

**Czech University of Life Sciences Prague**

**Faculty of Economics and Management**

**Business Administration**



**Bachelor Thesis**

**Agriculture in Nepal**

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## BACHELOR THESIS ASSIGNMENT

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Economics Policy and Administration  
Business Administration

Thesis title

**Agriculture in Nepal**

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### Objectives of thesis

Economic development in Nepal has been complicated and affected by the constant change in political scenarios which has ranged from monarchy to being ruled by the Communist party. Agriculture sector is the cornerstone of the Nepalese's economy. It contributes around 36 percent in the country's GDP providing employment opportunities to 66 percent of the entire population (The Official Portal of Government of Nepal, 2020).

Objectives of the thesis

- To conduct literature survey on the advantages and disadvantages of agriculture in Nepal and the ways it can undertake intensification without environmental or social damage
- To analyze the reports of NGOs and local authorities on the perspectives of agriculture in Nepal
- To design semi-structured interview to assess the perspective of the local farmers on the possible ways or obstacles to improve the crop/inputs ratio in Nepal
- To conduct semi-structured interviews with at least 10 local farmers belonging to different categories (receiving/not receiving aid) in Nepal
- To formulate the directions for improvement of agricultural production in Nepal.

### Methodology

Methodology

- Literature survey on the state and perspectives of Agriculture in Nepal will rely on standard scientific methods such as compilation, analysis, synthesis, induction and deduction. The literature will be based on standard academic publications, reports of international organizations such as the World Bank, and the expertise of practitioners.
- Empirical part will rely on semi/structured interview methodology. It is expected that at least 10 interviews will be conducted.
- Analytical part will employ methods of categorization, coding, and analysis of qualitative data from the interviews
- Conclusions will be based on the analysis of both the theoretical and empirical parts

## The proposed extent of the thesis

40 p.

## Keywords

agriculture, Nepal, environment, organic production, intensification of agriculture

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## Recommended information sources

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## **Declaration**

I declare that I have worked on my bachelor thesis titled "Agriculture in Nepal" by myself and I have used only the sources mentioned at the end of the thesis. As the author of the bachelor thesis, I declare that the thesis does not break copyrights of any their person.

In Prague on 11.07.2021

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### **Acknowledgement**

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# Agriculture in Nepal

## Abstract

Despite its prodigious potentiality and remarkable contribution in Gross Domestic Product (GDP), agriculture is one of the most overlooked sectors in Nepal. Development of agriculture is inching to progress in past decades. Due to continuous shrinking in yields of major food crops, Nepal is now pre-dominantly dependent on food imports. This paper is a study about agriculture in Nepal. The main purpose of the study is to see the current agricultural condition, problems, effect of climate change and to find the ways it can undertake intensification without environmental or social damage in Nepal. The study is further divided into empirical and theoretical part. Theoretical part will rely on standard academic publications through literature review and the empirical part will rely on interviews data.

An open-ended semi-structured survey interview has been conducted among two groups of farmers (small-scale holders and large-scale holder) between July to August 2021. Inductive content analysis has been used and several themes were identified as key to collect data. This study illustrates that the current situation of agriculture in Nepal is still substandard. Lacking basic requirements such as proper irrigation, quality seed, fertilizer and pesticide appeared to be the prime factors affecting agricultural productivity. Effort from the government has been ineffective causing uneven & irregular distribution of aids/support. This study also finds evidence from the hills of Mid-Western Nepal of discussions occurring on the topic of the feminization of agriculture's complicated procedures. Climate change on the other hand has a huge impact in farming and is happening now, there is a need to identify and adapt to its effects to deal with the agriculture industry's vulnerability.

**Keywords:** Agriculture, Nepal, Climate change, Organic production, Intensification of agriculture.

# Zemědělství v Nepálu

## Abstrakt

Navzdory svému úžasnému potenciálu a pozoruhodnému příspěvku k hrubému domácímu produktu (HDP) je zemědělství jedním z nejméně přehlížených sektorů v Nepálu. Rozvoj zemědělství jde v posledních desetiletích kupředu. Kvůli neustálému snižování výnosů hlavních potravinářských plodin je nyní Nepál převážně závislý na dovozu potravin. Tento článek je studií o zemědělství v Nepálu. Hlavním účelem studie je vidět současný stav zemědělství, problémy, vliv změny klimatu a najít způsoby, jak může provést intenzifikaci bez ekologických nebo sociálních škod v Nepálu. Studie se dále dělí na empirickou a teoretickou část. Teoretická část se bude opírat o standardní akademické publikace prostřednictvím rešerše literatury a empirická část o data z rozhovorů.

Od července do srpna 2021 byl proveden otevřený polostrukturovaný průzkumný rozhovor mezi dvěma skupinami zemědělců (malí chovatelé a velkopodnikatelé). Byla použita induktivní obsahová analýza a bylo identifikováno několik témat jako klíčová pro sběr dat. Tato studie ukazuje, že současná situace zemědělství v Nepálu je stále nevyhovující. Nedostatek základních požadavků, jako je správné zavlažování, kvalitní osivo, hnojiva a pesticidy, se zdá být hlavními faktory ovlivňujícími produktivitu zemědělství. Snaha vlády se ukázala jako neúčinná, což způsobilo nerovnoměrné a nepravidelné rozdělování pomoci/podpory. Tato studie také nalézá důkazy z kopců středozápadního Nepálu o diskuzích na téma feminizace složitých postupů zemědělství. Na druhou stranu má změna klimatu obrovský dopad na zemědělství a probíhá nyní, je potřeba identifikovat a přizpůsobit se jejím účinkům, abychom se vypořádali se zranitelností zemědělského průmyslu.

