

## **Youth Perception of Agriculture and potential for employment in the context of rural development in Bhutan**

*Tshering Pelzom // kichoema@gmail.com*

*College of Natural Resources, Royal University of Bhutan, Bhutan.*

*Om Katel // om@cnr.edu.bt*

*College of Natural Resources, Royal University of Bhutan, Bhutan.*

### **Abstract**

Agriculture forms the backbone of the economy in many countries, particularly developing countries, and Bhutan is no exception. In Bhutan agriculture provides employment and a livelihood to more than half the total population. However, the contribution of agriculture to Gross Domestic Product has been decreasing over the years and there are several reasons why agricultural productivity has been affected. One reason cited is the decreasing labour force in the agriculture sector. Bhutanese farming is comprised of relatively less mechanized farming than in other countries so young people are seen as the mainstay of agriculture, but over the last decade or so it can be observed that more and more young people are migrating to urban areas and as a result the labour force in rural areas is decreasing. It is unclear why young people are not interested in taking up agriculture related employment despite the increasing rate of unemployment in Bhutan. The objective of this paper is to document the perception and knowledge of young people towards agriculture and to analyze the factors affecting young people's perceptions of agriculture related employment. The data were collected from selected young people ranging from 13 to 24 years from east, west, central and southern parts of the country. The respondents included school students, school drop-outs, and unemployed young people and undergraduate students from selected colleges under the Royal University of Bhutan. Respondents also included teachers and farmers. The research reveals that students attending high school who hail from rural areas and have parents who are farmers perceive that agriculture can be a potential area for employment. However, the principal components analysis reveals that some factors causing young people not to take up agriculture-related employment are crop loss, lack of resources, parental pressure and relatively less access to technical and financial support. The responses of young people suggest that with adequate technical and financial support, profitable and sustainable farming can be made attractive to young entrepreneurs. Encouraging young people to promote agriculture in rural areas can substantially enhance food security in Bhutan. Therefore this paper aims to show ways in which young people can be attracted by and engaged in the agriculture sector and the implications for food security in Bhutan.

**Key words:** Agriculture, Bhutan, Employment, Knowledge, Perception, Rural Development, Young people.

## **Introduction**

Agriculture is the backbone of the economy in many countries, particularly developing countries. It provides employment and a livelihood to a significant number of people, in both the formal and the informal sectors. Agriculture, particularly in developing countries, depends on its people; how capable they are and the amount of labour they can provide (Raymond et al., 2004). Therefore young people are crucial in advancing the agriculture sector, particularly in developing countries, as they are the most productive group in the overall population. This can be further capitalized on by engaging young people and motivating them to join this sector. In Bhutan, over 60% of the total population depends on agriculture for their livelihoods (Katwal, 2013; RGOB, 2014b; Katwal et al., 2015) and young people in the age range of 15 to 24 years, comprise 19.3% of the total population (RGOB, 2012a; Dorji, 2015). However, the number of people, especially young people, in rural areas is decreasing over the years because of rural to urban migration (Tobgay, 2005b; Chua, 2008). In 2011 alone, over 0.6% of the total population of young people migrated from rural to urban areas (RGOB, 2012b; Tenzin, 2012). Rural to urban migration such as this has led to a reduction in the productive labour force in rural areas and this has ultimately affected agricultural productivity (Tenzin, 2012; UNICEF, 2016). However, in Bhutan the factors affecting agricultural productivity and its promotion as a potential source of employment for young people are not clear.

In Bhutan, the agriculture sector contributes significantly to the national revenue, although its contribution to GDP has been decreasing. The contribution was 26.8% of the total GDP in 2000, 17.7% in 2011 and 16.8% in 2014 (RGOB, 2012a; RGOB, 2013; Katwal, 2013; RGOB, 2015b). Bhutan has a population of around 781,600 and the GDP in October 2016 was US\$ 2,580 (RGOB, 2016a). The youth unemployment rate was 7.3% in 2012, 9.6% in 2013 and 9.4% in 2014 (RGOB, 2014a). The migration of young people from rural to urban areas has resulted in an increase in youth unemployment and food insecurity (Tenzin, 2012). Agriculture can provide significant employment in Bhutan, although the specific strategies that can motivate young people need to be clearly understood.

Currently, despite more than 60% of the total population of Bhutan being engaged in farming, food self-sufficiency at the household level has not been achieved. Therefore more than 85% of the rice requirement for Bhutan is met by neighboring India. This is due to three main reasons: small holder subsistence farming in the marginal lands, migration of young people from rural to urban areas and depredation of crops by wildlife species. In order to encourage farmers, ensure food security and, ultimately, rural development, the Royal Government of Bhutan (RGOB) designed its policies and one of the strategies, announced in 2003, is Bhutan's intention to become the world's first organic country by 2020 (RGOB, 2007; RGOB, 2011). Although the policy towards increasing agricultural output has been reviewed, revised and potential challenges identified (Tobgay, 2005b; Duba et al. 2008; Ghimiray, 2013; Nuehoff et al, 2014), the anticipated impacts and the retention of young people in rural areas with their subsequent engagement in the agriculture

sector have not yet happened. The Ministry of Education (MOE) started the School Agricultural Program (SAP) in 2000, catering for students from classes nine to twelve. The main intention of the SAP programme was to educate young people about the dignity of labour and the importance of agriculture to food security. It also aimed to motivate young people to gain employment in agriculture (RGOB, 2013), but it is not clear how effective these strategies have been. Therefore the objective of this paper is to document and analyze young people's perceptions of agriculture in Bhutan. It is expected that this research will help policy makers and researchers to develop strategies for engaging young people in agriculture which will lead to an increase in youth employment as well as agri-preneurship development and ultimately, food security in Bhutan.

