-intensive cultivation of higher value-added crops, as well as the exploration of more expensive non-timber forest products using advanced technologies, can be options to reduce the motivation of frontier farmers to destroy the forest.

If REDD+ project developers underestimate the actual situations related to farming systems and adopt support activities that fail to match the local realities that frontier farmers experience, the support is unlikely to motivate the majority of members to embrace alternative practices.

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Trans-boundary Connectivity and Contributions to Rural Development
A Case Study on the Cambodia-Thai Borderland

Kobayashi Satoru*

Abstract

This paper explores the dynamism of trans-boundary connectivity as an important factor for rural development observed in the landmine-infested area of the Cambodia-Thai borderland in 2014-16. Disorderly burying of landmines in the area during the Cambodian civil war from the 1980s to the beginning of the 1990s caused serious environmental pollution. In the last half of the 1990s, international assistance for clearing landmines started in the area when local residents faced fundamental difficulties in post-conflict rural development. This paper will focus on the case of Ta Saen commune, Kamrieng district, Battambang province and reviews the development process of the rural community since the end of the 1990s. First, how trans-boundary connectivity in a geographical sense contributed to the rural development of the area since then is explored. Second, the unique nature of trans-boundary connectivity, going beyond geography, is examined in the work of Mr. Takayama Ryoji, a Japanese expert in landmine clearance, as a major driving force for positive transformation of the local society. In conclusion, the significance of trans-boundary connectivity as an analytical perspective for studying development phenomenon in developing countries in an era of globalization is illustrated.

Keywords: *Connectivity, rural development, globalization, borderland, trans-boundary*

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1. Introduction

This paper explores the development process of a rural community in the Cambodia-Thai border area since the end of the 1990s as an illuminative example of rural development in the era of globalization[1]. Cambodian society suffered from severe warfare and totalitarian state rule under the Pol Pot regime in the 1970s. A period of rapid development has emerged since the beginning of the 1990s. The flow of assistance of goods, money and information, which were supplied through foreign aids and investment, from the capital Phnom Penh to the provinces, pushed forward rural development. Foreign direct investment for garment factories marked the start of industrialization in the capital at the end of the 1990s, attracting the young rural population as a labor force since then (e.g. Derks 2008). National economy indicators such as the GDP per capita have been demonstrating continuous development for over a decade. However, the reality of rural development, where local residents voluntarily utilize resource and connectivity for bringing progress into their livelihoods, is different.

More concretely, this paper will illustrate the nature of glocal dynamism in rural development in the era of globalization by examining how trans-boundary connectivity contributed to the rural transformation of a community in the Cambodia-Thai borderlands in recent years. The concept of trans-boundary connectivity has two meanings in this paper. The first indicates the cross-border flows of goods, knowledge, capital, etc., which transcend geographical boundaries between nations. This flow is the basic perspective for studying rural transformation as part of the worldwide process of globalization; "the expansion and intensification of social relations and consciousness across world-time and world-space" (Steger 2013: 15). The second is the concept of trans-boundary connectivity for indicating people's willingness to transcend their own domain to the outside, which is rarely seen in the vertical administration that modern organizations like government agencies employ[2]. Feelings of care for others motivate trans-boundary actions in this sense. As will be described in the coming sections, the

[1] Parts of the descriptive analysis of the development history of a community in the Cambodia-Thai border area, which will be introduced in this paper, had written in previous Japanese essays by the author in a different way (Kobayashi 2015, 2017).

[2] This conceptualization of trans-boundary connectivity must coincide with the concept of trans-disciplinarily, which emerged as new mode of knowledge production in recent years. This association will be refereed in the concluding part of this paper.

development work of one Japanese NGO worker, Mr. Takayama Ryoji, which enabled the successful progress of livelihoods of local residents in the research area, embodies the trans-boundary connectivity in this sense. Elaborating the flexibility and scalability of Mr. Takayama's work will deepen the understanding of the potential of foreign aid agencies for positively changing rural livelihoods, which are connected with the outside world in multiple ways.

2. Research Site

This paper focuses on Tasaen commune, Kamrieng district, Battambang province [3]. Battambang province is located to the west of Tonle Sap Lake and the east of Thailand. The province has a vast rice growing area in the lowlands and a farm area along the border with Thailand including the Kamring district. The majority of people living in the district engage in cash crop farming today. However, the area had no agricultural production in the beginning of the 2000s. Severe battles between the central government of Cambodia and the Khmer Rouge guerrilla forces repeatedly occurred in the region in the 1980s and the first half of the 1990s. In 1996-1997 Khmer Rouge soldiers started to form villages for earning their living in the area[4].

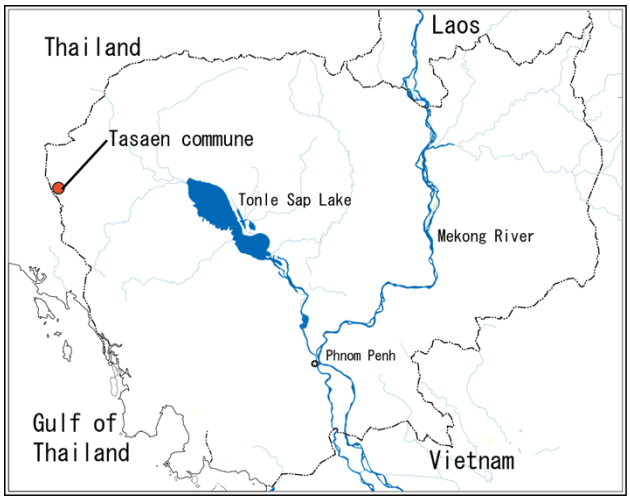

Figure 1. Research area

Tasaen commune is located at the north end of Kamrieng district, which is on the Thai border. A control point in the commune enables small-scale cross-border trading. The local residents can access larger border trade points in the Kamrieng and Phnom Preuk districts via the highway, which was paved in 2014. The commune has six villages. Three of them, located along the highway, were formed by former

[3] The information and data in this paper were collected through fieldwork in 2014 and 2015.

[4] Some Khmer Rouge soldiers were said to have been around the area since 1985, but they were moving around so that no one settled down there for a long time.

Khmer Rouge soldiers in the 1990s. They also accepted relatives of their families and some farmers from neighboring provinces during the first wave of migration to the area at the end of the 1990s. The other three villages, established in 2000 and 2004, are in a sea of farmland about ten kilometers east of the highway. They were established as development villages (*phoum aphivoat*) by the government to deliver agricultural land to families who reached the area from outside at that time. As the most favorable areas for agricultural production in the commune were occupied by the families of the former Khmer Rouge soldiers in the first three villages, the villagers who settled in the three new remote villages far from the main road had little room for expanding agricultural land to cultivate.

3. From battlefields to agricultural lands

The development history of the area after the battles ceased could be divided into four phases, according to the information gathered through the research. Firstly, the families of the former Khmer Rouge soldiers who started to earn a living in the area at the end of the 1990s encountered a serious environmental problem: the huge numbers of landmines and explosive remnants of war in the area (Davies and Dunlop 1994; Roberts 2011). The local residents said in the interviews that they first cleared the landmines themselves by burning the fields and checking the ground surface with their naked eyes, but the contamination was too severe for them to resolve. A number of accidents due to landmines occurred after 2000 when the local residents started agricultural cultivation. Finally, the Cambodian Mine Action Center (CMAC), the government organization for resolving landmine issues, started to work in the area in 2005. Based on the CMAC plan, landmine clearance, which included international assistance teams, started operations in the commune in 2006. The local residents recalled that 60 landmine-infested fields, each covering 1 hectare, had existed in the commune in that year. The commune chief explained in interviews in 2014 that 90 percent of those fields were cleared by 2013 by professional staff[5].

[5] The commune has been free of landmine accidents since 2011, but the mechanization of agricultural cultivation in recent years has resulted in increasing fear of accidents caused by anti-tank landmines.

The second phase of development history was the soaring production of cash crops, which was assisted by both the environment and geography of the area. The families of the former Khmer Rouge soldiers who settled there in 1997 cut down trees and sold the timber to Thailand[6]. In 1998, they began to burn forests and plant crops including sesame, mung beans, soybean and corn used for animal feed. The Cambodia-Thai border area is rich in soil fertility, guaranteeing high productivity without using fertilizer. In addition, the socio-geographical position of the commune was an advantage for cash crop farming. All production materials for farming were imported from Thailand at first and the products were sold to Thailand in return. After cultivating corn and beans in rotation for years, cassava was introduced to the area in 2004, which became the most popular crop and dominant in the area since 2014. The local households in the commune have been enjoying a relatively better socio-economic life due to cash crops in comparison with rice-growing areas in Cambodia.

Figure 2. Cassava fields in Tasaen commune

The third phase of development was a shift in agricultural land use, which occurred at the end of the 2000s when a group of local residents started to change the crops from single year crops such as cassava and corn to perennial crops such as longan and mango. Three factors supported this shift; the first was the transfer of skills of fruit cultivation from

Figure 3. Longan trees planted in Tasaen commune

[6] It is well-known that the trade of timber between the Khmer Rouge and Thai companies was seen in the Cambodia-Thai border area in the 1980s.

