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## **Agricultural Transformation in Bhutan: From Peasants to Entrepreneurial Farmers**

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### **Author's contribution**

*The sole author designed, analyzed and interpreted and prepared the manuscript.*

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### **ABSTRACT**

Bhutanese farmers have traditionally practised integrated subsistence farming, producing crops and livestock and utilising forest products. However, they are increasingly practising entrepreneurial farming today. The study of agricultural transformation is valuable for understanding the evolution of Bhutan's agriculture systems. Therefore, the current study reviews the five components of agriculture responsible for the transformation of Bhutanese farmers from peasants to entrepreneurial farmers: urbanisation, farm mechanisation, community institutions, high-value products and youth aspirations. Given the current rate of globalisation and improvements in agribusiness, the number of entrepreneurial farmers in Bhutan is likely to rise in the future. However, relevant stakeholders must still strive to create a conducive environment for agribusiness in Bhutan.

*Keywords: Agricultural transformations; entrepreneurial farmers; Bhutan.*

## 1. INTRODUCTION

Bhutan is popularly known for its development philosophy of gross national happiness, based on which happiness—instead of gross domestic product (GDP)—is used to measure the country's development. Bhutan is a landlocked country in the eastern Himalayas, located between India and China. It lies between 26°40' and 28°15' N and 88°45' and 92°10' E, and has a total geographic area of 38,394 km<sup>2</sup> [1]. It stretches 300 km east to west and 150 km north to south, with elevations ranging from 100 to 7,500 m above sea level. The country consists of 20 *dzongkhags* (districts) and 205 *gewogs* (subdistricts). Its projected population in 2016 was 779,666 [2]. Temperature, precipitation and vegetation in Bhutan vary dramatically with elevation, making the country suitable for a variety of crops and animals [3]. Indeed, there are six agro-ecological zones in Bhutan, ranging from the wet subtropical zone (100–500 m) to the alpine zone (3,600 m and above). Bhutan is an agrarian country; more than half of its population depends on agriculture for its livelihood. Agriculture is both the backbone and the development engine of Bhutan. In 2016, it contributed 16.52% to the country's GDP [2].

Bhutan remained in self-imposed isolation for most of its history; it was only in the 1960s that the country officially opened its borders to the outside world [4]. Bhutan's efforts towards agricultural modernisation began with its first five-year plan in 1961–66 [5]. Since then developments have taken place in many areas. With continuous support from the Royal Government of Bhutan (RGoB), amongst other sectors, agricultural development has flourished, and many of the country's agricultural workers have transformed from peasants to entrepreneurial farmers. In this study, entrepreneurial farming refers to crops, livestock and forest-related products generated for commercial purposes.

Agriculture in Bhutan is shifting from the traditional village-centric production of the past to market-based farming that is integrated into national and global markets.

Bhutan's agricultural transformation is currently in process; given the willingness of Bhutanese farmers to accept change, it will likely continue. Therefore, this study contributes valuable information about the evolution of Bhutan's agricultural systems by providing a comprehensive synthesis of the history and present status of agricultural development in the country. The discussions generated by this study will be useful to Bhutan's Ministry of Agriculture and Forest (MoAF) (particularly the Department of Agriculture and the Department of Livestock), agriculture-related nongovernmental organisations and other stakeholders who aspire to understand Bhutan's agricultural development. Despite the importance of Bhutan's agricultural transformation, few studies have been done on it up to now. Moreover, to the best of the author's knowledge, many of the existing studies, facts and figures on Bhutan's agriculture are scattered, though they can be aggregated effectively to interpret the country's agricultural transformation. The scarcity of holistic and systematic reviews of Bhutan's agricultural transformation motivated the author to explore this topic.

The factors responsible for agricultural transformation are multidimensional and differ according to time and location. Thus, there is no standard framework for analysing agricultural transformation. The lack of a reliable framework led the author to develop his own for this study. The author's framework encompasses prominent components of agricultural transformation. He relied on experts' suggestions and his own experience and knowledge of the subject matter to create the framework. This article reviews five components of agricultural transformation identified based on a wide range of secondary data (see Fig. 1).