**Klíčová slova:** Zemědělství, Nepál, Změna klimatu, Ekologická produkce, Intenzifikace zemědělství.

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## **List of abbreviations**

APP = Agriculture Perspective Plan

CBS = Central Bureau of Statistics

DSSAT = Decision Support System for Agrotechnology Transfer

FAO = Food and Agriculture Organization

GDP = Gross Domestic Product

GNI = Gross National Income

HDI = Human Development Index

LRMP = Land Resources Mapping Project

NARC = Nepal Agriculture and Research Center

NGO = Non-Governmental Organization

Mha = Million Hectares

MOAD = Ministry of Agricultural Development

Pa = Per Annum

SKBBL = Sana Kisan Bikas Lagubitta Bittyasanstha

SFACL = Small Farmers Farming Collectives Limited

UNDP = United Nation Development program

USAID = United States Agency for International Development

USD = United States Dollar

WBG = World Bank Group

## 2 Introduction

Nepal is a rising nation with an agrarian system (Adhikari, 2015; Chapagain, et al., 2018.), wherein cultivation was the primary source of income since prehistory, with farmland employing two-thirds of the people (Adhikari, 2021). Nepal's agricultural industry accounts for 28% of the country's gross country's product (GDP) (Khatri, et al., 2020).). The unique Agri-ecological ranging preferred by different climates provide a wealth of opportunities for growing a variety of horticulture goods. Internationally, Asian nations generate the majority of veggies, with Nepal ranking sixth among fresh veggies producers in 2016, after China, India, Vietnam, the Philippines, and Myanmar (FAO, 2016). Veggie cultivation provides income from a tiny agricultural plot in a short time, allowing managers to increase their living conditions (Gurung et al., 2016).

Farming is with no question one of Nepal's most significant industries for improving livelihoods and reducing environmental damage. Because Nepal is a landlocked nation, land is the most valuable asset for Nepalis. Pretty much every single person is dedicated in some manner to a piece of land that has been handed down through generations. As a result, the bulk of business growth take place at the site. Nepal is a highly populated concentration poor country, with 195 people per square kilometre and a very high populations density per unit of agricultural area (The World Bank Group, 2021). In 2020, it was ranked 142nd there in globe, with a Human Development Index (HDI) of 0.602. (UNDP, 2020). Nepal's Gross National Income (GNI) per capita is \$970 USD, making it one of the poorest nations in South Asia (The World Bank Group, 2021).

Income growth is a process that takes time. Nepal has been complex and influenced by the country's changing politics, which has varied from royalty to communist's government. Farming has traditionally been the main source of income for Nepal's lowest earners. It is a critical component of the domestic economy for eradicating poverty, creating job opportunities throughout the nation, raising living standards, and accelerating the growth of the economy. As a result, farming is a critical component of the country's economy and a significant driver of economic development. It is critical to the development of developing nations' economies since it is the primary source of food, commodities, money, and work for those living in rural areas.

### **3 Objectives**

Nepal's agricultural industry has a significant effect on the national growth and people's lives. Farming on the other hand is struggling in Nepal owing to a slew of restrictions and roadblocks. As a result, the primary goal of this research is to explore and identify the circumstances under which farming in Nepal may be enhanced. This study seeks to achieve the following subsidiary goals in place to bolster the primary goal:

- Present a literature review on the benefits and drawbacks of farming in Nepal, as well as methods to intensify it without causing ecological and social harm.
- To introduce the concept of climate change and its impacts in agriculture
- Analyse information from NGOs and local governments on the future of farming in Nepal.
- Perform semi-structured interview with at least 10 farmers in Nepal, divided into two groups (those farming in large scale and the ones farming in small scale).
- To develop strategies for increasing agriculture productivity in Nepal.

### **4 Literature Review**

This chapter contains a comprehensive overview of pertinent previous research. The conceptual section depicts Nepal's differences in socio - economic condition. It also discusses the evolution of farming and its difficulties. It concludes with the findings of Nepalese agricultural research.

#### **4.1 Geographic description**

Nepal is a small, divided nation situated mostly in the Himalayan but also including portions of the Indian plains. It is bordered on the southern, eastern, and western by India, and on the northern by China (Gauchan and Shrestha, 2017). Nepal's populations were projected to be 29 million people, with a total geographical region of 147,181 sq.km (The World Bank Group, 2021). Nepal's topography is varied with great lands, subalpine-forested slopes, and some of the world's tallest peaks. The nation is split biologically into three major regions: Terai (lowland), Hill (mid-hill), and Mountains (upland), which are arranged in latitudes bands that span from north to the south. The mountainous area

encompasses the north half of the country, with altitudes ranging from 4877 metres to 8848 feet above sea level, accounting for 35 percent of total land area (Central Bureau of Statistics, 2018). Moving south, the Hill area, which ranges in elevation from 610 to 4877 metres, provides 42 percent of total land, while the Terai region, which encompasses the southern half of the country and shares its border with India, provides 23 percent (Thapa, 2009).

In terms of biological and meteorological circumstances, each area in Nepal is distinct from the others. As a result, we may observe a wide range of agricultural methods in various regions. Terai is the most fertile area in India, allowing for the growth of a broad range of crops. The mountainous area is the least suitable, although it has many snow-capped peaks, especially Mt. Everest, the world's tallest peak. The hill area is in the middle of the two, with many beautiful peaks, lush valleys, and lakes (Bhattarai, 2009). Nepal has 3.2 million ha of farmed land (with approximately 1.0 million hectares of extra area that may be cultivated). Each of the 3.4 million total properties has a median of 0.8 hectares of land. Just 16% of the area in this hilly region is used for agriculture (Paudel, et al., 2016).