## **Methods**

The research study makes use of the stratified sampling method (Kothari, 2004). The sample of respondents comprises students from classes nine to twelve from selected schools in four regions of Bhutan and final year undergraduate students from selected colleges in Bhutan. The sample also includes school dropouts and unemployed young people (Table 1). The four regions in Bhutan are Thimphu and Punakha in the west, Trongsa and Bumthang in the centre, Trashigang and Mongar in the east, and Samtse and Chukha in the south. From each region two districts were selected; one close to their administrative centre and the other far away from their administrative centre, and they were categorized as urban and rural respectively. From each district the young people are stratified into (1) Middle and High Secondary Schools, (2) School Dropouts, (3) Tertiary institutions and (4) Unemployed young people. The students in the higher secondary schools were further stratified into Humanities, Commerce, Sciences and General in order to compare them with college students. The students in tertiary institutions were also further stratified into Bachelor of Arts (BA) [B.A. in Development Economics and B.A. in Economics], Bachelor in Business Administration (BBA), Bachelor of Commerce (B.Com), and Bachelor of Science in Sustainable Development (B.Sc. SD) in order to compare their perceptions with those of young people still at school. Other respondents, including school dropouts and unemployed young people were interviewed using the convenience and opportunistic sampling method. Another respondent group comprised of farmers, school principals and school agricultural teachers was also interviewed to measure their perceptions of careers in agriculture for the young people of Bhutan.

A total of 396 students were selected and this is higher than the required sample of 384. The sample size determination followed the equation:  $n = \frac{Z^2 \cdot p \cdot q}{e^2}$  where,  $n$  is the sample size,  $Z$  is Z value (1.96 for 95% confidence level),  $p$  is the percentage picking a choice, expressed as a decimal,  $q$  is the confidence interval, expressed as a decimal, and  $e$  is 1-p. Therefore the total sample size for the survey is 500, out of which 232 young people (classes nine to twelve), 30 school dropouts, 84 college students, 50 unemployed young people, 72 farmers, 14 principals and 18 school agriculture teachers were interviewed. Several key informant interviews were also carried out for data triangulation.

**Table 1.** Sample size and sample characteristics (N=396)

Variables	No. of respondents (%)
<b>Age</b>	
Younger people (13-18)	211 (53.3)
Older people (19-24)	185 (46.7)
<b>Gender</b>	
Male	200 (50.5)
Female	196 (49.5)
<b>Qualification Level</b>	
School Students (MSS & HSS)	232 (58.6)
College Students	84 (21.2)
School dropouts	30 (7.6)
Unemployed Young people	50 (12.6)
<b>Area (Locality)</b>	
Rural	188 (47.5)
Urban	208 (52.5)
<b>Regions</b>	
East	92 (23.2)
West	146 (36.9)
South	108 (27.3)
Central	50 (12.6)
<b>Family Background</b>	
Agriculture Background	181 (45.7)
Non-Agriculture Background	215 (54.3)

The questions asked concerned whether or not young people know what agriculture is and whether they have any knowledge of agriculture. The questionnaires used the 5-point Likert scale: (1) Strongly Agree, 2) Agree, 3) Neutral, 4) Disagree and 5) Strongly Disagree as used by Likert (1932). The final questionnaires were pretested to maintain consistency and reduce ambiguity. The data were collected from May 2016 to July 2016. The questions were designed to measure the knowledge and perceptions of young people concerning agriculture and to find factors affecting the potential of agriculture as a source of employment for young people. The factors considered in this research are broadly classified as ecological, economic and social. The ecological factors are related to geography, location and climate, while farmers' access to markets, labour and land are categorized as economic. The perceptions of the young people's parents, teachers and relatives are categorized as social factors. The data from the 5-Likert scale responses were used for a Principal Component Analysis (PCA). The PCA was performed in order to extract a number of factors associated with youth employment in agriculture. The appropriateness of the data for factor analysis was evaluated using Bartlett's Test of Sphericity, and to verify and support the results of the factorial solution a scree test was also performed (Table 3). The PCA was performed with orthogonal rotation (varimax) and the Kaiser–Meyer–Olkin (KMO) measure verified the sampling adequacy for the analysis, KMO = .83 which can be accepted for further analysis where all KMO values for individual items were > .68, showing

well above the acceptable limit of .5 (Field, 2009). Bartlett’s test of sphericity  $\chi^2$  (351) = 3559.18,  $p < .001$ , indicated that correlations between items were sufficiently large for a PCA. An initial analysis was run to obtain eigen values for each component in the data. Seven components had eigen values over Kaiser’s criterion of 1 and in combination they explained 60.58% of the variance.

In order to determine the significant factors affecting the perceptions of young people concerning agriculture related employment opportunities in Bhutan, a linear regression model and the Ordinary Least Square (OLS) method as mentioned in Equation (1) were used.

$$\hat{y}_i = a + \beta_1 x_1 + \beta_2 x_2 + \beta_3 x_3 + \beta_4 x_4 + \beta_5 x_5 + \beta_6 x_6 + \beta_7 x_7 + e \text{----- (1)}$$

Where,

$\hat{y}_i$  - is dependent variable that indicates the measure of the young people’s perceptions of agriculture related jobs,

$x_i$  -is explanatory variables,

$a$  &  $\beta$  -are regression coefficients

$e$  - Stochastic error terms.