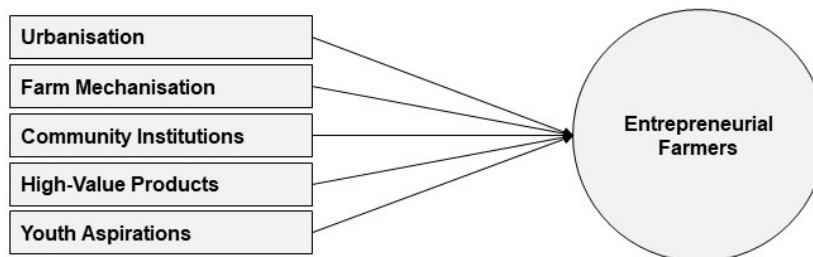


Fig. 1. Components of agricultural transformation in Bhutan

## **2. COMPONENTS OF AGRICULTURAL TRANSFORMATION IN BHUTAN**

### **2.1 Urbanisation**

Until recently, urban centres in Bhutan exerted limited or no influence on agriculture. Indeed, rural-urban interactions were minimal due to the lack of transportation and communication facilities in Bhutan. However, today the country's improved infrastructure makes both the quantity and the quality of rural-urban interactions complex. For instance, although more than half of the country's population is employed in the agriculture sector [2], better employment opportunities in other sectors are on the rise in urban areas; 34.2% of Bhutan's population is now employed in the service sector and 8.7% in the industry sector [6], resulting in rural-urban migration that both positively and negatively affects the agriculture development [7,8].

In rural communities, migration causes numerous socioeconomic problems, including abandoned households, an ageing population, labour shortages, fallow lands and human-wildlife conflicts [8,9]. The extended family structure of the past is now being replaced with truncated families (grandparents living alone) and families that skip a generation (grandparents and grandchildren living together). The growth in migration in Bhutan has increased the urban population, which reached 37.9% in 2014 [10] and is projected to increase by 135% by 2020 [9]. As a result, urban sprawl has extended into agricultural lands, reducing the country's limited cultivable land of 2.93% [11,12]. Nonagricultural employment opportunities, coupled with rural-urban migration, are a challenge to agricultural development in Bhutan.

At the same time, urbanisation incentivises local farmers by generating market opportunities for their agricultural products. Bhutan's increasing urban population has created a higher demand for cereals, vegetables and dairy products, motivating farmers to produce these high-value products to meet demand in urban areas. As a result, farmers, particularly in peri-urban areas, have begun to focus on high-value crops and high-yield animals. The Thimphu Centenary Farmers Market in Bhutan's capital city, vegetable outlets along national highways and other weekend markets in major urban centres show the influence of urbanisation on farming in Bhutan. Urbanisation influences those involved in agriculture to move towards entrepreneurial farming.

### **2.2 Farm Mechanisation**

Bhutan has a significant amount of rugged, mountainous terrain, and 49.5% of its total geographical area has a slope greater than 50%, making it vulnerable to soil erosion and unproductive. In the past, this terrain left rural communities inaccessible to one another [3]. However, in the recent decades, with the introduction of motorable roads, a mobile phone network, television and hydroelectricity throughout the country, the flow of goods and services has improved. As a result, today farmers have better access to modern agricultural technologies than ever before.

The agricultural mechanisation of South Asia started 50 years ago [13]. However, it is a more recent phenomenon in Bhutan. The RGoB established the Agriculture Machinery Centre (AMC) in 1983 to promote farm mechanisation appropriate to Bhutan's terrain and ecology. In 2016 the AMC was corporatised to provide better services to farmers and renamed Farm Machinery Corporation Limited (FMCL) [14]. FMCL has four regional delivery services for farmers. With its vision to "make farming an attractive livelihood enterprise that is socio-economically and environmentally sustainable", FMCL provides numerous mechanical services to farmers [15].

Today some communities no longer use oxen for ploughing, and farmers have been gradually transitioning to modern technologies such as two- or four-wheel power tillers. Because traditional agriculture was labour-intensive and required the use of local labourers, the labour shortage in rural Bhutanese communities is one reason that farmers are opting for modern technologies. Another factor responsible for farm mechanisation is farmers' willingness to increase their production now that they have better access to markets. Modern agricultural technologies facilitate the transition of agricultural workers from peasants to entrepreneurial farmers, who are more common in Bhutan than ever before.

### **2.3 Community Institutions**

Informal social institutions have existed since early history, when hunter-gatherers organised themselves into groups to fulfil their common goals. Over time, social and economic conditions fostered the development of community institutions in various countries [16]. Modern community institutions like cooperatives and

farmers' groups emerged in the early 1880s in England and gradually spread to other parts of the world [17]. Bhutan remained isolated until the early 1960s and it did not have outside influences. As a result, it maintained numerous social assets, including the values of togetherness, amity, reciprocity, helpfulness and care for other living beings [18]. These values are highlighted in Bhutan's labour exchange system, which exists within rural communities during peak farming seasons, local festivals and rituals [19], as well as in the country's *northue* tradition, the shared ownership of cattle and herding responsibilities [20]. Bhutanese communities depended on these informal social institutions, characterised by kinship and neighbourhood relationships. Although these informal institutions still exist today, they are on the decline. For instance, traditional rituals and ceremonies have declined both in frequency and in intensity because younger generations are less interested in them than were their forebearers [21,22].