## **4.2 Factor affecting Agricultural production**

### **4.2.1 Climate**

Climate change is one of the most important variables influencing agricultural output across the globe. Various climatic factors have a huge impact on the biological dispersion of farm commodities. The biggest danger to farming is a fast shift in climatic trends, which may be caused by global warming. Nepal is highly susceptible to climate, ranking fourth among the world's poorest nations (Dangal, 2011). Rainfall patterns, repeated shortages, severe heat surges and flooding, and glacial melt are the major dangers to this nation. The monsoon and terrain have a major impact on the nation's weather and climate.

Because Nepal uses outdated, inefficient agricultural methods and has sufficient infrastructures, the impacts of global climate change are anticipated to be devastating (Maharjan et al. 2011). Due to improper planting patterns, inadequate infrastructures, and unsuitable technologies, the nation's agriculture is particularly vulnerable to high temperatures and drought in the spring (Manandhar, et al., 2011). Due to its weak and

sandy soils and undulated terrain, the nation is equally vulnerable to many natural calamities such as floods and landslides during the monsoon. Furthermore, owing to a succession of frequent and severe weather occurrences, Nepal's agricultural output has decreased significantly. According to Regmi (2007), the agricultural output in Nepal's east, mid, and far western areas was reduced by 12.5 percent and 6%, respectively, owing to 3 years prior to 2005.

Drought has resulted as a result of these climatic factors, particularly in the rain - fed farming sector, wherein people rely on rainfall for their main farm operations (Ghimire, et al., 2010). Drought is most common from the end of March to the beginning of June, which coincides with the start of rainy seasons in many areas of the nation (Joshi, 2018). Droughts hit Nepal in 1972, 1977, 1982, and 1992. Several dry spells/droughts were also recorded in the years 2012, 2013, and 2015. Droughts in Nepal have wreaked havoc on the hill agricultural system, particularly in terms of crop output and the lives of those who rely on it (Adhikari, 2018).

#### **4.2.2 Soil**

Nepal is presently facing a significant problem with land degradations, especially siltation. Nepal is vulnerable to many types of land deterioration, including floods, landslide, and soil degradations, due to its high pace of populations increase, sustenance farming industry, and extremely severe monsoon rainfall events (Chalise, et al., 2019).

Nepal is a nation with a lot of social and geographical variety, and it's dealing with a lot of severe soil erosion problems (Karkee, 2004). The nation is now facing two challenges: growing populations and declining agriculture production. Soil nutrients have deteriorated over time, putting strain on people to rely on forest funds to satisfy their basic food requirements. Soil fertility has been severely deteriorated as a result of intensive farming (Gardner, et al., 2003) and the overuse of artificial fertilisers, and soil degradation has been a persistent issue for agricultural production and the ecosystem. Land degradation rates vary throughout the nation due to topographic variations, land-use change, uneven precipitation patterns, and changing demographics. In the Nepalese mid-hills, unscientific land use and farming practises have resulted in significant soil erosion and degradation (Chalise, et al., 2019).

Over the last several decades, Nepal's land use has changed dramatically. Farmland usage rose by 53.6 percent from 1961-1962 to 2001-2002, a 40-year period, although it has begun to decline in past few decades. Between 2001/2002 and 2011/2012, sown area and arable lands declined by 0.3 percent and 3.1 percent, correspondingly (CBS, 2003; 2016). Furthermore, high rates of soil degradation (Uddin, et al., 2016), sustenance and conventional food production (Pandey, 2012), unscientific nature conservation (Rijal, 2001), risen land fracturing, forest destruction (Acharya, Kafle, 2009), converting of farmland to settlers, and unsure current land rights (Paudel, et al., 2013) are some of the major issues that stymie rural growth. Increased grain production, environmental preservation, and wildlife preservation all benefit from effective land management. Nepal has inadequate land use choices and government attempts to execute land use. While Nepal established a lands use plan in 2012, the legislation's actual implementation is difficult due to its flexibility and numerous gaps (Uddin, et., 2016).

#### **4.2.3 Water**

Only 1.4 thousand acres (Mha) of Nepal's 2.7 million hectares (Mha) of farmland have farming production. Midsized water sources, as well as subsurface irrigated, make up the bulk of irrigations systems (Pradhan, and Belbase, 2018). Farming is an important contributor to Nepal's economic, accounting for about 33% of GDP and sustaining the lives of the majority of the people. Agriculture-based livelihoods are fragile owing to the whims of the long rainy season and terrain (Pradhan, and Belbase, 2018).

Nepal's current irrigations systems are becoming old, and they need to be improved and modernised in order to increase food production from agricultural production. It is often discovered that state-built and maintained irrigations systems may be improved, therefore they must be rejuvenated (Pradhan, and Belbase, 2018). Drought danger caused by climate change has emerged as one of the most serious threats to Nepal's mid-hill agricultural system and rural livelihoods.

#### **4.2.4 Fertilizers & Pesticides**

Small - scale farmers and diverse planting patterns predominate Nepalese farming, which is still mainly subsistence. Many researchers have found that a drop in soil quality

throughout the nation is a major factor limiting the production among most commodities and agricultural methods (Balla et al. 2014; Rijal 2001; Schreier, Brown, and Shah 1995). Other factors, such as climate changes (Panday 2012), shifting agricultural methods, and soil degradation, all contribute to the stagnation of production (Maharjan and Joshi 2013). Chemical fertiliser usage has risen significantly in the United States, from 16.7 kg ha<sup>-1</sup> in 2002 to 67.4 kg ha<sup>-1</sup> in 2014. (WBG 2017). Chemical fertiliser usage, on the other hand, remains minimal in Nepal as compared to other Asian nations. Farmers utilise 2.5 to 3 t ha<sup>-1</sup> of organic manure each year to maintain soil fertility (NARC 2013).