The factors affecting the young people's perceptions of agriculture =  $a + \beta_1$  (Crop Loss) +  $\beta_2$  (Resources Constraints) +  $\beta_3$  (Threats) +  $\beta_4$  (Lack of Resources) +  $\beta_5$  (Lack of Accessibility) +  $\beta_6$  (Peer Pressure) +  $\beta_7$  (Parents Pressure) +  $e$ ----- (2)

The young people’s perceptions of agriculture related jobs =  $1.971 + 0.074$  (Crop Loss) +  $0.009$  (Farming Constraints) +  $0.007$  (Threats) -  $0.132$  (Lack of Resources) -  $0.005$  (Lack of Accessibility) -  $0.005$  (Peer Pressure) -  $0.082$  (Parents Pressure) +  $e$ ----- (3). A summary of the young people’s attitudes, knowledge and perceptions with thematic questions is presented in Table.2.

A Cronbach’s alpha higher than 0.70 indicates a high value of reliability and in this study reliability levels are higher than 0.70.

## Results and Discussion

Higher proportion of young people and those living in rural areas agree that agriculture could be an opportunity for employment (Table 2). The analysis shows that young people who had experience with or exposure to farming are likely to accept that agriculture can provide opportunities for employment in Bhutan. This is consistent with the report on students’ perceptions by Ejembi, (1988) in Nigeria. Similarly, the young people living in the rural areas had positive perceptions of agriculture, as was the case in Nigeria and Tanzania (Nnadi et al, 2008 cited by Kimaro et al, 2015; Vera-Tasca et al, 2008; Adesina et al, 2016). However, the results from Nigeria and Tanzania were related to contract farming (D’Silva et al., 2009; Ovwigho and Ifie, 2009; Aphunu and Akpobasa, 2010), whereas in

Bhutan the farmers are small holders. Therefore the comparison between Bhutan and countries such as Nigeria and Tanzania may not be relevant due to conceptual and geographical differences. However, some of the reasons for low agricultural productivity, such as the lack of infrastructure and limited access to markets and technology are comparable with the Bhutanese situation. In Bhutan the use of modern technology for farming and gaining access to markets and infrastructure is limited, primarily because of the mountainous terrain.

The results reveal that young people attending school have relatively more knowledge of agriculture and have positive perceptions of agriculture and its employment opportunities compared to those in colleges and those who are unemployed. A higher proportion of young people with higher qualifications disagree that agriculture can be considered as a source of employment (Table 2). This could be because higher qualifications means higher expectation from parents and relatives as reported by Mc Larty (2005) and Hassan et al. (2009) and cited by D'Silva et al. (2009). Farming in Bhutan uses traditional methods for which the skills can be achieved by practicing year after year. Sometimes skills and knowledge are transferred from one generation to the next and this also means the modern education system has little influence on making the farming system in the mountainous environment practical and sustainable (Gurung 2015). Akiko (2016) argues that the modern school education system has alienated the younger generation from rural farming life and it is causing rural out-migration. It is not clear how the modern education system has failed to motivate younger generations but it seems that young people completing college degrees tend to migrate to towns and cities for employment and prefer jobs in urban areas and not in cities (Kimaro et al., 2015) It could be argued that the current education system in Bhutan does not offer diverse knowledge and skills, and most parents want their children to work in the civil service. The Chi square test also reveals that there are significant differences between variables such as age ( $\chi^2 = 58.576$ ,  $p < .001$ ) and qualification ( $\chi^2 = 88.746$ ,  $p < .001$ ) as regards knowledge of agriculture, and similarly with age ( $\chi^2 = 26.696$ ,  $p < .001$ ), qualification ( $\chi^2 = 33.975$ ,  $p < .001$ ) and region ( $\chi^2 = 14.655$ ,  $p < .05$ ) as regards perceptions of rural development. This result is consistent with the findings of Nnadi and Akwizu (2008); D'Silva et al. (2010) and Abdullah and Sulaiman (2013).

Relatively lesser proportion of young people in eastern Bhutan agree that agriculture could offer potential for employment and rural development. This is because farmers grow their own food and the only potential buyers are people living in the urban areas. In addition, agricultural products are basically seasonal. This means that during the summer months there are too many vegetable sellers while during the winter months there is little or no availability of vegetables. Such a situation creates uncertainty and fluctuating market prices (Table 2). The result which shows that young people from the south of Bhutan tend to perceive agriculture could be due to better access to markets and better vegetable productivity in that region. Southern Bhutan is located in the sub-tropical zones where winter is warm and summer is relatively hot and humid so it is a relatively better place

for agriculture.