Thailand. Local residents launched fruit planting based on the information and experience they obtained through cross-border communications with Thai farmers during the 1980s and 1990s. No governmental policy was involved in the process; past conflict provided the opportunities for this skill transfer across borders. The second factor was the proximity to Bangkok, the trading center of the regional economy. Most of the locally produced fruit in Tasaen commune would be exported to China via Bangkok from the beginning. Without this existing business network centered in Bangkok, the local residents could not determine to shift their crops, even if they had known of the stable demand for tropical fruit in the Chinese market. Finally, the third driver was the qualitative change in land ownership. Since 2012, the Cambodian government advanced land registration. The border area was one of the main targets so that most local residents in Tasaen commune had obtained land certification[7], which provided a favorable social environment for planting perennial crops, not single-year crops[8].

4. Mr. Takayama and Japanese factories

The final phase of the development history of the commune was the introduction of off-farm jobs at the end of the 2000s. Interestingly, a Japanese mediator, Mr. Takayama Ryoji, initiated it[9]. He visited Cambodia as an officer of the Japanese Self Defense Force, which worked in peacekeeping operations under the United Nations Transitional Authority of Cambodia (UNTAC) in 1992-93. After retiring in 2002, he joined Japan Mine Action Service (JMAS), a Japanese NGO specializing in landmine clearance. Mr. Takayama came to Tasaen commune in 2006 to clear landmines. He established mutual trust with local authorities and villagers through his work clearing landmines. Moreover, Mr. Takayama started to

[7] The purpose of the land registration project was to obtain political support from the rural population. Therefore, places with conflicts or the possibility for conflict were prioritized.

[8] These features and the shift to fruit cultivation could be observed in other regions of the Cambodia-Thai border area such as Veal Veng district, Pursat province, according to the fieldwork of the author in 2015-16.

[9] There is the autobiographical work on Mr. Takayama in Japanese (Takayama 2010). In addition to this, Shimoyachi-Yuzawa (2012) is helpful to understand the feature of Mr. Takayama's activities in Tasaen Commune.

work for other community development projects such as constructing school buildings and wells for daily livelihoods. However, his multiple endeavors for the development of the rural community in Tasaen commune was criticized by the committee of JMAS in Tokyo as superflux services. The gap between Mr. Takayama and his colleagues in Japan finally resulted in his resignation from JMAS.

Figure 4. Mr. Takayama and his landmine clearance team

In 2010, he finally established his own NGO for working much more flexibly. Furthermore, Mr. Takayama successfully brought three Japanese factories from his hometown, Ehime prefecture on Shikoku Island, Japan, to Dey Kraham village, one of the three villages formed by the former Khmer Rouge families. The first factory was established in 2008; two other factories were built in 2011. All the factories have been manufacturing paper craft products for the Japanese market such as sticky notes, envelopes and special paper for Japanese calligraphy. Over 250 villagers, mostly young women, were hired by the factories at a salary of 200-300 USD per month in 2015.

Figure 5. Workers at a Japanese factory in Tasaen commune

The process for the companies deciding to build factories in the commune must be closely examined. In addition to the interviews with Mr. Takayama and some Japanese staff working at the factories in the commune, the author visited Shikokuchuo City and interviewed one key person, Mr. Kawai, who first determined the construction of a factory in Tasaen commune. Mr. Kawai was at J.P.C., a papercraft company, and assumed the responsibility for managing the international expansion of operations. The company tried to expand operations abroad in the beginning of the 1990s due to rising production costs

in Japan. Then, the company built the first factory overseas in a suburb of Shanghai, China in 1995-96. The company built the second and the third factories in rural areas of China in the following years as well. However, according to Mr. Kawai, the fragile political atmosphere between Japan and China in the 1990s created concerns about stable operations[10]. This made Mr. Kawai start searching for an alternative site outside China in 2005. After visiting special economic zones in the Philippines, Vietnam and India, Mr. Kawai saw on the TV news one day in 2007 that Mr. Takayama would hold a photo exhibition at a department store in Matsuyama City, Ehime prefecture. He went to the exhibition and met Mr. Takayama, which started the process. The location of Tasaen commune, which ensured smooth connections and flows of production materials, products and technology transfer through the trans-boundary economy provided a positive impression for Mr. Kawai. In the end, he considered investing in Tasaen commune more reasonable and attractive; he decided to build the factory there[11].

Considering the process of this investment from Japan to Tasaen commune, it is interesting to notice that Mr. Takayama and Mr. Kawai had different perceptions on the reasons for investing. Mr. Takayama, a facilitator and mediator of community development, always emphasizes a spirit of volunteer service when he talks about Japanese factories in the village. However, Mr. Kawai explained in the interview that: "The company does not expect a direct return from the investment in Tasaen. The company calculates benefit/profit in total, which includes the factories in China." That is, the establishment of factories in Tasaen commune was to pressure the Chinese counterpart, the central production base of the company, not to seek short term profit generated directly from operations in Tasaen commune. This was a win-win situation for the Japanese companies and Mr. Takayama as they implemented social investment.

[10] Mr. Kawai also said that the difficulty of conducting business in China had another reason. According to him, every local business owner would try to monopolize the business with J.P.C. in China by all possible means, disturbing the business relations with other partners in China.

[11] In addition, Mr. Kawai said that the cost for building a factory in Tasaen commune was inexpensive for the company. According to him, the cost of about 5 million JPY could be covered by the personal budget of the company president. The small size of the initial investment is a key to understanding the decision of these papercraft companies.

5. Concluding remarks

As globalization is an uneven process, a glocal perspective paying attention to connectivity while working with local dynamism is imperative for understanding rural communities today. Supposing transformation of rural communities and livelihoods taking a single route everywhere in the world is incorrect. At the same time, external connections and the role of external people in communities must be paid attention because they can cause unexpected dynamism in rural communities.

The rural transformation in Tasaen commune described in this paper shows that multiple connections, overlapping accidental encounters and progress brought about the steady development of the local community since the end of the 1990s. First, the organizational tackling of landmine clearance enabled agricultural production[12]. The richly-endowed local environment, offering fertile soil and large-scale agricultural land holdings, provided the foundation for agricultural expansion. In addition, the trans-boundary economy contributed to the rapid development of agricultural production in Tasaen commune[13]. Finally, Mr. Takayama's multiple approach to the community brought about off-farm opportunities in the commune. He visited there to assist with environmental rehabilitation, but by and by launched various development projects. It successfully invited Japanese factories that brought about very positive progress for rural livelihoods in recent years. Interestingly and importantly, the series of assistances and achievements was originated from his sincere care to rural people, which moved from one to the next in a trans-boundary way and not based on causal reasonings or vertical command structure. The breakup with JMAS in the early stage of his involvement to the community development was the symbolic turn of his activities in this sense.

[12] The shift in the political atmosphere contributed to the development of the commune as well. The area was not included in the Cambodian government's development projects in the 1990s. The landmine clearance project was the only case of involvement of the government in local development. However, the Cambodian government started to pay attention to the development of the border area after the conflict in 2008-2011 with Thailand concerning the ownership of the Preah Vihear Temple. This definitely caused the governmental project of constructing road networks in the border area including Tasaen commune.

[13] The commune having established access to electric power, which was supplied by wires extended from Thailand, in 2004 illustrates the uniqueness of the border area.

Mr. Takayama's story is interesting not only because it illustrates a reality of rural development in a developing country under globalization but also because we can learn plenty of thought-provoking insights from it. For instance, his way of working with rural people in Cambodia probably request researchers who are working in the fields of development study, including the author, to reconsider approaches to people and communities as objects of study. Mr. Takayama repeatedly told to the author, when he recalled the progress of his activities in the community, that one of the keys for his story is not to be afraid of sticking out of one's main discipline to neighboring fields. Reflecting on oneself, although there is a growing academic discussion for demonstrating the importance of "trans-disciplinary" approach for producing practical knowledges for a human society[14], most of academics are not dare to transcend conventional walls between disciplines. In other words, his story might convey the illuminate power for asking researchers and students to break traditional walls among scientific disciplines and make one step forward.

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Extension Approach of Bangladesh Agricultural University: History and Current Practice

Salim Muhammad[*], Ando Kazuo[**] and Uchida Haruo[***]

Abstract

The Bangladesh economy is traditionally and predominantly agricultural. In the 1950s, the Pakistan government recognized the importance of education and research in agriculture and allied fields and indicated the problems connected with the development of agricultural education and research. One result was that the Bangladesh Agricultural University (BAU) was established in 1961 under the recommendation of a National Education Commission of Pakistan, following the pattern of the land grant universities of the United States with financial aid from USAID. The USAID collaboration linking with Texas A&M University provided the initial support for capacity building through professional advisers, manpower development, laboratory equipment and more. The American government tried to introduce the experience of the land grant university for East Pakistan then. However, the initial idea was later converted into the BAU Extension Approach.