Nepal's Ministry of farming which is part of the Ministry of Agricultural Development (MOAD), runs a number of initiatives that emphasise the significance and need of fertilizer application. Natural dung and composting marketing, green manure application, balancing fertilisers usage, compost service, farmers' field education on combined plant-nutrient systems, provision of mycorrhizal fungi injection packets, and other workshops and presentations are examples of such initiatives. The possible danger to public health and the ecosystem linked with increased pesticide usage is a worry. Several agricultural pesticides are known to cause health issues in humans and animals, as well as have a negative effect on plant variety and the ecosystem in the short and long term (Stern, et al., 1959; Pimentel, et al., 1993; Atreya, 2007).

#### **4.2.5 Tools & Machinery**

Livestock power (36.3 percent), manpower (40.5 percent), and mechanical energy (23 percent) are the three main forms of agricultural energy in Nepal (Shrestha, 2012). Likewise, other research found that just 8% of Nepalese people utilise tractors, while 26% use iron ploughs and 60% of agricultural activities are done out by women (Kaur, 2017). Around 2.7 percent of rural households want their own metal animal-drawn plough, 3% get their own manual spraying on the hill, 13% have their own cattle cart in Terai, and some forward-thinking growers have purchased combine extractors for bespoke hire (Shrestha, 2012). Despite the fact that farm sizes in Nepal are modest, the use of four-wheeler vehicles is on the rise. However, it is believed that about 85 percent of the implements used by hill farmers are handcrafted (Shrestha, 2012).



Farming increased automation has progressed in Nepal during the past five decades, with different kinds of equipment being used, mainly via private sector imports and interaction with farmers. Water pumps, 4 wheel and 2-wheel loaders, harrows, rotavators, seeding drills, threshers, combine harvesters, agricultural production lines, rice, oil, and pulse mills, and laser land-levellers are among the power-operated farm equipment (Biggs and Justice, 2013). Tractors are employed for a wide range of non-agricultural applications, include rural transportation, building, surface mining, and quarries. Mechanisations is on the rise in Nepal, and it will assist boost grain yields in many areas.

### **4.3 Development of Agriculture in Nepal**

Pastoral nomads were the main agricultural practice in Nepal, and the advent of scaffolding, ploughing techniques, and irrigations in the 12th century encouraged the development of farming (Joshi, et al., 2012). Rice, barley, various kinds of millets, and lentils were natural to the area, but maize and potatoes were introduced in the 18th century, allowing for increased cropping intensity, especially in the Bari lands (upland) at higher elevations. As a consequence, the planted area expanded from the valleys to terraces on the river slopes (Seddon et al. 1979). Populations increase impacted the development of farming in the nineteenth century, resulting in the availability of new areas for production, particularly in the Terai. The elimination of disease in many parts of the Terai in the 1950s, as well as the clearing of forests, hastened the immigration of hill persons and persons from India to the Terai (Joshi, et al., 2012).

Because there is limited room to expand the land under cultivations, populations expansion has resulted in smaller average farm sizes and increased dispersion, resulting in rising poverty. Nevertheless, since agricultural production is presently extremely low, there is a lot of room for fast development with contemporary technology. Irrigations, farming roads, land development, farm machinery, machinery, and the utilisation of bought inputs are all areas where significant investments is required to turn promise into reality (Joshi, et al., 2012).

In Nepal, there are about 3.7 million landholdings (family farms), with 95 percent of them being owner-cultivated (FAO, 2013). A farm family's normal size is just 0.6 hectares. These small farmers comprise a wide variety of crops with mostly family labour and eat

the majority of their output. Due to poor efficiency, a limited excess to sell, and a lack of marketplace and infrastructural facilities such as roads and transportations networks, they sell just 12% of their output and earn only 5% of their overall revenue (FAO, 2015).

#### **4.4 Impact of Climate change in agriculture growth of Nepal**

Climate change is a significant element that has a significant effect on crops output. The increasing effects of climate change have pushed the farming industry to the forefront of global debate, as the industry both produces to and are impacted by the changing climate.

The heating rate in Nepal is considerably greater than the world average heating rate, and the heating rate in the Himalayas is even higher. During rainy season, when rainfalls combines with glacier and runoff from the highlands, this has a direct effect on the plains. Furthermore, the effect of climate change is gradually growing as a consequence of uncertainty and climate-related severe occurrences. Nepal, on the other hand, has a limited adaptive potential to react to climate change-induced instability. Climate change assessments and forecasts are largely dependent on a literature study and some strewn data that isn't always trustworthy. Nonetheless, the nation faces serious threats from climate change, which are anticipated to have a significant impact on crop output, ecosystems, and rural people' livelihoods.

The farming sector's commitment to the country's economy is jeopardised by its susceptibility to climate change. Severe climatic factors, such as a sustained rise in mean temperatures and increased rain, have had virtually negative effects on many components of the food productions system in recent years. Nepal is subjected to a variety of natural catastrophes, including flash floods, hailstorm, earthquakes, popular uprising, soil depletion, and avalanches, all of which have an impact on agricultural systems. Yet, both biophysical variables will influence the degree of susceptibility. Many academics and groups have voiced worry that climate change would damage the farming industry of Nepal, where 85 percent of people lives in rural regions and relies on climate-sensitive mineral wealth (Karki, & Gurung, 2012).