Instead, in recent years, formal community institutions have emerged in Bhutan. Accordingly, today people living in rural areas increasingly depend on institutions such as cooperatives (co-ops) and farmers' groups (FGs). The RGoB enacted the first Cooperative Act of Bhutan in 2001 and amended it in 2009. In 2010 the RGoB set up the Department of Agriculture and Marketing Cooperatives (DAMC) under the MoAF. The DAMC facilitates the development of FGs and co-ops in Bhutan [23]. Since 2010 co-op development has gained momentum. As shown in Table 1, there are 57 registered co-ops with 2,336 members and 370 registered FGs with 7,532 members [24].

These successful institutions improve the livelihood of both members and nonmembers in the community [25]. Therefore, scholars generally regards formal community institutions as a vehicle for development [26]. The RGoB has enormous faith in the benefits of these institutions and creates an environment conducive to their success by developing acts and policies that support them [27–29]. Today Bhutan's institutions are transforming from traditional kinship and neighbourhood social networks to formal community institutions that allow marginalised farmers to group together and access business opportunities that would otherwise be unavailable to them. These formal institutions guarantee farmers market inputs and outputs, thereby encouraging them to produce a greater quantity and quality of agricultural products. Thus, Bhutan's community institutions have the potential to generate entrepreneurial farmers in the future.

## 2.4 High-Value Products

In the past, Bhutanese farmers practised integrated subsistence farming with low-yielding crops and animals. They cultivated only enough crops to feed their families, with little or no surplus for trade. To supplement their living, they kept animals such as cattle, horses, chickens and pigs for milk, meat, eggs, labour and manure. People living at higher altitudes reared yaks and sheep for wool. In addition, farmers collected and used a variety of forest products, especially non-wood products like wild vegetables [30]. These farming practises were based on indigenous knowledge passed down through generations.

**Table 1. Numbers of Cooperatives (co-ops) and Farmers Groups (FGs) in Bhutan from DAMC [24]**

Years	Sectors				Total co-ops (FGs)
	Agriculture co-ops (FGs)	Livestock co-ops (FGs)	Forestry co-ops (FGs)	Non-RNR co-ops (FGs)	
2010	1 (07)	4 (05)	0 (04)	0 (01)	5 (17)
2011	2 (13)	4 (19)	0 (02)	0 (00)	6 (34)
2012	2 (54)	3 (33)	1 (15)	0 (00)	6 (102)
2013	4 (09)	5 (07)	0 (00)	3 (00)	12 (16)
2014	1 (44)	2 (16)	0 (20)	1(01)	4 (81)
2015	0 (39)	3 (13)	0 (01)	1 (00)	4 (53)
2016	0 (24)	3 (18)	1 (00)	2 (00)	6 (42)
2017	4 (10)	7 (14)	0 (00)	3 (01)	14 (25)
<b>Total</b>	<b>14 (200)</b>	<b>31 (125)</b>	<b>2 (42)</b>	<b>10 (03)</b>	<b>57 (370)</b>

For most of the twentieth century, farmers did not capitalise on value-added products because there was not an adequate market for these products. Until the 1990s, a prominent feature of traditional farming was shifting cultivation; this meant that farmers cleared and burned a patch of forest to plant cereal crops. They used the land for a few years and then shifted to another area, allowing the cleared forest to regrow. After leaving that land unused for a decade or more, the farmers returned to it and the cycle continued [31]. Factors like population growth, forest conservation policies and improved agriculture production through better inputs and management, put an end to large-scale shifting cultivation in the 1990s.

Another traditional aspect of farming in Bhutan was nomadic herding, which dominated livestock domestication, particularly in northern Bhutan. Nomadic herders migrated seasonally with their animals [32] without establishing a permanent settlement [33]. Due to the limited alternatives for economic activities, nomadic herding still prevails in the higher mountains of Bhutan. However, most farmers in the temperate and subtropical regions of Bhutan have been shifting to the stall-feeding domestication of animals. Moreover, while in the past, agricultural products were marketed through barter systems—the exchange of one product for another among communities—bartering is now practised only minimally in some communities in Bhutan [34].

Although Bhutan's socio-economic conditions did not favour entrepreneurial farmers in the past, the country is experiencing a gradual shift towards high-value cash crops and hybrid animals. Today farmers produce agricultural products that are in high demand from nearby urban centres and international markets, including apples, oranges, areca nuts, hazelnuts and cardamom. Farmers also grow ginger, chillies, red rice and vegetables commercially.