Keywords: *Extension Approach, Bangladesh Agricultural University, Land Grant University, BAUEC*

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Introduction

The great Mughal Emperor Akbar introduced the teaching of agriculture into education in India in the middle of the 16th century. He also introduced the Bengali calendar on the basis of the agricultural season. In British India, agriculture was included in the Department of Revenue, Agriculture and Commerce in 1870 during the period of Lord Mayo. Then in 1880, the Famine Commission first recommended an independent Department of Agriculture. Dr. John Augustus Voelcker, Consulting Chemist of the Royal Agricultural Society of England was sent to India to report on improving Indian Agriculture. He submitted his report in 1891, recommending the lines along which agricultural improvement, including agricultural education, was possible. Ultimately, the Bengal Department of Agriculture was established in 1906, followed by the establishment of an agricultural research laboratory at Tejgaon, Dhaka in 1908. Agricultural education started with the establishment of an agricultural school in 1922 (Khan, 1990, 141-44). This article describes the history and current practice of the BAU Extension Approach.

Discussion

Establishment of Bangladesh Agricultural University: Higher education in agriculture started with the establishment of a college, the Bengal Agriculture Institute, at Dhaka that started educating students in 1941. The college acted as an affiliated Faculty of Agriculture of Dhaka University until the establishment of Bangladesh Agricultural University. Bangladesh Agricultural University (BAU) was established in 1961 under the recommendation of a Pakistan national education commission in the pattern of the land grant universities of the United States with financial aid from USAID (Fig. 1). The land grant university, or land grant college, is an institution of higher education in the United States designated by a state to receive the benefits of the Morrill Acts of 1862 and 1890 (Ando *et al*., 2018, 83-84). The Morrill Acts funded educational institutions by granting federally controlled land to the states for them to sell, raise funds and establish and endow land-grants to teach agriculture and mechanical arts. The Agriculture and Mechanical College of Texas, later renamed Texas A&M University, for instance, was established in 1878 under the provision of the Land Grant Acts. Ultimately,

most land-grant colleges became large public universities that today offer a full spectrum of educational opportunities in the USA.

Fig. 1. Bangladesh Agricultural University

Initially, it was assumed that students with rural backgrounds would get preference for admission to BAU and return to the villages and work with the farmers after completing a degree in agricultural sciences. The main mission of these graduates would be to teach farmers about improved farming practices and motivate the farmers to adopt modern farming practices. It was also planned that, like the land grant universities of the USA, the BAU would be entrusted to conduct agricultural development in the local districts. In the USA, each state has an agricultural university established through the land grants that is responsible for conducting agricultural development in the state. This was the main essence of establishing BAU. Unfortunately, the linkage between agricultural education, research and extension in Bangladesh was weak. Although BAU was established in the pattern of the land grant universities, it did not grow in that pattern. BAU did not even receive proper government patronage and was denied some of the functions it was expected to perform.

Establishment of Bangladesh Agricultural University Extension Centre (BAUEC): After one and half decades since inception, BAU took the initiative for generating and transferring technologies to the farmers to reorient its teaching and research programs in the context of Bangladesh in this new dimension. To perform this job, the Bangladesh Agricultural University Extension Project was established in 1976 and subsequently named the BAU Extension Centre (BAUEC) to connect rural

residents with BAU (Google, 2018). The other government departments and NGOs are also considered for active collaboration in research and extension programs with this center.

BAUEC has the following objectives:

1) To evolve an extension approach called the BAU Extension Approach that will be replicable all over Bangladesh with necessary local adjustments.
2) To help the BAU teachers and students to obtain practical experience in farmers' fields.
3) To organize training programs for farmers and extension workers.
4) To motivate and organize farm family members to improve their standard of living by adopting innovations disseminated through BAUEC.
5) To establish linkages with different GOs and NGOs to develop the farm, home and community.

Important Featuers of the BAU Extension Approach

1. Extension activities through organized groups.
2. Extension programs covering all the individuals in a village.
3. BAUEC has its lowest unit at the grass-root level: *para* (a village neighborhood).
4. BAUEC has its field office at the village level.
5. Members of Village Development Societies (VDS) become the dealers of agricultural materials including fertilizers and pesticides.
6. Farmers participate closely in program planning and other agricultural development with the BAUEC field workers and other officials.
7. Farmers receive on-the-spot training.
8. Farmers receive quick solutions to their farm problems as different subject matter specialists are involved with BAUEC.
9. The members of Village Development Society and Village Women Association (VWA) practice the habit of saving as a provision gives some incentive to those who save more.

10. Farmers in the BAUEC project area have the privilege of obtaining the know-how of modern agricultural development by different types of visits to experimental stations and also by interacting with different categories of visitors from Bangladesh and abroad.
11. BAU teachers, students and research specialists are also involved in BAUEC activities and frequently visit the BAUEC villages as per the regular schedule.

BAUEC activities: BAUEC organizes different types of societies such as Village Development Societies, Para Development Societies (PDS), Village Women Associations, and Landless and Marginal Farmers Societies (LMFS). Each society generates funds to ensure continuous capital increases and profit sharing (Sobhan and Karim, 1995, 3). Figure 2-5 shows different BAUEC activities.

Fig. 2. Students and teachers are listening to farmers' problem

Fig. 3. Raising vegetables at the school compound by the students in the school compound

Fig. 4. Animal vaccination program

Fig. 5. Exhibition of the farmer's produce

A learning by doing program includes the students raising vegetables in the school compound. The students raising vegetables in the school compound by themselves obtained nationwide publicity thanks to Bangladesh Television. As a result, a great number of schools have implemented this

program across Bangladesh. Different government, semi-government and non-government organizations have adopted this program as a development activity.

One of the most important BAUEC activities is to organize a training program for village women, BRDB cooperators, field extension workers and farmers. The broad areas in which these training programs are conducted include fruit and vegetable cultivation, fish culture, poultry rearing, cattle rearing, goat and beef fattening, fodder preservation, tree plantation and intensive vegetable cultivation with nutritional consideration.

BAUEC organizes demonstrations of different high yielding variety crops that have been improved by BAU and different research institutions. BAUEC society members receive different types of training regarding livestock, poultry rearing and fish cultivation. As the follow-up program for the training, BAUEC supplies calves, eggs, chickens, hybrid cocks and fish fries to them. To protect the cattle and poultry from diseases, BAUEC provides vaccines and arranges vaccination whenever necessary. BAUEC organizes cock-exchange programs by withdrawing local breeds of cocks from the village and distributing improved cocks to the farmers to improve the poultry breeds.

One of the main BAUEC objectives is to help farmers improve their health, nutrition and sanitation. To complement these activities, BAUEC supplies tube wells with the help of UNICEF for providing pure drinking water and implementing programs on kitchen gardening and mini-ponds for fish culture. BAUEC supplies latrines to farm families with the help of the Department of Health for improving their sanitation.

One important BAUEC objective is to help the BAU teachers and students to obtain practical experience in the farmers' field. The BAU students usually use the BAUEC villages as their field laboratory and perform the following activities:

1. Practice how to conduct benchmark surveys.
2. Motivate farmers during surveys.
3. Identify diseases and vaccinate the livestock and poultry in the village.
4. Motivate farmers towards adopting new technologies.

5. Conduct research, along with their teachers, in the villages on aspects of agricultural and rural development.
6. Conduct research, along with their teachers, in the villages on aspects of agricultural and rural development.
7. Be equipped with information on different aspects of agriculture and related issues.

Conclusion

Most of the Bangladesh farmers are subsistence farmers and have very limited resources. They produce diversified products to meet their consumption requirements and other household needs. A farmer raises field crops, homestead vegetables, trees, cattle, poultry and occasionally fish. Off- and on-farm activities help to supplement cash requirements. Here, all the components are linked together and aimed at improving household welfare. Due to intensive land use and intensification of multiple farm components, the farming system of Bangladesh is highly complex. For addressing complex agricultural scenarios, BAUEC evolved a holistic approach to link all components of the farmers to meet their different needs. To achieve this, BAUEC organized different types of groups such as Village Development Societies (VDS), Para Development Societies (PDS), Village Women Associations (VWA) and Landless and Marginal Farmers Societies (LMFS). The extension approach of the Bangladesh Agricultural University through BAUEC plays an important role in achieving sustainable agricultural development in its project villages.

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Gross National Happiness Development Center

Wangdi Sonam*

Abstract

The idea of happiness and well-being as the goal of development has always been part of the Bhutanese political psyche. While this has informed Bhutan's development endeavors during the early part of the modernization process, it was not pursued as a deliberate policy goal until the 4th Druk Gyalpo His Majesty Jigme Singye Wangchuck introduced Gross National Happiness (GNH) to define the official development paradigm for Bhutan. The goal of Gross National Happiness is built on the premise of the essential goodness of people and that the Bhutanese people will be able to bring out the best in themselves.