According to Acharya and Bhatta, (2013), the upper side warming trend seems to be disastrous, as it averages about 2.0°C in west Nepal, over 3 times the substantially lower

warmth. When contrasted to the worldwide trend, Nepal's warming trend is considerably greater. Moreover, climate change makes slopes and steep hills more susceptible. According to Malla (2008), Nepal had a 1.8o C amount of warming from 1975 to 2006, with an average annual increase of 0.06o C. Droughts, catastrophic floods, earthquakes, and a variety of field crops impacts have all been observed in the nation as a result of climate change. According to a study conducted at Khumaltar on CO<sub>2</sub> enriching technologies, rice and wheat yields rose by 26.6 percent and 18.4 percent, respectively, owing to double CO<sub>2</sub>, 17.1 percent and 8.6 percent thermally induced rise. A crop modelling (DSSAT) used by the National Agriculture Research Center (NARC) to investigate the impacts of CO<sub>2</sub>, heat, and rainfall on rice and wheat yields in all areas revealed a favourable effect, but an adverse influence in maize, particularly in the Terai.

Bista, (2019) reviewed the effect on both elements and tests experimentally what influences atmospheric carbon gases into the environment. The World Bank's Green Data Book provides data on carbon emissions, energy usage, and agrarian country level factors for 150 nations. Farmland, irrigated, natural forests, renewable sources, and energy usage effectiveness all have a negative impact on carbon dioxide emissions, according to multiple regressions analysis. However, fertiliser usage and per capita energy use have a beneficial impact. The findings show that individuals in developed nations are more liable for carbon emissions than those in developing ones. Cross-subsidizations for low-external-input farming, especially organic growing in poorer nations, is recommended.

#### **4.5 Women as agent in agriculture**

Authors have highlighted women's rights in recent intellectual debate, shifting from viewing women as inferior beneficiaries of progress to active stakeholders in the process of improvement and transformation. The notion of opposition and disagreement within family judgement as agency has been highlighted by Gammage et al., (2016). They claim that such decisions are seldom made by a single person, but rather by a group of people who are at various stages of decision - making processes. The article analyses social norms as described by Agarwal, using agency as an explanatory framework to interpret the raw data collected from the field (1997). Social norms regulate the distribution of duties, obligations, and finances among family members based on age, gender, and family status, as per (Agarwal, 1997, Gammage et al., 2016). Kabeer (2016) has also emphasised

instances of active resistance, as well as women's behaviour that causes them to accept socially imposed duties as a given aspect of their life. Kabeer is aware of the importance of compulsion over choice, as well as the negotiating processes. This article focuses on the notion of agency, which encompasses not only pro-active judgement on the side of women, but also adaptable choices in light of judgement that is moulded as much by societal norms as by the architecture of present system. The agency approach offers a diverse area for study (Kabeer, 2016) of the (de) feminizations issue since women's involvement in farming is both a fight for continuation and discontinuities of particular practises and norms within the surrounding structures of limitations.

The proportion of homes led by a woman is steadily rising. Families claiming land or home owning in the names of its females accounted for 19.71 percent, up from 11.7 percent in 2001. Likewise, female-headed families now account for 25.73 percent of all families in the nation, up from 14.9 percent in 2001 (Tamang, et al., 2011). Likewise, in farming, there is an experience of different of labour force. In 2010, 72.8% of females and 60.2 percent of men worked in agriculture, per the Ministry of Agriculture Development (Farnworth, et al., 2019). Current farming policies, on the other hand, fail to acknowledge the shifting economic reality in which women bear the brunt of the burden. For examples, Nepal's Agriculture Perspective Plan (APP) (1996-2015) is the country's first long-term agrarian developments strategy. The nation's agriculture industry did not develop much throughout the Plan era. One of the causes for the rising trend of emigration is policy failure. Despite the fact that the APP is the nation's first thorough agrarian growth plan with a significant economic agriculture template, it was unable to resolve problems such as agricultural production, working to improve access to services for those with low living conditions, ensuring food and nutrition's security for children, and attempting to address issues affecting women and exempted societies (Meinzen-Dick, and Zwarteveen, 1998).

Furthermore, the current Agriculture Development Strategy is being developed under such a structure, and it may meet the same fate as the previous strategy (Paudel et al. 2013). However, the evidence supporting the degree of 'gendering of farming' has yet to be fully examined and defined, there are many signs that it is occurring across the world and affecting gender relations (Song and Vernooy 2011; Chang et al. 2011). Women's involvement in farm labourers and judgement are two elements of gendering of agricultural

(Gartaula et al. 2010). Many groups say that women are becoming more involved in agriculture. However, it is unclear if it is aimed at empowering women economically or just increasing the number of females engaged in agricultural operations (Bhawana, and Race, 2020).

## **4.6 Agricultural Trade**

Due to the obvious diminishing amount of output inside the nation, the propensity to import manufactured commodities is increasing day by day. As a result, the trade imbalance has been rapidly growing. This demonstrates that international commerce is unbalanced (Magar, 2019).

Data research revealed that farm produce importation from surrounding nations, as well as other nations, are rising. India imports two-thirds of agricultural goods, with the rest probably coming from foreign nations. Nepalese international trade is imbalanced due to a high quantity of imported farm commodities. As a result, lawmakers should concentrate on the developments of food production, particularly in terms of agricultural policies and programmes, and the sequence of foreign trade should be revised and renewed through a diversifying, industrialization, and synth agrarian framework, which might help Nepal reduce its trade imbalance and maintain a stable currency value (Magar, 2019).

The status of Nepal's worldwide commerce is now unfavourable. Massive disparities exist among foreign trade, as well as their levels of growth, resulting in growing trade imbalances. Only ten export products represent for 40% of all exports in Nepal, indicating that the country's exports are diverse. Nepal's overall trade is 68 percent with India, and trade deficits are rising due to the country's growing budget deficit. India alone contributes for 57 percent of Nepal's global trade imbalance (Sharma, et al., 2017).

Nepal's agriculture exports to India were stable from 2001 to 2009. However, between 2009 and 2013, Nepal's agriculture purchases from India increased at a rapid pace of 27% per annually (p.a.), while agriculture exports to India increased at a slower rate of 8% per annum (p.a.). Nepal's commercial dependence on India is rapidly increasing, with imports rising at 8% per year and exporting increasing at 5% per year. The lack of product diversity in exports is a problem that equally applies to trade agreements.