**Table 2:** Summary of responses of youth

	Agree (%)	Neutral (%)	Disagree (%)
<i>I am willing and it is acceptable for me to be employed in and seek opportunities related to agriculture (Attitude).</i>			
Rural	118 (58.2)	38 (19.1)	33 (22.7)
Urban	130 (57.8)	41 (19.1)	38 (23.0)
School students	149 (64.2)	36 (15.7)	47 (20.1)
College Students	40 (48.2)	22 (26.2)	22 (25.6)
Unemployed Young people	80 (50.3)	17 (21.5)	23 (28.3)
Male	114 (56.9)	40 (19.9)	46 (23.2)
Female	116 (59.1)	36 (18.3)	44 (22.6)
Younger Young People	135 (64.4)	33 (15.5)	43 (20.3)
Older Young People	99 (53.6)	40 (21.5)	46 (25.1)
East	50 (53.6)	20 (22.2)	22 (24.3)
West	83 (57.2)	28 (18.9)	35 (23.9)
South	61 (56.9)	23 (21.1)	24 (22.0)
Central	35 (70.4)	5 (10.3)	10 (19.3)
Agriculture Background	109 (60.0)	32 (17.8)	40 (22.2)
Non-Agriculture Background	121 (56.3)	43 (20.2)	51 (23.5)
<i>Agriculture involves crop farming and livestock rearing and provides opportunities to place local produce on the global market (Knowledge).</i>			
Rural	116 (61.7)	45 (23.9)	27 (14.4)
Urban	116 (56.0)	55 (26.3)	37 (17.7)
School Students	161 (69.5)	54 (23.3)	17 (7.10)
College Students	35 (41.5)	30 (35.5)	19 (23.0)
Unemployed Young people	36 (44.9)	16 (20.0)	28 (35.2)
Male	122 (61.2)	49 (24.5)	29 (14.3)
Female	110 (56.2)	51 (25.8)	35 (18.0)
Younger Young People	141 (66.9)	54 (25.6)	16 (7.5)
Older People	91 (49.3)	46 (24.6)	48 (26.0)
East	54 (53.6)	18 (22.2)	20 (24.3)
West	77 (57.2)	42 (18.9)	27 (23.9)
South	63 (56.9)	32 (21.1)	13 (22.0)
Central	40 (70.4)	6 (10.3)	4 (19.3)
Agriculture Background	117 (64.9)	40 (22.0)	24 (13.1)
Non-Agriculture Background	115 (53.2)	60 (27.9)	40 (18.7)
<i>Do you think agriculture can contribute to rural development? (Perception).</i>			
Rural	96 (51.1)	53 (28.0)	39 (20.9)
Urban	95 (45.9)	64 (30.8)	49 (23.4)
School Students	125 (54.0)	64 (27.7)	43 (18.3)
College Students	31 (37.3)	31 (36.8)	22 (26.6)
Unemployed Young People	35 (43.5)	22 (27.6)	23 (29.0)
Male	97 (48.6)	60 (29.9)	43 (21.5)
Female	94 (48.1)	57 (29.1)	45 (22.9)
Younger People	113 (53.4)	61 (28.8)	37 (17.8)
Older People	79 (42.5)	56 (30.2)	50 (27.2)

East	43 (46.6)	26 (28.2)	23 (25.2)
West	67 (46.0)	44 (30.0)	35 (24.0)
South	53 (48.7)	35 (32.0)	20 (19.1)
Central	29 (57.5)	12 (24.9)	9 (17.5)
Agriculture Background	93 (51.0)	51 (28.4)	37 (20.7)
Non-Agriculture Background	100 (46.3)	65 (30.3)	50 (23.4)

### Factors affecting young people's perceptions of agriculture

PCA analyses show that the items that cluster on the same components were grouped in the same thematic group. The thematic groups are categorized into seven groups based on the complements. Component 1 is categorised as “crop loss”, component 2 as “Farming constraints”, component 3 as “threats to crop”, component 4 as “lack of resources”, component 5 as “lack of accessibility”, component 6 as “peer pressure” and component 7 as “parental pressure” (Table 3). The seven components clustered are further categorized into ecological, economic and social factors. Ecological Factors (Factor 1:Crop loss; Factor 2: Farming constraints; Factor 3: Threats), Economic Factors (Factor 4: Lack of resources; Factor 5: Lack of accessibility), Social Factors (Factor 6: Peer Pressure; Factor 7: Parental pressure).

**Table 3:** PCA result of factors affecting youth perception of agriculture (N = 396).

Factors that affect young people's engagement in agriculture	Component*						
	1	2	3	4	5	6	7
Reduction in yield due to poor harvests.	.74	.03	.09	-.05	.01	.07	-.08
Reduction in yield due to poor soil quality.	.72	.07	.09	.01	.12	.00	-.07
Reduction in yield due to soil degradation.	.72	.14	-.02	.02	.15	-.06	.07
Reduction in yield due to irregular rainfall.	.72	.10	-.04	.08	.03	.08	.23
Reduction in yield due to unsuitable climatic conditions.	.66	.13	.08	-.02	-.08	-.04	.08
Reduction in yield due to poor irrigation facilities.	.54	.31	.15	-.11	.13	.03	.35
Parents face wildlife threat.	.02	.78	.05	-.15	.05	-.02	.05
Crops affected by pests and disease.	.32	.68	.09	.03	.07	.09	.17
Inadequate land in the village.	-.04	.08	.83	.14	-.05	.33	-.16
Water shortage in the village.	-.11	.00	.72	.17	.01	.40	.15
Unaffordable high-quality farming inputs.	.01	.13	.07	.81	.02	.07	.04
Unaffordable high-cost technologies for farming.	.16	-.03	-.05	.80	.09	.00	.05
Unaffordable high-quality seeds.	.19	-.07	-.12	.75	.10	.05	-.05
Can't start agri-business without income.	-.03	.29	.26	.58	.03	-.06	.10
Lack of proper marketplace to sell farm products.	.25	.05	-.12	.58	.36	.13	-.06
Financial problems at home.	.21	-.17	.43	.48	.12	-.05	.05
Can't apply for an agricultural loan due to poor family background.	.24	-.42	.26	.43	.24	-.02	.06
Lack of micro-bank facilities in the village.	.00	-.01	.04	.15	.85	.01	.03
Lack of credit facilities in the village.	.14	.05	.06	.18	.81	.03	-.05
If I work as a farmer my friends will look down on me.	.06	-.03	-.01	.06	-.03	.86	.21