Universities in Bhutan and elsewhere can be powerful instruments in influencing the minds and habits of people. The GNH Development Center can assist the community in developing business incubators and small business centers. The Center can provide a platform for both the students and the community to enrich their knowledge about their culture and tradition by bringing historical or culturally oriented events and social venues to a community. These include hosting art shows and festivals, concerts, sporting events, food venues, and many other public attractions. The Center and its purpose, in essence, will provide opportunities to learn and promote alternative GNH developmental approaches at the local level with the ultimate goal being the happiness and wellbeing of the people. The Center will also provide a unique opportunity for students and the local community to exchange experiences on strategies for translating wellbeing frameworks into practice.

Keywords: *Culture, happiness, traditions, university*

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Introduction

The origination of the concept and Bhutan's ownership of this noble idea makes it fitting and important that Bhutan continues to advance this concept. Even though every language seems to have a word for happiness or satisfaction, and people from all cultures apparently have no difficulty in understanding its meaning; albeit with slightly different nuances, the idea of happiness defies precise definition. Depending on the context and perspective, happiness may be understood in a variety of ways. Over approximately the last fifty years since its introduction, Bhutan has ensured that GNH has been the unifying force behind all policy formulation, and has shaped the country's five year planning cycle; ensured moving GNH from being a development philosophy to a core component of Bhutan's development strategy, seeking to strike a balance between GNH's four foundational pillars: environmental conservation; sustainable socio-economic development; preservation and promotion of culture; and good governance.

We believe that, if the basic global development purpose were changed from the pursuit of profit to the pursuit of higher wellbeing in all its dimensions, the true level of happiness in the world would certainly increase. The Fourth King announced that Bhutan would pursue *"happiness"* in its path towards development, rather than merely measuring progress through growth in Gross Domestic Product (GDP). Well-regarded in Bhutan for his visionary and many progressive actions as a King, His Majesty recognized that GDP did not consider the ultimate goal of every human being: happiness. While conventional development models stress economic growth as the ultimate objective, the concept of Gross National Happiness is based on the premise that true development of human society occurs when material and spiritual development complement and reinforce each other. Thus, Gross National Happiness (GNH) was born as a development philosophy in Bhutan.

International interest in Bhutan and the concept of Gross National Happiness (GNH) have seen remarkable growth over the past decades. For instance, Kyoto University in collaboration with Sherubtse College played a vital role over the past decade in capacity building and understanding depopulation, rural

development, cultural aspects and national heritage conservation. Thinking of these issues, the Center was designed to function under the joint initiative of Sherubtse College and Kyoto University.

Universities express the needs of a community, society or nation, devoted to fashioning its intellect. As an institution of higher education, a university is dedicated to the pursuit and propagation of knowledge, to the study and clarification of values, and to the advancement of the interests of the society and the nation at large. Society also looks up to the university as the source of knowledge and wisdom (Thakur S Powdyel). A strong and growing synergy between higher education and community development thus already exists. Communities where host colleges and universities have been able to positively leverage the presence of these institutions have stabilized and accelerated the growth of the local economies. Through activities and initiatives including research, consulting, promoting and advocating GNH's best practices, and higher education has facilitated economic growth at the local level.

The goal of Gross National Happiness is built on the premise of the essential goodness of people and that the Bhutanese people will be able to bring out the best in themselves. The universities in Bhutan and elsewhere can be a powerful instrument in influencing the minds and habits of people. Depending upon the region, the GNH Development Center can assist the community to develop and grow in the following areas:

- Serving as a conduit for research and development
- Developing business incubators and small business centers
- Preserving and promoting culture and many other initiatives.

Serving as a conduit for research and development:

The GNH Development Center will seek funding, engage faculties and students in high-quality research, and contribute to work in finding solutions to the many development challenges related to GNH. We expect the Center to be the think-tank of the local community and its development in diverse fields. The

Center will engage university faculties to participate actively in the issues affecting the local community, conduct studies of immediate concern to the community and provide leadership in educating and empowering the people.

Promoting Entrepreneurship, Business Incubation and Small Business Development

Universities in Bhutan are already establishing and assisting startups in colleges in collaboration with government agencies. The GNH Development Centre can thus play a role in fostering entrepreneurship in the local community through the faculties and students by offering entrepreneurship classes and training. The government, in its work to shift the business paradigm, has started an economic stimulus plan with the dual purposes of empowering people and ensuring balanced equitable socio-economic development.

The GNH Development Center, collaborating with the community, can work to develop and empower small businesses in the community, creating a climate that supports small business growth. The Center can encourage citizens and young graduates to create businesses rather than seek employment by working and investing in the growth and development of small businesses in the local community, which will facilitate economic self-reliance for Bhutan and build GNH business culture from the ground up.

Preserving and Promoting Culture and Tradition

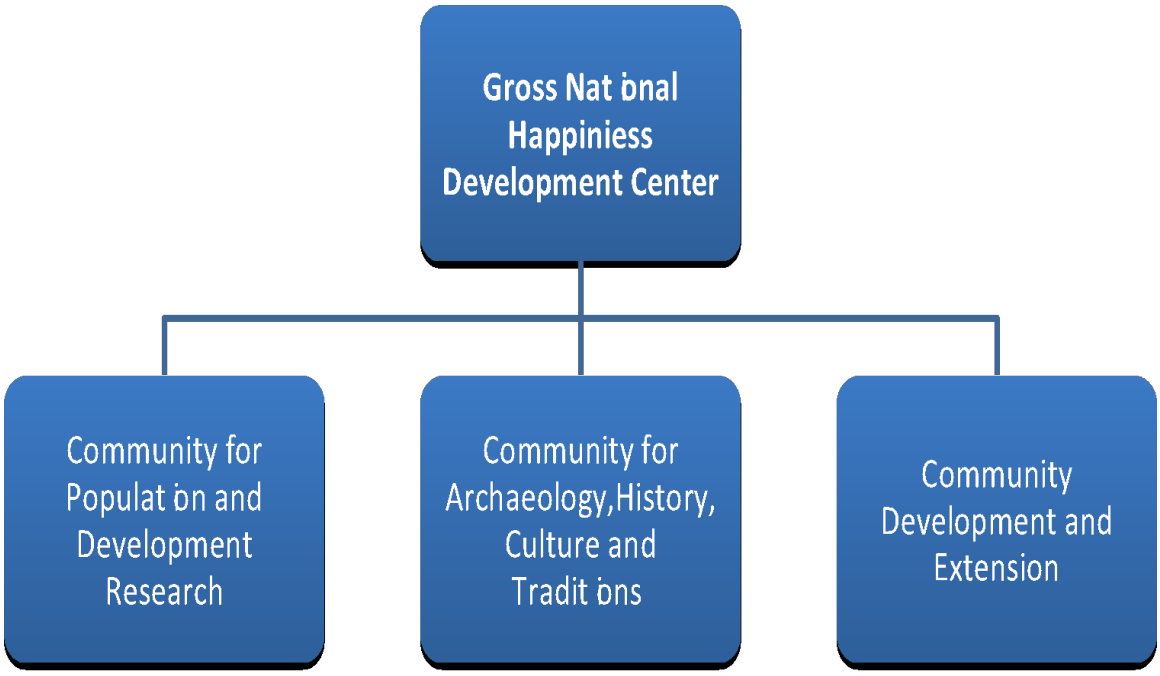
Due to modernization, our country's culture and tradition are at risk. The Bhutanese thus have a strong and immediate need to uphold their culture and traditions because this is a key way for the Bhutanese to sustain their unique identity. Culture and tradition for the Bhutanese embody their pride in being able to remain a sovereign nation in between the two most populous countries in the world: China and India.

In the colleges of the universities in Bhutan, the dimension of promoting and preserving traditional culture is very strong and is seen as an educative asset that contributes to developing student creativity,

cultural identities and intercultural understanding. Therefore, the Center can provide a platform for both the students and the community to enrich their knowledge about their culture and tradition by bringing historical or culturally oriented events and social venues to the community, including hosting art shows and festivals, concerts, sporting events, food venues and many other public attractions. These events can include talent from outside of the area as well as student shows rich in culture and tradition. The Center and its purpose, in essence, will provide an opportunity to learn and promote alternative GNH developmental approaches at the local levels where the ultimate goal is the happiness and wellbeing of the people.

The Center will also provide a unique opportunity for students and the local community to exchange experiences on strategies for translating wellbeing frameworks into practice. It will help bring about a re-appraisal of what matters. In time, quietly but surely, the Center will propagate GNH as a practice in the villages and amongst the common people and facilities to achieve the national goal of Gross National Happiness.

The Gross National Happiness Development Center will have three sub-branches: the Community for Population and Development Research; Community for Archaeology, History, Culture and Traditions; and Community Development and Extension. There will be one overall coordinator for the Gross National Happiness Development Center, who will be appointed for one year based on rotating between the two coordinators for the Community of Population and Development Research and the Community for Archaeology, History, Culture and Traditions.