Underperformance in value combination with appropriate goods for export, as well as inadequate backwards and forward connections with the rest of the economic in the case of industrial goods exported, are further problems from the standpoint of product developments in Nepal (Sharma, et al., 2017).

## **4.7 Authorities in Agriculture**

Current policies set the frameworks and actions plans for achieving specific national objectives. The following are some of the administrations in Nepal that have been working on agricultural developments:

### **4.7.1 Nepal Agricultural Research Council (NARC)**

The Agri based academic institution in Nepal is the Nepal Agricultural Research Council (NARC), which is in charge of studying better genetics, production, and nutrient management for fish and livestock (Kyle, and Resnick, 2019).

The Nepal Agricultural Research Council (NARC) is an apex crop research organisation that was founded in 1991 as an independent national body to undertake agronomy in order to improve the folk's financial status. The NARC's particular goals are to undertake high-quality scientific studies on many sectors of production, to identify and solve current farming issues, and to benefit the country in developing agrarian policies and strategies (Kyle, and Resnick, 2019). Conducting improved farm research needed for government farming policies, prioritising studies to be performed, supplying technical advisory solutions to consumers, and trying to coordinate, supervising, and assessing agrarian investigations in Nepal are all highlight the most important of NARC. Financial donations from the Nepalese government provide for about 75% of NARC's overall financial resources. Grants from locally and internationally donor organisations, as well as money from research and consulting services, provide for a major component of the economic assets. NARC maintains a network of 61 research stations spread throughout the nation, each represents a unique natural area. Crops, gardening, fishery, and livestock are all research fields. Despite many attempts, Nepal's agricultural study and extensions sector is often chastised for failing to meet expectations (Kyle, and Resnick, 2019).

#### **4.7.2 Sana Kisan Bikas Laghubitta Bittiya Sanstha ltd. (SKBBL)**

Sana Kisan Bikas Laghubitta Bittiya Sanstha ltd. (SKBBL) is a corporation formed under the corporation statute of 2006. It was founded on July 6, 2001. The mortgage lender was granted a D class federal level credit institutions licence by Nepal Rastra Bank in line with the Banking financial Institutions Act 2017 and is now operating as a large supply borrowing micro finance institution (SKBBL, 2019).

This economic organisation is based on the belief that poverty eradication may be hastened by creating strong, competent, independent, and durable organizations at the local level, as opposed to the current financing methods. For the financial and social developments of small landowner's poor, the banking firm has been running micro financing and social progress programmes via local competent organisations (SKBBL, 2019).

Local Producers Collectives (SFACLs) and other Finance Companies get retail financing and technical assistance from SKBBL (MFIs). It runs a number of development initiatives to guarantee that the underprivileged and small producers in the nation have access to microfinance services (SKBBL, 2019).

The political policy and trust, as well as that of global health banking firms, federal level advertising financial companies, and the cooperative societies sector as a whole, have always motivated us to enlarge our services to every nook and cranny of the nation. We are dedicated to improving the lives of Nepal's poor, borderline, and small growers institution (SKBBL, 2019).

SFACLs (Small Farmers Farming Collectives Ltd.) have been handling repatriation services to assist its members in receiving money from relations. Rural individuals in diverse geological networks of the nation now have access to fund transfer thanks to this service. The number of individuals looking for work abroad has risen in recent years. Sana Kisan Bikas Laghubitta Bittiya Sanstha Ltd. (SKBBL) has developed a service that makes it easier for individuals in Nepal to receive donations. These repatriation services are managed by Small Farmers Agriculture Cooperatives Ltd. (SFACLs) (Sana Kisan Bikas Laghubitta Bittiya Sanstha Ltd. (SKBBL), 2019).

### **4.7.3 USAID in Nepal**

The United States Organization for International Development (USAID) is a federal govt specialized agency of The United States that distributes humanitarian foreign aid with the goal of reducing inequality, supporting community, and promoting democracy (USAID, 2021).

To tackle these issues, USAID collaborates with the Nepalese local govt developments partners as part of the US state's Feed the Future Action plan to improve crop yields, free trade, and nourishment by increasing both the producers and consumers of more healthy foods. The Feed the Future Project has assisted an estimating one million Nepalis boost their earnings over the last five years by enhancing crop production and improving nutrition. As a consequence, poverty fell by 36% among 2013 and 2015, malnutrition fell from 49% to 36% among 2006 and 2016, and median producer sales rose from \$250 to \$700 per year in the 24 south-western and central regions where these initiatives are implemented. USAID will actively engage with Nepal, one of 12 target nations globally, to scale up effective methods to enhance national food security, as part of the US state's current Global Food Security Strategy (USAID, 2021).

Nepali famers will have more access to automated agricultural technology, such as low-cost vehicle extensions that improve crop output and income, thanks to a collaboration among USAID/Nepal and USAID/India. This collaboration will help improve Nepal's Various agriculture Universities, ensuring that its education is focused on producer and agrarian market requirements (USAID, 2015).

KISAN is a five-year, \$20.4 million Feed the Future project in Nepal funded by the United States Agency for International Development (USAID). With sustainable farming and nutritional initiatives, the project would enhance food production, boost income, and diversify diets for 160,000 impoverished rural families, totalling approximately one million rural Nepalis, spanning 20 districts (USAID, 2021).

The Agriculture and Forestry University will be funded and supported to identify research topics and create curriculum to assist farming students better participate to Nepal's rural progress of the economy under the second programme launched today. In Nepal, the



initiative will use what it has learnt from Indian institutions to help the Agriculture and Forestry University promote Nepal's farmers more effectively (USAID, 2015).