Studies show the shift in Bhutanese farmers' crop preferences, from low-value to high-value crops (e.g., from wheat to potatoes) [35,36]. Furthermore, in the last 20 years, there has been a 28.57% loss in traditional varieties of crops [36]. Low-yielding breeds of cattle have been replaced by high-yielding exotic breeds such as Jersey and Brown Swiss [33]. Fig. 2 shows the rising population trend for these "improved" breeds of cattle and the decline of local cattle between 2014 and 2016. The turn towards high-value crops and animals is known as value intensification. Along with value intensification, farmers are also turning to double-cropping—planting vegetables in a paddy after harvesting rice. Both value intensification and double-cropping are indicators of the emergence of entrepreneurial farming in Bhutan.

Bhutan's most recent agricultural transformation is a movement towards 100% organic agriculture (OA), although the country's traditional agricultural practises are very much like those of OA. Due to the small scale of Bhutanese agriculture, the country's farmers generally find it difficult to compete in the international market. OA can overcome this challenge through the value addition of OA branding and certification, which allow organic products to fetch premium prices for Bhutanese farmers. While OA offers farmers numerous strengths and opportunities, it also has weaknesses and threats [37]. Thus far, empirical studies on the success of OA in Bhutan have been inadequate, so the future of OA is still unclear [9]. However, Kobayashi and Chhetri [5] noted a shift in people's consumption patterns and priorities in Bhutan, leading to a material and symbolic reordering of agricultural practises. Bhutanese farmers are likely to adopt OA if responsible stakeholders incorporate their products into national and international markets. Thus, the adoption of OA has the potential to create more entrepreneurial farmers in Bhutan.

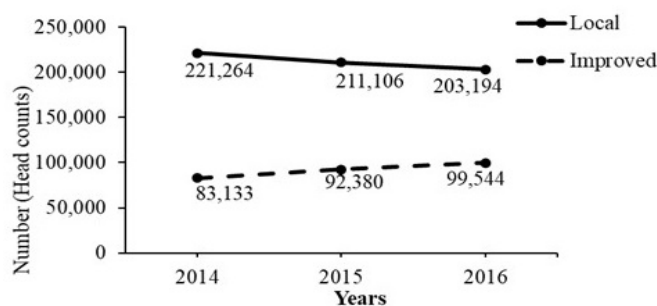


Fig. 2. Trends in the number of local and "improved" cattle in Bhutan from 2014 to 2016 [2]

## **2.5 Youth Aspirations**

Although the RGoB encourages young people to choose agriculture as their career, educated youth show reservations about going into farming upon graduation. Both parents and children see farming as a difficult and not particularly promising career; they aspire to a career in civil service or at least a white-collar job. Farming is still looked down upon by many educated people in Bhutan; these beliefs harken back to the days of traditional agriculture, when uneducated peasants practised subsistence farming with minimal mechanisation.

However, today more university graduates than ever before are opting for careers in agriculture and finding success. Some of the driving force for this shift includes increasing number of graduates, saturated government jobs, infant private sectors, improved awareness about entrepreneurship and continuous government incentives. Although it may take some time for Bhutanese society to fully embrace farming as a respected career, educated young people have already begun to work as entrepreneurial farmers. For example, the Youth in Agriculture Program, a commercial vegetable farm initiated by a group of recent graduates, has been very successful [38]. The success of such youth-initiated farms will inspire other young people to embrace careers in agriculture. Bhutan's continuous entrepreneurship education such as training, entrepreneurship courses in university, and business mentors [39,40] and improvements to infrastructure [41] have the potential to motivate youths to embrace entrepreneurial farming.

## **3. CONCLUSION**

Bhutan remained hidden in the Himalayas until the mid-twentieth century. These years of isolation strengthened its traditional culture and values; hence, traditional agriculture practises still prevail in the country. However, various components of Bhutan's agricultural system—including urbanisation, farm mechanisation, community institutions, high-value products and youth aspirations—are constantly evolving, making it difficult to predict the future of agriculture in Bhutan. Nevertheless, it is clear that entrepreneurial farmers are replacing Bhutan's peasants, who laboured as subsistence farmers. Given the rate of globalisation and improvements in agribusiness, the number of

entrepreneurial farmers in the country is likely to continue to grow.

Although the author tried to include most components of Bhutanese agricultural transformation in the framework for this study, he may have overlooked some crucial factors such as changes in climate and government policies. Therefore, this study paves the road for future researchers to explore agricultural transformation in Bhutan. Further study is needed to explore the strengths and weakness of entrepreneurial farming, as well as the opportunities and threats to emerging entrepreneurial farmers, to understand the future of entrepreneurial farming in Bhutan.

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## **COMPETING INTERESTS**

Author has declared that no competing interests exist.

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