The Center will bring together actors and agents of development, including scholars, researchers, leaders, villagers, students, policymakers, practitioners, intellectuals and academics to explore and examine issues and problems at the grassroots level. The Center will also provide a creative platform for cross-cultural exchanges to revitalize indigenous cultures and encourage innovative research collaborations and best practice models to design the framework for the operationalization of GNH. The study of measuring community vitality is relatively new and little work has been conducted on it.

For meaningful development and community vitality, emphasizing the quality of life of the community, progressing beyond the economic aspects, is clearly important. Research has shown that an increase in material well-being over time does not increase the happiness of the people. Excessive focus on material development has even led to a diminished sense of community in some developed nations. Therefore, this Center will focus on the determination of methods to maximize the wellbeing and vitality of the community, as well as to revitalize moribund communities. The Center will examine interactions and relationships within and, to some extent, across communities. The Center will also emphasize dimensions

of community vitality, such as volunteering, social cohesion, safety, creation and development in the respective target areas.

The following are the mandates and plans of the Center.

1. **Vision**

   Become a center of excellence in happiness, rural development and wellbeing, and preserve the National Heritage and Cultural Identity

2. **Mission**

i. To emphasize GNH at the grassroots level

ii. To study migration trends in Bhutan

iii. To adopt some of the villages at Kanglung Gewog

iv. To conduct historical research to archive in the National Heritage and Cultural Identity

v. To study depopulation in Eastern Bhutan

vi. To influence social, economic and development policies through social research

vii. To establish institutional linkages at both national and international levels

3. **Governance structure and membership**

3.1 **Executive Committee**

The Centre shall be managed by an executive committee consisting of the following members:

S.I No	Members	Responsibilities
1	President	Advisor/Convener
2	Dean of Research and Industrial Linkage	Chair
3	Coordinator	Member Secretary
4.	Dean of Student Affairs and Dean of Academic Affairs	Members
5.	Five Faculties	Members

3.2 **Administrative staff**

The Center shall have a minimum of one research associate and one adjunct professor in the future. The research associate will be either an honors student or a full-time employee.

4. **Thematic Areas**

i. Population, development and health

ii. Governance, economic growth and poverty

iii. Local monuments and artifacts

iv. Traditional tools and materials

v. Tangible and intangible culture

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The History, Necessity, and Potential Role of the Community Development Center of the University in Myanmar

Nilar Aung* and Thein Htun**

Abstract

Community development is a key program in Myanmar's extension education that was created to develop economic and human resources as well as physical, natural and cultural resources in the community. The university mission is to be public institution dedicated to learning, teaching, research, and community service. With the mission as a starting point, input was solicited from the community and goals were created. Aims and objectives of community development center (CDC) can vary based on the region to region. During the period of the Myanmar Socialist Programme Party, youth organizations were organized in states and divisions including the universities organizations implemented community development sports, arts, and social welfare training. During the military government, the community development center was established as the Human Resource Development Programme. According to the Myanmar Education Sector Panorama, June 2012 a plan existed to establish community development center at universities and degree college between 2012-2015 to contribute to regional development. With the new democratic government, now is the best time to modify the plan and move forward the community development center adjacent to each and every university. The development potentials of CDCs at universities in Myanmar are available human resources with multiple disciplines, facilities such as rooms, computers, and internet access as well as infrastructure and communications skills; and to share the research-based knowledge from each and every university located in the regions across Myanmar.

Keywords: *Community development center, Regional development, Universities*

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Introduction

The Ministry of Education is the main education provider in the Republic of the Union of Myanmar and functions with the vision of creating an education system that will generate a learning society capable of facing the challenges of the Knowledge Age. The Ministry of Education is implementing short- and long-term education development plans to upgrade the education standards and develop a lifelong learning society. The implementation of the education development plan has gone beyond enhancement the quality of higher education and promoting diversity, to also markedly increased accessibility to both basic and higher education.

In rural education extension, community development is vital programs. To be successful academic researchers and planners need to be able to recognize and define what is (and what is not) encompassed in the community and economic, social and other development. A related issue is to be able to identify, categorize and distinguish among the many specific educational thrusts possible for community and economic development programs. Myanmar has 173 higher education institutions. Among them, 66 institutions are under the jurisdiction of the Ministry of Education while 97 institutions are under 12 other ministries. "Among the 163 Myanmar universities in 2012, more than one third of them (66) are under the Ministry of Education, followed by 61 under the Ministry of Science and Technology and 15 medical universities under the Ministry of Health. The remaining ministries have between one and five universities, resulting in insufficient focus on agriculture and other important topics."

For example, to contribute the knowledge obtained from agricultural and other research to farming community, the one and only agricultural university is located in central Myanmar. This university is unable to cover the whole country for sharing knowledge. As an agricultural country, Myanmar should have community development centers established in universities and college especially those which are located especially in rural areas. By doing so, the researchers from universities and college can conduct more research based on their community needs they can share the knowledge directly and effectively with the community and their research will be more applicable.

The networks of learning centers, community learning centers could define the role of higher education institutions in fulfilling community needs.

The establishment of community development center at universities and degree college can be contributed to regional development Myanmar Higher Education Sector Panorama, 2012).

Potentials for Community Development

In this research applies the exploratory method to explore the history and necessity. The secondary data such as the numbers of universities research accomplished by researchers from various disciplines from different universities and education development plans were obtained from the Department of Higher Education. The primary data was collected using semi-structured interviews with planners, and researchers to learn their views and opinions on the community development center. Some focus group discussions were conducted with researchers, and people who had good experiences in community development works.

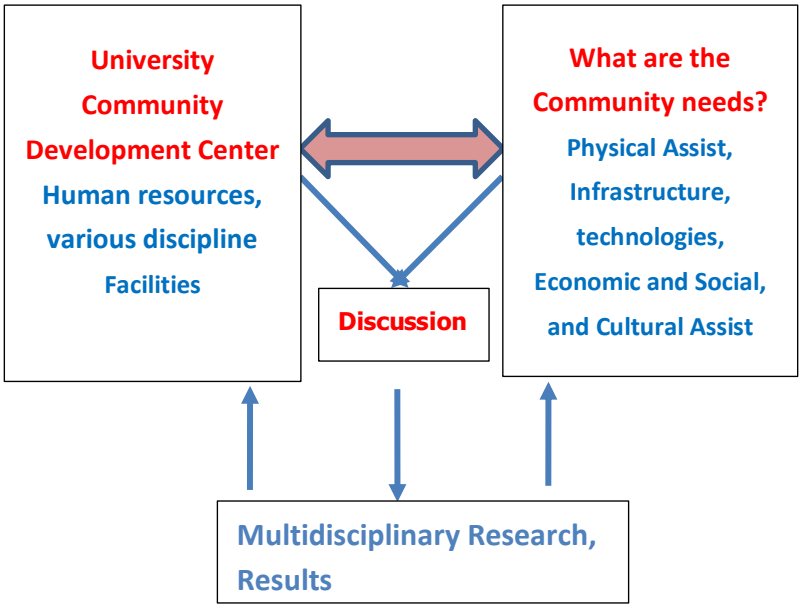

Figure 1. Findings and Suggestions

Source; own draft

To sustain existing levels of economic activities and create additional economic activity within the community, the major challenges and opportunities of existing businesses are needed to be understood. To create economic enterprises using locally appropriate management of natural, historical and cultural resources the following are necessary.

• Developing heritage, cultural and ecotourism opportunities

• Considering the environmental consequences of development activities

Myanmar higher education institutions are reinforcing their role as a center for creating and disseminating knowledge in the local communities. They are defining the services, skills, and

knowledge that they could provide to the rural areas and communities in which they are located and strengthen linkages with local and rural communities and contribute to their development. They are able to harness technology to act as a driving force in the delivering of knowledge and skills. They also conduct research on local resources and identify educational programs they can offer using the networks of learning centers, community learning centers and other means available. Community-based human resource development is being activated in order to buttress development of the local residents ' lifelong learning and promote the growth of local industries. As a task of the thirty-year long-term education development plan for fiscal year 2005-2006, higher education institutions were assigned to open community development center to facilitate their services to the community. The centers offer courses, perform 31 researches and offer consultancy services needed by the regions in which the institutions are located.

The university campus environment should support and facilitate the mission of the university. The planning process began with the mission of the university as a public institution dedicated to learning, teaching, research, and community service. With the mission as a starting point, input was solicited from the community and goals created. Aims and objectives of community development center (CDC) in universities can vary based on the region to region. The three primary types of community development center are economic resources (businesses, jobs, and so on) human resources (the skills and other contributions of the people living in the community) and physical, natural and cultural resources (the resources of the natural environment as well as those that are man-made, such as streets and hospitals).

History of Community Development Centers in Universities

During the period of the Myanmar socialist program party, youth organizations lead community development in sports, arts, social welfare training and more.