#### **4.8 Feminization of Agriculture in changing context of Nepal**

Oppression of women of farming is defined as "documented method, processes, and practises of increasing women's involvement in farming production, labour, and decision-making, such as its impact on women and current sexual politics" for the purposes of this article. The gender reassignment process is progressing, according to studies by De Schutter (2009).

The feminizations argument, which began with the feminizations of industrial work, was subsequently extended to agriculture (De Schutter, 2009). Feminizations became more visible when small grain productions shifted away from growing crops and toward wage agriculture. Bieri (2014) claims that the term "feminizations" was used to describe the "new ruralises" in high-value crop productions as a manifestation of agribusiness in the Global South. According to FAO (2010b), objectification of women has altered women's traditionally undervalued position in society. Prior studies (Adhikari, and Hobley, 2011; Khanal and Maharjan, 2010) shows that feminizations processes in farming are still poorly recorded and evaluated, particularly when it comes to evaluating female position in the profitable crops supply chain (Upreti, Ghale, et al. (2016).

Feminizations is a situation in which men and women's roles are imbalanced, whether in the home or in the society. People are moving momentarily and continuously outside of their native nation in pursuit of a better life as a result of globalisation and improvements in communications and transportations (Bhadra 2007). Farming labour is becoming more gendered as a result of labour migrants (Gartaula et al. 2010). It is occurring as a result of rising attention of and desire in formal schooling among all households, where children attend schools and young adults, enticed by overseas work, are no longer seen in farm areas. Agricultural and home responsibilities are now a component of women's responsibilities (Kollmair and Hoermann, 2011)

## **4.9 Status of organic Agriculture in Nepal**

From 10th Five-Year Plan, organic agriculture has been recognised as a key area in Nepalese farming. However, different organisations, people, and farms are becoming more involved in this area. There's a whole variety of organically grown methods, some of which have been used for centuries and others which are being developed by producers themselves. Some organic goods such as espresso, tea, honey, big cloves, ginger, and others, are now sold to other markets. Institutional factors and people believe that organic progress in Nepal is sluggish owing to the state's lack of clarity and skewed data flows from diverse developments initiatives (Parajuli, et al., 2020)

When looking back at the state's previous policies and initiatives, agricultural production, especially organic manufacturing, is never considered in the context of food. The development of organic agriculture is exclusively for export, according to the national agricultural strategy 2016. The policy and programme led it from the development of business and stressed generating more revenue, but it was never viewed from the perspective of personal food and health. As a result, organic agriculture is restricted to primarily export-oriented products including beekeeping, coffee, tea, big cinnamon, ginger, and a select number of farmers (Kassim and Fanuel, 2007).

People and organizations engaged in organic agriculture, as well as farmers involved in organic methods (few of whom are switching to organic from conventional agriculture), lack precise criteria. Companies, people, and growers themselves seem to be unsure about their roles in this industry. As a result, the exact estimation to determine the quality and level of organic goods is also unknown. They are unable to provide a thorough and timely explanation of why it is essential, how much of it is organic, and which techniques are appropriate for Nepalese conditions (Tamang, Dhital, and Acharya, 2011).

## **4.10 Challenges for agricultural growth**

Nepal is mostly an agricultural nation. The agricultural sector has contributed to country's GDP peaked at 33% in 2014-15 and has been steadily decreasing ever since. This decrease in country GDP contributions is mostly due to a decrease in cultivated area land area and the working population it requires, with these commodities being heavily shifted to the

commerce, tourist, health, and training centres (Shrestha, and Khanal, 2020). The overall trend of farming in Nepal has stayed around 3 per cent for the last 2 decades, with no signs of improvement. Crop output and efficiency, on the other hand, rose by 6.2 percent and 7.1 percent in the previous fiscal year, correspondingly, which is still insufficient (The Kathmandu Post, 2019).

Farming, which is the country's macroeconomic foundation, still depends largely on grower expertise, manual labour, as well as the mercy of environment for output. The following are some of the most significant challenges impacting Nepal's agricultural output.

Geographically Variety: Due to the obvious historical and ethnic variation, there is a greater need for technique. As a result, a technology's application is restricted, and the return on investment is poor.

Drainage, energy supply, Agri-inputs manufacturing, mechanisation, marketing, and research institutes all have poor infrastructure building. Poor Agri-Rules: There are no land use policies in place to address the growing dispersion of non-agricultural land use. Improper policies on mechanisation, subsidies, and access to inputs.

Increased Labour Crisis, Agricultural Masculinization: Feminizations of Nepalese farming is a hot topic these days. Heavy young outmigration's is thought to be the primary cause of agriculture's feminization. Despite the absence of solid empirical data, concept of gender is believed to have a negative impact on agricultural land and value added.

## **5 Methodology**

### **5.1 Participants and recruitment**

Ten participants within two geographical regions (Hilly & Terai) and from six different districts (Nawalparasi, Chitwan, Morang, Dhanusa, Surkhet, and Bhaktapur) took part in the interview. Participants were divided into two groups. Producers who farm on a large scale and producers who grow on a limited scale for personal use. Because Nepal has a diverse range of geographical circumstances, it offers a diverse range of farming opportunities. Farmers who are interviewed are primarily from the Terai (6 participants), with a few from hilly areas (4 participants). In the interview, there is no one from the Mountain region. Respondents were recruited using convenience sampling initially, which means they were chosen depending on their accessibility. It was difficult to travel and identify a certain group of individuals because of COVID restriction. Later, snowball sampling was used for addition of participants beyond the researcher's network. The interview was conducted over phone call via Skype, which meant the interviewee and interviewer couldn't have in-person interaction. Interviews were performed over two weeks from early-September to mid-September 2021. Though there were no written consent, all participants were informed and made aware about the purpose of the interview and verbal permission were granted by all participants to use necessary data.