My friends consider farming as low dignity job.	.05	-.01	-.02	.11	.02	<b>.85</b>	.09
People will look down on me if I take farming as a career in the future.	.05	-.08	-.02	.01	.02	<b>.80</b>	.21
My friends will consider me successful if I do dignified work.	.04	.22	.04	-.07	.07	<b>.65</b>	.18
My parents don't want me to take agriculture as my career in future.	-.02	-.10	-.07	.04	-.06	.26	<b>.77</b>
My parents would not like me to do farming.	-.04	.11	.06	.04	.03	.28	<b>.77</b>
My parents want me to become an Engineer/Doctor but not a farmer.	.07	.11	-.06	.01	.08	.06	<b>.77</b>
My parents tell me that farming is a bad profession.	.11	-.33	.04	.00	-.18	.28	<b>.57</b>
<b>Eigen values</b>	<b>5.37</b>	<b>3.55</b>	<b>2.32</b>	<b>1.57</b>	<b>1.28</b>	<b>1.16</b>	<b>1.11</b>
<b>% of Variances</b>	<b>19.89</b>	<b>13.16</b>	<b>8.58</b>	<b>5.82</b>	<b>4.73</b>	<b>4.29</b>	<b>4.11</b>
<b>A</b>	<b>19.89</b>	<b>33.05</b>	<b>41.63</b>	<b>47.45</b>	<b>52.18</b>	<b>56.47</b>	<b>60.58</b>

**Ecological factors comprise of:** crop loss, farming constraints and threats to crops. Crop loss is a crucial problem in rural Bhutan and is mainly related to the abundant forest cover which usually provides a good habitat for diverse wildlife species. Each year farmers experience significant crop losses as a result of resource constraints such as disease and pest infestation, as well as damage from wildlife in India, Nepal and Bhutan. Crops are damaged by wild animals every year in parts of India, Nepal and Bhutan, and this is one of the factors behind an increasing number of farmers giving up farming, which leads to an increasing amount of farmland left fallow. An increase in wildlife such as wild pigs, deer, black bears, porcupines and monkeys means an increase in labour needed to guard crops. This is relatively difficult and people in rural areas get little respite as monkeys destroy crops during the day and other wild animals depredate the crops at night. Similarly, farming in marginal lands (2.8% of the total land area is arable in Bhutan) is not profitable and usually results in a higher input to farming than the crop yield. This is mainly related to the farming on lands that are steeper than 35 degrees. In addition, increasing water shortages due to climate change are a serious threat which will unfavourably affect crop production due to loss of soil fertility and this will result in the erosion of topsoil, the loss of cultivable lands, outbreaks of pests, diseases and increased damage to crops caused by wildlife. This issue is becoming common in Asia in general but is relatively more crucial in Bhutan than India and Nepal (Tobgay, 2005b; Armstrong et al., 2009). The mountainous terrain of Bhutan limits the use of modern technology even if the farmers could afford it.

In Bhutan, 13.6% of the agricultural landholding is relatively smaller than in other developing (World Bank, 2011a; World Bank, 2011b). Farmers practice seasonal subsistence farming in many parts of Bhutan.

**Economic factors comprise of:** lack of resources and accessibility. The two components are somehow related to other factors such as crop loss and this leads to a lack of resources for farmers. Most farmers in Bhutan are subsistence farmers and they do not have capacity to buy and use modern technology. In addition, most of the farmers are relatively poor and they are not able to provide collateral in order to obtain loans from banks. Crops

grown in marginal lands are mostly depredated by wildlife and farmers do not get compensation for such losses as there is no such mechanism to support farmers. Crop loss is significant in Bhutan. It reduces the average annual household cash income by 17%. Although crop losses to wildlife in Bhutan are lower than figures reported elsewhere, such as 38% in Nepal and 45% in the Tsarap Valley of India, a significant amount of crop loss is not reported in Bhutan as farmers know there will be no compensation (Wang and Macdonald, 2006; Deshar, 2013). Crop loss is also a serious deterrent to rural development because of the terrain and slopes as steep as 38 degrees. This means that crop farming has to be done manually as the use of modern technology is limited (Deshar, 2013; Palden, 2016; RGOB, 2016b).

Many of the world's poor people live in rural areas and, particularly in developing countries, farmers experience poor market access as a result of the low adoption of modern agricultural technologies, the lack of basic infrastructure (paths, trails, bridges and roads) and the lack of transport services (Tobgay, 2005b). As a result marginal farmers usually receive negative returns from crop productivity and this causes farmers, particularly educated young people, to migrate to urban areas in search of better employment opportunities (Tobgay, 2005a; Gurung, 2015).

**Social factors comprise of:** peer pressure and parental expectations, and this relates to the argument of Gurung (2015) and Ueda (2016) that the education system and the people of Bhutan expect their children and friends to work in the civil service. This is consistent with the findings of Charles (2014) and Njeru et al. (2015) where young people in African countries such as Ghana and Kenya experience a similar situation to that in Bhutan. Agripreneurship and entrepreneurship in Bhutan are not considered to be sustainable employment options mainly due to the low market and higher uncertainty and risks.