During the military government, the community development centers shifted into the Human Resource Development Programme. In Myanmar higher education sector panorama 2012, the establishment of community development centers at universities was planned to contribute to regional development.

Table 1. Current Research Centers in Myanmar Universities

Source: Education Atlas of Myanmar.2018

Sr.	Name of the Research Station	University	Location
1	Universities Research Centre	University of Yangon, Yangon Region	Yangon University campus, Kamayut Township, Yangon
2	Aquaculture Research Centre	Mawlamyine University, Mon State	Set Se Village Tract, Than Phyu Zayat Township
3	Marine Science Research Centre	Pathein University, Ayeyarwady Region	Makyee Area, Shwe Thaung Yan Sub-Township
4	Biological Resources Research and Biotechnology Development Centre	Pathein University, Ayeyarwady Region	Pathein University campus, No. 3 Ward,
5	Marine Science Research Centre	Myeik University, Tanintharyi Region	Myeik University Campus

Myanmar higher education institutions are reinforcing their role as centers for creating and disseminating knowledge in local communities. They are defining the services, skills, and knowledge that they can provide to rural areas and the communities in which they are located and strengthen linkages with local and rural communities and contribute to their development. They are able to harness technology to act as a driving force in delivering knowledge and skills. They also conduct research on

local resources and identify educational programs they can offer using the networks of learning centers and community learning centers and other means available. Community-based human resource development is being activated in order to buttress the development of the local residents' lifelong learning and promote the growth of local industries.

As a task of the Thirty-Year Long-Term Education Development Plan for fiscal 2005-2006, higher education institutions were assigned to open community development centers to facilitate their services to the community. The centers offer courses, perform 31 researches and offer consultancy services needed by the regions where the institutions are located.

As an endeavor to enhance learning opportunities that transcend the limitations of place and time, e-Education was launched in Myanmar on January 1, 2001. By harnessing information and communication technologies, learning opportunities are being increased for citizens wherever they are in Myanmar, regardless of their age, genders experience, and educational qualifications, thereby facilitating Myanmar becoming a learning society able to face the challenges posed by the Knowledge Age.

Necessity and Potentials of Community Development Centers

Community development is a key program in national extension education. Extension educational programs are to develop the economic human physical, natural and cultural resources in community. The university campus environment should support and facilitate the mission of the university. The planning process begins with the mission of the university as a public institution dedicated to learning, teaching, research, and community service. With the mission as a starting point, input was solicited from the community and goals were created. These goals can vary based on region to the region. There are three primary types of resources as follows;

- Economic resources—businesses, jobs, and so on.
- Human resources which are the skills and other contributions of the people living in the community

• Physical, natural and cultural resources which are the resources of the natural environment as well as those are man-made, such as streets and hospitals

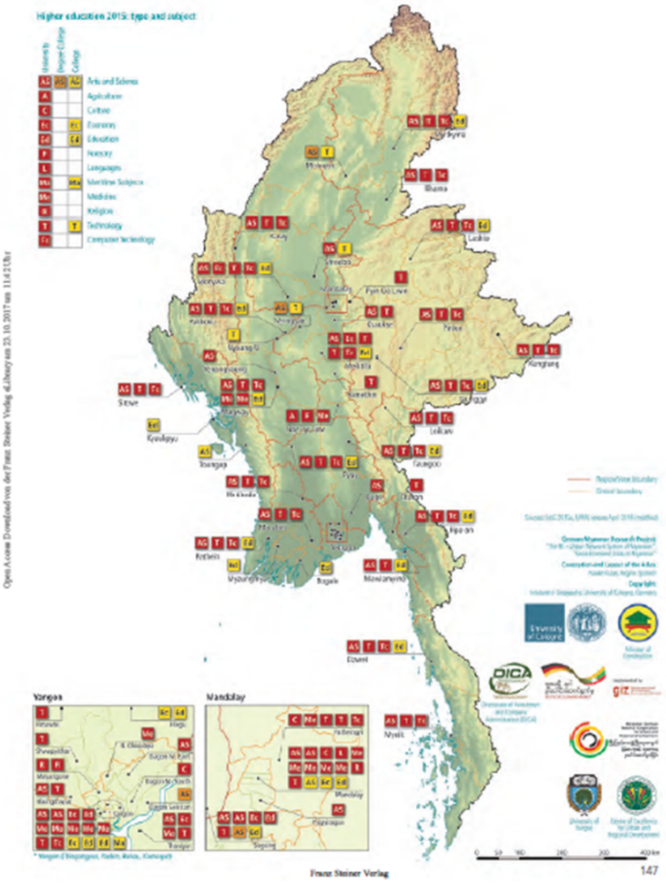

Figure 2. Spatial Distribution of Universities in Myanmar

Sources: Socioeconomic Atlas of Myanmar,2018

Although Myanmar is an agro-based county and over 65 percent of the total population lives in rural areas, Myanmar has only one agricultural university, which is in Yezin, central Myanmar. The Ayeyarwady Region is the rice bowl of Myanmar, and the region has 29 percent of the rice producing areas and 14 percent of the population. The three universities in the Ayeyarwady Region are Pathein, Mubin and Hinthada, but they have no research centers for agricultures.

Research centers for farmers are needed to be established in universities to share and contribute the knowledge gained from research. Farmers are now facing less profit on their farms because of their insufficient knowledge for recording costs and benefits, seeds, and amounts of fertilizer and pesticide

used, training is required. The limited knowledge on how to overcome the impact of climate change needs to change with their changing environment, especially in cropping patterns, seeds, technology and the insufficient knowledge of market conditions and value chains. This knowledge needs to be shared with farmers who only sell to middlemen. The insufficient knowledge on systematic seed selections, soils, and methods render the total benefits very low in agricultural income.

Now is the best time to renew community development center in universities in Myanmar because shifting the resource-based economy to a knowledge-based economy is necessary. Universities are primarily located in rural areas with different geographic features and locations as well as different community needs.

Different community needs are found including vocational training skills training and social entrepreneurship. Multidisciplinary research should be emphasized more on the development of agricultural practices, climate smart agriculture, climate-resilient rice varieties and economies. Human resources from different disciplines of universities, infrastructure, and facilities, one aspect of the suggestions of teachers are major reasons to establish community development center in universities of Myanmar. The plans and strategies of the Myanmar higher education sector are to fulfill the educational goals of the country in the new century. The plan for community development centers is enormous contributions to develop qualified human resources and reaching out to local communities to equip them with advanced skills and knowledge.

The education promotion programs include building a robust higher education system to serve Myanmar, in order to become a modern and developed nation. Community development center can provide Myanmar citizens from different areas with quality education, advanced skills and knowledge that they need. Community development center can create strong foundation for the pursuit of lifelong learning while simultaneously nurturing the cultural roots and identity of Myanmar.

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Field practice and services for rural areas provided by students in the Faculty of Regional Collaboration, Kochi University

Ichikawa Masahiro*

Abstract

In rural Japan, depopulation and aging have severely increased. Universities in Japan are expected to contribute to resolving these problems through education and research. In Kochi University, a new faculty, the Faculty of Regional Collaboration, was established in 2015. This paper explains the curriculum, which consists of many hours of field practice, the problems found so far in the education and the relationships with rural areas where fieldwork practice is conducted.

Keywords: *depopulation, aging, service learning and contribution to regional problems by universities*

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1. Introduction

Problems in rural areas in Japan: Population in Japan, after peaking in 2008, started decreasing. The elderly population, which starts at 65 years old, is approximately 34,591,000, accounting for 27.3 percent of the total population. In 2005, the lowest birth rate of 1.26 was recorded. After that, although the rate has increased slightly to 1.44, it is still low. The number of births recorded annually was approximately 977,000. This was the first year after 1899, when statistics started being recorded, that the number fell below one million.

Especially in rural areas, depopulation and aging have severely increased. Problems include abandoning agricultural management and silviculture fields as well as collaborative work deteriorating in the community. Population migration from rural to urban areas such as Tokyo continues and some rural communities have started disappearing. Today, taking countermeasures against these problems is urgent.

Universities roles: Formerly, research and education were mainly expected of universities. Excellent research was conducted and the results reflected student education. As the problems mentioned above have appeared, however, university contributions for resolving them has been expected, which are to conduct research on those problems and develop human resources to contribute to resolving them.

Kochi University, first among universities in Japan, established a new faculty to contribute to resolving such regional problems: the Faculty of Regional Collaboration. This paper examines the education methods and curriculum in this faculty.

2. Education in the Faculty of Regional Collaboration

Kochi University was established in Kochi Prefecture on Shikoku Island (Fig. 1), a remote area of Japan, in 1949. In Kochi today, depopulation and aging have severely increased. Until 2014 Kochi University had five faculties: Humanities, Education, Sciences, Medicine and Agriculture. The entire university had approximately 5,000 undergraduate students and 500 graduate students. In 2015, given the crisis in rural areas mentioned above, the Faculty of Regional Collaboration was newly established with approximately 60 first year students.

The Faculty of Regional Collaboration works to produce leaders with management skills in regional

collaboration. The skills consist of comprehensive understanding of local communities, planning competency and practical skills for collaboration. The prospective new leaders are to identify, analyze and integrate complicated regional issues, and to address them by promoting collaboration between people and organizations across primary, secondary and tertiary industries. After graduation, students are expected to promote regional collaboration with extensive knowledge of industries from agriculture to marketing.

The distinguishing characteristics of the curriculum are to foster students with the abilities mentioned above using substantial time for field practice. Students from the first year to junior year spend over 600 hours on field practice.

In the field practice, the first-year students are expected to understand the natural, social and cultural conditions and the regional problems in the community they are assigned (Photograph 1). For example, in a particular rural village or town, the students help with agricultural work; attend collaborative work such as road cleaning; and help to implement events such as sports festivals and agricultural fairs. Through these activities, they become familiar with local residents and understand the conditions and problems in their communities.

In their sophomore year, students create plans to resolve the problems (Photograph 2). Discussion with local residents is held several times during the planning process. After a initial plan is created, a small-scale trial is implemented and the plan is then improved according to the results.

In their junior year, students implement the plan in full scale (Photograph 3). Projects conducted by students so far have been establishing a farm restaurant utilizing fresh agricultural products and beautiful scenery, organizing a chorus group in a village and a mini-concert inviting a brass band from the university, and photographing newly-weds against the background of a beautiful flower garden. The students conduct many projects, utilizing the rich resources in the communities they are assigned.

In their senior year, based on their experience from the field practice, students conduct research and analyze the regional problems for their theses.

Students use several sites for their field practice around Kochi Prefecture (Fig. 2). The sites go beyond the agricultural community to include fishing communities as well as regional urban area such as Kochi city.

The curriculum of the faculty consists of field practice and lectures to learn basic knowledge and techniques needed for fieldwork and facilitating the understanding of the situations of the communities.

3. Issues so far in the Faculty

The period for understanding the regional issues may be insufficient. According to the current curriculum, in the second semester of the first year, the students conduct fieldwork to understand the situation and issues in the community they work on. This may be insufficient time to understand the community and issues there within a single semester as the students have little fieldwork experience and knowledge. In the next semester, insufficient understanding would result in problems for creating plans to resolve regional problems.

For example, depopulation and aging in rural areas are deep-rooted issues relating to surrounding issues such as politics, economy and nature as well as the conditions such as society and culture. Becoming familiar with and understanding those conditions require time. Deep knowledge and insight of teaching staff are also required.

Only three years have passed since establishing the Faculty. Hereafter, the teaching staff must improve the curriculum and create a regional philosophy.

Figure 1. Location of Kochi

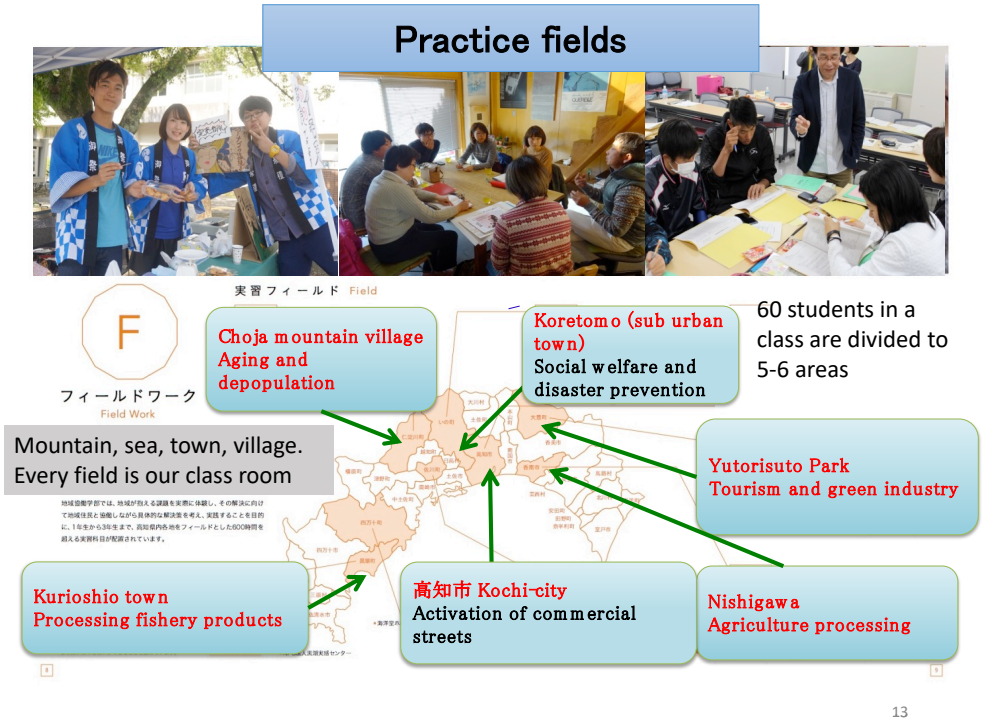

Figure 2. Communities the students are assigned in Kochi Prefecture

1st grade: Understanding the works and life in villages
Service learning

Photo 1. First year student field practice

2nd year: Presentation of proposed plan and discussion with local people

Photo 2. Second year student field practice.

3rd year: Memorial photograph in a flower garden in mountain village
Utilization of beautiful landscape as a mountain resource

Photo 3. Third year student field practice

Participatory Learning and Action (PLA) by Students and Young Scholars of Bhutan in Japanese Depopulated Area: Its Implication for Challenging Global Issue

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Abstract

Depopulation is one of the biggest issues for many rural communities in Japan. Although Japanese government and local people have struggled to overcome the depopulation and relevant problems for several decades, clear solution to the problem has not been proposed yet. Recently, depopulation or rapid out-migration in rural area is starting to be observed commonly in many developing Asian countries and international cooperation would be important to cope with the problem, like a global warming. Furthermore, positive contribution to local society by higher educational institution is increasingly expected by local government and communities. Regarding this, the Center for Southeast Asian Studies, Kyoto University and Sherubtse College, Royal University of Bhutan has jointly carried out the exchange learning program in Japan and Bhutan to cope with the problems since 2012. This paper introduces the activities of exchange learning program in Japanese rural area and note perspective of the program.

Key words: *depopulation, exchange learning, community-based activities, Japanese rural area*

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1. Introduction

Depopulation is a central problem confronting many rural communities in Japan. Although Japanese society achieved rapid economic growth in 1960s and 1970s, it was strongly supported by the concentration of productive-age population into the economic and industrial centers from the rural communities. Declining population and imbalanced population structure, viz. relatively few young and productive populations and many aging population, has caused a lot of problems for rural community, such as shortage of human resources, shrinking of local market and job opportunity, declination of community's autonomy, deterioration of public services, and so on.

Although depopulation has come up as a concerned issue in the end of 1960s in Japan, the same issue has started to be observed in many developing Asian countries in recent years. Bhutan is a small mountainous country located southern slope of the Himalayas, and the country had kept a distance from rapid modernization until a few decades ago. However, the mass rural-urban migration associated with resent rapid modernization is becoming intense anxiety for policymaker and researchers. Its seriousness was also expressed in National Day's address by His Majesty the King in 2016 (Bhutan Broadcasting Service 2016). The mass out-migration of young generation, especially in eastern Bhutan, has made aging population of rural community relatively high. According to the census in 2017, the aging rate (age 65 or older) of the country was 5.9%. However, the aging rate of eastern Bhutan reached 7.6% (Royal Government of Bhutan 2018). The society with an aging rate exceeding 7% is classified as an "aging society" in the definition by World Health Organization. The out-migration of young generation from rural communities comes up with the large area of uncultivated/fallow land in rural communities. The rate of uncultivated/fallow land exceeded 20% in eastern Bhutan and the reasons for uncultivation/fallow mentioned by landowners were "shortage of labour" (Royal Government of Bhutan 2018). Mechanization of farming is difficult for most of the community due to rugged topography so that population drain have directly impact on farming.

It is commonly considered that minimization of infrastructural and economic gap between urban and rural communities would be a fundamental and exclusive approach to depopulation. In fact, the government of Japan invested more than 800USD for improvement of infrastructure, school and health facilities and transportation network, and promotion of industrialization over the past four decades.

However, recent serious situation of Japanese rural area indicates that conventional approach would be not adequate for solving depopulation and we are requested to propose alternative approach for the problem. Recently, positive and visible contribution of higher educational institutions to local society is highly expected by local government and community. Especially in Bhutan, most of the Colleges are located in rural area and these Colleges have a strong advantage in contribution to rural society. Regarding this, the Center for Southeast Asian Studies (CSEAS), Kyoto University and Sherubtse College, Royal University of Bhutan started exchange learning program to challenge rural development issues, including depopulation, in Bhutan and Japan.