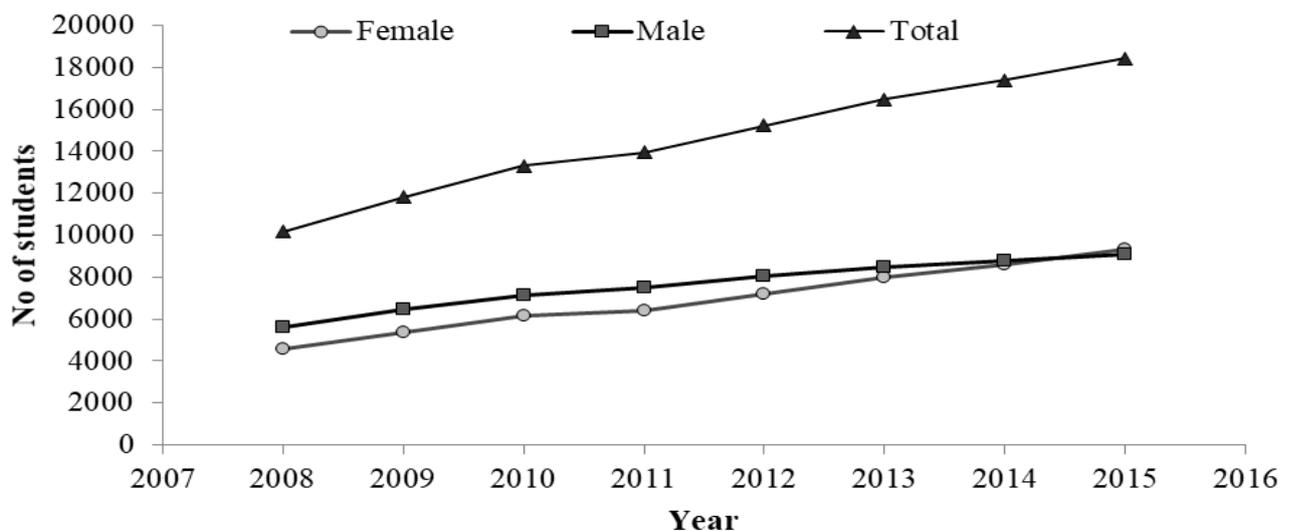
### **Factors affecting youth perception on employment related to agriculture**

The seven thematic factors were identified as the major constraints to agricultural development in Bhutan. The regression analysis revealed that out of seven components identified, three components; crop loss ( $r = .117$ ,  $t(395) = 2.240$ ,  $p < .05$ ), lack of resources ( $r = .200$ ,  $t(395) = -3.843$ ,  $p < .001$ ) and parental pressure ( $r = -.160$ ,  $t(395) = -3.267$ ,  $p < .05$ ) were found to contribute significantly towards young people's perceptions of agriculture. This is why agriculture related jobs fail to attract young people in Bhutan. Human Wildlife Conflict (HWC) is a serious concern in Bhutan. When HWC either poses a serious threat to human welfare or involves endangered wildlife species it attracts greater attention. In Bhutan both conditions apply (Wang and Macdonald, 2006). This is one of the reasons that young people are not eager to take up agriculture or agriculture related jobs as the perceived returns from agriculture are relatively low. The contribution of agriculture to Bhutan's GDP has declined and is still in decline. Even employment in agriculture sectors is declining. For example, it was 75% in 1999 to about 60% in 2011 (UNDP, 2013).

In the context of lack of resources, Bhutan's rapid economic growth has led to the struc-

ture of the economy changing. Growth has been relatively capital intensive, while the labour absorbing capacity in various sectors has stalled or even decreased so unemployment has increased significantly. Furthermore, for the economic transition, there is a demand for young people to have specific skills such as vocational training, while most graduates seeking jobs hold general degrees and do not meet employers' requirements. Even if young people are employed in the farming sector, they either underperform or eventually leave these jobs for better opportunities. It is therefore important that efforts be made to enhance the skills of young people through skill development programmes. It is also interesting to note that the number of students graduating from higher secondary schools has been increasing significantly over the last decade or so (Figure 1). However, reports from the ministry of education reveal that the number of children enrolling in school peaked in 2010 and since then enrolment has been decreasing. This indicates that the number of students graduating from school is expected to drop by the year 2022 and it also means that a skills based education system would fulfil the requirement of the job market (RGOB, 2015a).

**Figure 1:** Statistics of number of students graduating from higher secondary schools



### Farmers' and teachers' perception on agriculture in Bhutan

Although agriculture has played and continues to play an important role in Bhutan, making a significant contribution to GDP, the farmers practise subsistence farming, and are marginal(?) with small landholdings (Tobgay, 2005b). Although about 82% of respondents said that their main source of income is from agriculture they were quick to mention that most of the agricultural products are perishable goods and need to be sold within a short period of time. When access to the market is poor, the products perish and the farmers incur a loss. The difficult terrain further limits crop farming, so input costs are relatively high and hiring farm labourers also does not result in profits. Therefore, farmers think that it is better for their children to find employment in other sectors and not in agriculture. Farmers also mention that due to better basic services and infrastructure young peo-

ple today prefer to live in urban areas, but this is creating a shrinking labour force in the agriculture sector (Gosai and Sulewski, 2014). Teachers and farmers perceive that the relevant agencies may be able to motivate young people by assisting them to have access to agricultural loans. They see that young people need to be trained in scientific methods of farming, techniques to manage pests and diseases and the use of subsidized agriculture inputs (fertilizers, farm machines etc.). Young people need to be linked with the relevant institutions to have access to technical support in selling farm products and to be encouraged to become entrepreneurs.) These factors would not only contribute to overcoming major constraints to agriculture and rural development, but they would also help reduce youth unemployment in the country. The education system in Bhutan has not been able to produce students with sufficient scientific knowledge and technical skills to meet the demands of the job market.