2. Participatory Learning and Action Program in rural area, Japan

The exchange learning program has been carried out summer and winter season in Japan since 2012. Japan is well known as a one of the most developed countries in the world. On the other hand, seriousness of depopulation in rural area is not known from other Asian countries. Bhutanese students and young scholars from Sherubtse College visited Japanese rural areas through the program and carried out fieldwork by Participatory Rural Appraisal to understand current rural situations. Some groups participated in social volunteer works, such as snow removal, to understand community facing issues more deeply (Plate 1). The fieldwork was mainly conducted in two rural areas, Miyama-cho (Nantan-city) and Miyazu city in Kyoto Prefecture (Figure 1). Miyama-cho is located central part of Kyoto Prefecture and surrounded by mountains. Kita village of Miyama-cho is well remaining traditional houses with a thatched roof and its landscape attracts a lot of tourists. On the other hand, most of villages of Miyama-cho are facing depopulation and aging. Miyazu city and located in the northern part of Kyoto Prefecture and many communities are also facing serious depopulation, like Miyama-cho. In addition to fieldwork to understand current situation of depopulation, participants visited several organizations and individuals who have carried out remarkable activities for against depopulation and community revitalization. Chii Community Development Association (CCDA) in Miyama-cho is an organization addressing local problems through community-based activities. The participants visited CCDA office and received explanations on their activities and occasionally took part in CCDA's activities (Plate 2 & 3). In Miyazu, there are several regional and civic groups organized by local people to implement

community-based activities. The participants were taken to the site by the members of regional or civic groups and observed their activities with their explanation in the field. After the fieldwork, meeting or workshop involving local people was held in Miyama-cho or Miyazu to share participants' findings and impressions through the program and to enhance self-awareness of involvement in the issue.

Figure.1 Location of Miyama-cho and Miyazu city, Kyoto Prefecture

Photo.1 Volunteer work (snow removal surrounding community temple, 2015)

Photo.2 Lecture given by local people, 2018

Photo.3 CCDA's activity (maintenance of roadside tree, 2014)

3. Situation of depopulation in Sasari village and Kigo village

In addition to field observation, some groups carried out intensive field survey in Sasari village in Miyama-cho and Kigo village in Miyazu city. Sasari village is located northeastern part of the Nantan-city and thriving in timber production from 1970s to 1980s. The basic infrastructure, such as electricity, water supply facility, paved road, internet environment and so on, is well arranged like most of other rural areas in Japan. According to statistical data, there were 36 households and 183 populations in 1960 in the village (Publication Committee of Chii village History 1998). However, the household and

population of the village was 19 and 11, respectively in 2014. The survey group found that the population of the village reached its peak in 1960 and then sharply dropped down during the period of rapid economic growth. More than 50% of population declined from 1960 to 1971. The decline rate of population was comparatively lower after 1970s but getting higher again last a decade because of natural decline of aged population and small population in the village. The population of aged 60 or older accounted for 69.6% in 2011 and most of villagers' children lived and worked in urban area of Osaka, Kyoto or Shiga Prefecture. There were four aged persons lived in the village alone in 2014. They were still active and communicated well with other villagers, but there was serious concern about who can look after them when something happens, such as emergency, when they stay alone in house or outside. Aging of the community population made it difficult to maintain individual daily physical works as well as community works, such as maintenance of irrigation and community temple.

Kigo village, Seya area of Miyazu city, is a mountainous village getting heavy snowfall in winter season. Seya area consists of five villages including Kigo village and its population declined from 1357 in 1930 to 114 in 2010 (Miyazu city office 2015). Like the case of Sasari village, there was sharp decline of the population from 1960 to 1970. The decline of the population in Seya area was attributed to not only strong economic pull factors but also push factor of natural environment, i.e. heavy snowfall in Seya area. Especially, tremendous heavy snowfall in 1963, called *Sanpachi-gousetsu*, caused extensive damage to many houses and it triggered mass out-migration from Kigo and surrounding villages in Seya area. The heavy snowfall is still serious problem for the communities. In 2016, there were five households in the village and these all families were in-migrant from urban areas. The original villagers have already migrated from the village and the most of farmland have been abandoned (Ando et al. 2016).

4. Community-based activities in Miyama-cho and Miyazu city

Besides the struggle of central and local government for depopulation and relevant problems, community people have also taken action for community revitalization with strong awareness of crises for their community. Here, author introduces two examples of community-based activity taken by *Chii-Shinkokai* in Miyama-cho and *Utsukushisa –tankentai* in Miyazu city.

i) *Chii-Shinkokai* in Miyama-cho**:** Chii Community Development Association (CCDA), called *Chii-Shinkokai* in Japanese, was established in 2001 to promote community-based development and revitalization for community by community people. Various activities have been planned and practiced by CCDA involving community people and relevant organizations. Community events, such as sports festivals, autumn harvest festival and cultural exhibition, have been held to provide fun for local people and strengthen community bond. The village beautification program by local women was implemented to encourage women's participation in the community revitalization and utilize women's high sense for beautification. On the other hand, some events, such as sweetfish festival, exchange program of school kids and green tourism programs, have been organized to encourage the interaction with urban people and let urban people know about the good points of living rural community and richness of natural environment (Plate 4). To cope with increase of human-wildlife conflict, zoning project between residential and forest area was implemented. Furthermore, CCDA has provided a hands-on learning opportunity for university students through volunteer work and interaction program in the aging and depopulated communities of Chii area. Some Bhutanese groups also participated in the activities in winter and shared their experiences and impressions with university students. Besides planning and practicing of revitalization activities, CCDA office also provides some local governmental services, such as issue of residency certificate and collection of insurance fee. The central office of Nantan-city is located about an hour's drive from Chii area by car and representative service of the local government office by CCDA have relieved inconvenient accessibility to public services for the community people.

ii) *Utsukushisa-tankentai* in Miyazu city: The local expeditionary group called *Utsukushisa- tankentai* is one of the civic groups in Miyazu city. The group was established in 2001 by Miyazu citizens and they dealt with local revitalization through re-discovery and re-evaluation of local treasure, means local culture, traditions, knowledges, natural resources, and so on. Their main activity was visit to field or community and re-discover local endemism which should be evaluated and handed down to next generations. Miyazu city consists of many mountainous and coastal villages, and the group members visited almost all of the villages and surroundings. The group members were guided by local people and they carefully listened to their story about their life and village history. After the field expedition, their findings were published as a local newsletter six or seven times a year (Plate 5). The newsletters were

distributed to every household in Miyazu city. According to the editor of the newsletter, there were big and positive responses from the readers. In addition to the publication of newsletter, *Utsukushisa-tankentai* published several booklets and books related to local history, culture, vegetation and so on. The book, titled *Miyazu Shin-fudoki*, is a collection of articles written on local culture, histories, traditions, landscapes, and life histories from the view point of localites. In addition to field expeditions and publications, the members engaged in volunteer works to keep the landscape clean and beautiful. Unfortunately, *Utsukushisa-tankentai* has finished their activities in 2015, but their experiences and findings have passed to other groups and utilized for revitalization activities. For an example, Miyazu city established Eco-Tour Guide Group to encourage local ecotourism, and *Utsukushisa-tankentai*'s findings were used in some pages of eco-tour guidebook. Some hidden visiting spots found through expedition of *Utuskushisa-tankeitai* were started to maintain by other groups or individuals as a new tourist spot to encourage local ecotourism.

Photo.4 Rural experience program of urban kids in Chii (2016)

Photo.5 Newsletters published by *Utsukushisa-tankentai*

5. Perspective of the Exchange Learning Program

Depopulation is a deep-rooted issue and it would be difficult to find out clear and immediate solution. However, the exchange learning program based on PLA has provided comparative view point of depopulation between Bhutan and Japan to re-think on the approach to it. Most of Bhutanese young scholars were very surprised at the gap between well-developed rural infrastructures and reality of depopulation in Japan, and one Bhutanese scholar mentioned that depopulation seems to be rooted not only in economic factors in rural area, it would be also rooted in people's mind-set to rural area and its

values. In fact, conventional approach to rural development is preferentially focused on infrastructural investment and improvement of economic condition. On the other hand, intrinsic value of rurality was kept behind. However, recent activities by CCDA and *Utsukushisa-tankaintai* are laid weight on re-evaluation of rural community and local resources rather than straightforward materialistic or economic development. This kind of approach, unexpectedly, akin to the concept of Bhutanese development, called Gross National Happiness (GNH). GNH preach on importance of holistic approach by combination of material and spiritual development to improve human welfare and happiness. CCDA and *Utsukushisa-tankaintai*'s approach to rural community would give concrete hints for implementation of GNH in practice in rural area of Bhutan. On the other hand, many questions about GNH or "happiness" were asked to Bhutanese students and scholars by Japanese local people. The concept of GNH is actually getting popular among Japanese communities. In fact, there are some local governments applying the idea of GNH to their development plans. Although the scale of the program is not so large, steady place-based exchange learning involving interaction with local people enhance participant's self-awareness of involvement in the issue and it would be connected to their new approach and action in their place for the future.

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