### **Conclusion and Recommendation**

Agriculture is the backbone of the economy in many developing countries and one of the most important sectors for employment. In the case of Bhutan, subsistence farming in marginal lands is not an attractive agriculture based career for young people. It is interesting to note that there are significant differences in age, qualification and region in terms of knowledge and perception of farming, but what is more surprising is that the younger generation of young people and those studying at high school tend to have more knowledge and perceive agriculture as a potential source of employment. Crop losses due to wildlife depredation, lack of resources, such as inadequate land for farming and inadequate financial ability, combined with pressure from parents wanting their children to be employed in the civil service, are the main factors affecting young people's lack of willingness to gain employment in agriculture. The parents of the young people and teachers believe that the provision of adequate financial and technical support may attract young people to take up employment in agriculture. Currently, the situation in Bhutan is constrained by a combination of farmers with a low level of education and lack of adequate information on demand and price for the farm produce resulting in ignorance of sustainable management of natural resources and enhancing the productivity of the agricultural produce consequently capture of markets. Transforming the agriculture sector through technical, financial and moral support for farmers and particularly for young people may help the country to address private sector development, youth unemployment and even, food insecurity. In addition, Bhutanese farmers have had long experience dealing with HWC and this is currently a major problem in rural areas, therefore designing an insurance mechanism to address crop losses may be an important step in retaining young people in agriculture. Bhutan has made progress in developing its economy and also with infusing the developmental philosophy of Gross National Happiness. However, private sector development has, to this date, failed to inspire young people to be entrepreneurial. However, this study is limited to cross sectional data pertaining to young people and agriculture, so further research with longitudinal data, mainly concerned with the changing

preferences and perspectives of young people and the market situation, is highly recommended.

### **Acknowledgement**

The authors would like to thank Mr. Phub Dorji (PhD), President, College of Natural Resources, Royal University of Bhutan, for the recommendations while conceiving the research idea for this manuscript. The authors would also like to thank the Ministry of Education for the kind permission to collect data from the school students. This research would not have been possible without the financial support of the NORHED project, College of Natural Resources, Royal University of Bhutan.

### **Conflict of interest and Contribution**

There is no conflict of interest, whatsoever, related with this manuscript.

All the authors mentioned in this manuscript have contributed equally to this manuscript.

### **References**

- Abdullah, Abdullah, A. A., & Sulaiman, N. N. (2003). Factors That Influence the Interest of Young people in Agricultural Entrepreneurship. *International Journal of Business and Social Science*, 4(3), 288-302.
- Adesina, K., & Favour, E. (2016). Determinants of Participation in Youth-in-Agriculture Programme in Ondo State, Nigeria. *Journal of Agricultural Extension*, 20(2), 104-117.
- Aphunu, A., & Akpobasa, B. I. O. (2010). Assessment of Rural Youths' attitude Towards Agricultural Production in Sapele Local Government Area of Delta State. *The Nigerian Academic Forum*, 19(1).
- Armstrong, R. L., Alford, D., & Racoviteanu, A. (2009). Water Storage: A Strategy for Climate Change Adaptation in the Himalayas, Winter No. 56. *International Center for Integrated Mountain Development*, Kathmandu, Nepal.
- Charles, B. (2014). Assessment of the youth in Agriculture programme in Ejura-Sekyedumase District. (Doctoral dissertation, School of Graduate Studies, Kwame Nkrumah University of Science and Technology, Kumasi).
- D'Silva, J. L., Shaffril, H. A. M., Uli, J., & Samah, B. (2009). A review of contract farming and factors that impinge youth's acceptance to contract farming. *European Journal of Social Sciences*, 11(2), 328-338.
- Deshar, D. (2013). An overview of agricultural degradation in Nepal and its impact on economy and environment. *Glob J Econ Social Develop*, 3(1), 1-20.
- Dorji, L. (2015). Sexual and Reproductive Health of Adolescents and Youth in Bhutan. Monograph No. 7. National Statistics Bureau & UNFPA: Thimphu, Bhutan.
- D'Silva, J. L., Shaffril, H. A., Uli, J., & Samah, B. A. (2010). Socio-demography factors that influence youth attitude towards contract farming. *American Journal of Applied Sciences*, 7(4), 603-608.
- Duba, S., Ghimiray, M., & Gurung, T. R. (2008). Promoting Organic Farming in Bhutan: A Review of Policy, Implantation and Constraints. Council for RNR Research of Bhutan. Ministry of Agriculture

and Forests, Royal Government of Bhutan. Thimphu, Bhutan

Ejembi, E. P. (1988). Perceptions of Agriculture in Nigeria by Students of the Division of Agricultural Colleges. Ahmadu Bello University. PhD thesis, Iowas State University, Ames, Iowa.

Field, A. P. (2009). *Discovering statistics using SPSS (and sex and drugs and rock' n' roll)*. London: Sage Publication.

Ghimiray, M. (2013). *Going Organic: A Policy to Develop Agriculture in Bhutan. Extent and Potential use of Bio-Pesticides for Crop Production in SAARC Countries*. SAARC Agriculture Centre. Paper 2, 59-67.

Gichimu, B. M., & Njeru, L. K. (2014). Influence of access to land and finances on Kenyan Youth Participation in Agriculture: A Review. *International Journal of Development and Economic Sustainability*, 2(3), 1-8.

Gosai, M. A., & Sulewski, L. (2014). Urban Attraction: Bhutanese internal rural–urban migration. *Asian Geographer*, 31(1), 1-16.

Katwal, T. B. (2013). Multiple Cropping in Bhutanese Agriculture –Present Status and Opportunities. Regional Consultative Meeting on Popularizing Multiple Cropping Innovations as a Means to raise Productivity and Farm Income in SAARC Countries, Peradeniya, Kandy, Srilanka.

Katwal, T. B., Dorji, S., Dorji, R., Tshering, L., Ghimiray, M., Chhetri, G. B., & Tamang, A. M. (2015). Community Perspectives on the On-Farm Diversity of Six Major Cereals and Climate Change in Bhutan. *Agriculture*, 5(1), 2-16.

Kimaro, P. J., Towo, N. N., & Benson, H. M. (2015). Determinants of rural youth's participation in agricultural activities: the case of Kahe East ward in Moshi rural district, Tanzania. *International Journal of Economics, Commerce and Management*, 3(2), 33.

Kothari, C. R. (2004). *Research methodology: Methods and techniques*. New Age International Publisher, Second Revised Edition, ISBN-978-224-1522-3. New Delhi: India.

Liker, R. (1936). A Technique for the measurement of attitudes. *Archives of Psychology*, 140, 1-55.

Neuhoff, D., Tashi, S., Rahmann, G., & Denich, M. (2014). Organic agriculture in Bhutan: potential challenges. *Organic agriculture*, 4(3), 209-221.

Njeru, L. K., Gichimu, B. M., Lopokoiyit, M. C., & Mwangi, J. G. (2015). Influence of Kenyan Youth's Perception towards Agriculture and Necessary Interventions. A Review- *Asian Journal of Agricultural Extension, Economics & Sociology*, 5(1).

Nnadi, F. N., & Akwizu, C. D. (2008). Determinants of Youthsparticipation in Rural Agriculture in Imo State, Nigeria. *Federal University of Technology Owerri: Nigeria*, 323-333.

Ovwigho, B. O., & Lfie, P. A. (2009). Attitude of Youth to Agricultural Development Programmes In Ughelli South Local Government Area of Delta State, Nigeria. *Journal ofAgricultural Extension*, 13 (2), 67-75.

Reymond, J. M., Hanson, J., Fretz, T., & Weismiller, R. (2004). Necessary conditions for successful agriculture and rural development. *Outlook on Agriculture*, 33 (1), 55-58.

RGOB [Royal Government of Bhutan]. (2007). *National Framework for Organic Farming in Bhutan*, Ministry of Agriculture, Thimphu, Bhutan.

RGOB [Royal Government of Bhutan]. (2011). Statement on Bhutan's Organic Policy, by Prime Minister; Lyonchen J. Y. Thinley, Department of Agriculture, Ministry of Agriculture and Forests, Royal Government of Bhutan, 1–3.

RGOB [Royal Government of Bhutan]. (2012a). Bhutan RNR Statistics. Policy & Planning Division. Ministry of Agriculture and Forest. Thimphu, Bhutan.

RGOB [Royal Government of Bhutan]. (2012b). 'Labour Force Survey Report 2012'. Labour Market Information and Research Division. Department of Employment, Ministry of Labour and Human Resources. Thimphu, Bhutan.

RGOB [Royal Government of Bhutan]. (2013). Memorandum of understanding for piloting "Agriculture and Food Security as optional subject for classes IX and X". Policy & Planning Division, Ministry of Education and Ministry of Agriculture and Forestry. Thimphu, Bhutan.

RGOB [Royal Government of Bhutan]. (2014a). Labour Force Survey Report 2014. Labour Market Information and Research Division. Department of Employment, Ministry of Labour and Human Resources. Thimphu, Bhutan.

RGOB [Royal Government of Bhutan]. (2014b). RNR SECTOR 11th Five Year Plan (2013- 2018). Policy & Planning Division, Ministry of Agriculture & Forests. Thimphu: Bhutan.

RGOB [Royal Government of Bhutan]. (2015a). Annual Education Statistics 2015. Policy & Planning Division, Ministry of Education. Thimphu, Bhutan.

RGOB [Royal Government of Bhutan]. (2015b). Statistical Yearbook of Bhutan 2015. National Statistics Bureau. Royal Government of Bhutan. Thimphu, Bhutan.

RGOB [Royal Government of Bhutan]. (2016a). National Statistics Bureau (NSB). Royal Government of Bhutan. Thimphu, Bhutan. Retrieved January 15, 2016, from <http://www.nsb.gov.bt/main/main.php>

RGOB [Royal Government of Bhutan]. (2016b). State of Climate Change Report for the RNR Sector. RNR Climate Change Adaptation Program. Ministry of Agriculture & Forests. Thimphu, Bhutan.

Singh, S. K. (2016). Progress and performance of agriculture in India. *Journal of Agroecology and Natural Resource Management*, 3(1), 67-71.

Tobgay S. (2005a). Small Farmers and Food Systems in Bhutan. A paper presented at the FAO Symposium on Agricultural Commercialization and the Small Farmer, Rome.

Tobgay S. (2005b). Agriculture diversification in Bhutan. Ministry of Agriculture. Thimphu, Bhutan.

Ueda, A. (2016). Rural Life and Modern Formal Schooling in Bhutan. In *Education in Bhutan*. Springer Singapore, 127-137.

UNDP. (2013). Millennium Development Goals (MDG) Acceleration Framework: Youth Employment in Bhutan. Thimphu, Bhutan.

UNICEF. (2016). UNICEF Bhutan: Adolescent & Youth. New York: United Nations Children's Fund. Retrieved from February 10, 2017, <http://www.unicefbhutan.org.bt/about-us/adolescent-youth/>

Vera-Toscano, E., Gomez-Limon, J. A., & Moyano, E. (2008). Factors determining citizen's attitudes towards agri-environmental property rights. *Environmental and Resource Economics*, 41(4), 541-561.

Wang, S. W., & Macdonald, D. W. (2006). Livestock predation by carnivores in Jigme Singye Wangchuck National Park, Bhutan. *Biological Conservation*; 558-565.

World Bank. (2011a). Agricultural land (% of land land area) in Bhutan. *Development and the next generation* Washington, DC.

World Bank. (2011b). Agricultural land (% of land land area) in Nepal. *Development and the next generation* Washington, DC.