### **5.2 Data Collection**

Six semi-structured open-ended questions and ten key respondents were used to collect data for the study. The questions were formulated to guide the interview covering concerns about selection of crops for farming, current issues and problem, support or aid received from government or NGOs and suggestion for improvement of farming without environmental and social damage. There were three female respondents, and one of them held bachelor's degrees in political science. Two were literate without having higher degree. Among the seven male respondents, none were bachelor's degree holder and one returned from abroad after 7 years working in orange farming. With verbal consent, all interviews were audio recorded and transcripts were taken after the session. Interviews were taken in Nepali language and were later translated into English language. No direct identifying information were used in transcript.

### 5.2.1 Table 1: Exemplar quotes for each theme derived from the data

#### Livelihoods & Value Chain

*“I grow garlic and seasonal mustards green vegetables. The reason is that it’s the right season to grow it and there is a demand of local garlic in market” - Participant 1 (Large scale, Hilly region)*

*“I grow sugarcane which is my main crop. My place is in rural area and there is not good facility of water, so I am growing sugarcane for a long time as it doesn’t need a lot of water.” - Participant 2 (Large scale, Terai)*

*“I was doing labour work in Dubai for 8 years, I couldn’t do anything big, so I came back and started farming.” – Participant 4 (Large scale, Terai)*

*“I am growing cucumber as my main crops. Reason is that cucumber can be grown over all season, demand is high in market, and it has good profit margin” – Participant 5 (Large scale, Terai)*

*“Mainly, we grow paddy and maize which is kind of traditional crops.” – Participant 7 (Household, Hilly)*

*“Our soil and climate are not suitable for all types of crops, so we have been growing wheat & maize as our main crops for generation.” Participant 10 (Household, Hilly)*

#### Uneven Government support

*“I think agriculture is only sector where I have seen government being generous. I took training for farming offered by District Agriculture Department, and they have also provided me loan to set up everything in very less interest rate. I have also received a mini tractor, a water pump machine, spray tank and some fertilizers as grant.” Participant 4 (Large scale, hilly)*

*“I haven’t received anything from government yet.” Participation 1 (Large scale, hilly)*

*“No, there aren’t any help that I received from government.” Participant 2 (Large scale, Terai)*

*“Well, I can’t say the government hasn’t done anything. My district agriculture department has provided me with some agriculture tools in sum of around NRs 89,000 last year as grant. They have also visited my*

*farm and provided me with pesticides, fertilizers, and constructed water canal for irrigation.” Participant 4 (Large scale, hilly)*

*“Well, we are not doing big scale farming. Our agriculture production is small and only enough for ourselves and we have never received anything from government, nor do we expect anything from them.” Participant 7 (Household, Hilly)*

*“Yes, government is doing several helps to farmer who does agriculture in big scale, but I haven’t received anything because I only do farm for household purpose.” Participation 9 (Household, small)*

Labour shortage & feminization of agriculture *“Well, there is shortage of manpower, it’s very difficult to work only by female members of family as man are abroad for work.” Participant 6 (Household, Terai)*

*“These days agriculture labour is difficult to find in our locality.” Participant 7 (Household, Terai)*

*“Nowadays, it’s difficult to find people who can work in field so we must pay high price to those who will work for us.” Participation 9 (Household, small)*

*“I work with my wife and daughters as my sons have do other work to make money to pay our expenses” Participant 10 (Household, Hilly)*

Climate Change *“Untimely rainfall ruins the crops which is affecting our productivity.” Participant 1 (Large scale, hilly)*

*“Although, sugarcane doesn’t need that much of water but during monsoon heavy rainfall for longer time kills our sugarcane which decreases its productivity.” Participant 2 (Large scale, Terai)*

*“Due to change in climate and increase of temperature, our area is slowing getting unsuitable for growing orange and shifting to higher altitude regions which obviously affect our productivity.” Participant 4 (Large scale, hilly)*

*“Well, excessive rainfall is causing us problem because it will flood away our crops from field but at the same time high temperature due to sunlight damage our crops as well.” Participant 8 (Household, Terai)*

*“Untimely rainfalls bring disease which kills our crops.” Participant 9 (Household, Terai)*

*“It feels like the seasons are shifting. Winter and summer are different from past”* Participant 10 (Household, Hilly)

Shifting to  
organic &  
modern farming

*“I would say Nepal government has to spread awareness about organic farming to more people.”* Participant 8 (Largescale, Terai)

*“I think the first thing which can help agriculture to improve is to provide training and awareness program to local farmer on modern farming.”* Participant 9 (Household, Terai)

*“I think we should focus on using local and organic manure.”*  
Participant 10 (Household, Terai)

*“There has been excessive use of chemical fertilizers and pesticides in crops these days.”* Participant 6 (Household, Terai)

*“Bringing new agriculture tools and quality seeds from foreign country by government and providing it to farmers would help.”* Participant 1  
(Large scale, hilly)

*“To improve agriculture protecting environment and social factor, I think we should focus on using local and organic manure.”* Participant 3  
(Large scale, Terai)

### **5.3 Data Analysis**

As the entire interview was conducted in Nepali language and the data itself was in audio form, which was obtained from the recording, so the translation was done very carefully keeping in mind of each word to make it most accurate meaning. Interview data were analysed according to the principle of Thematic Content Analysis. A process of familiarization with the data, generation of initial codes, development of a coding structure and definition of key themes was followed by analysis of the data and examination of connections between categories (Clarke, 2008). Several codes were constructed, re-constructed, reviewed and updated to ensure consistency and reliability during the whole process of coding and categorization. Data were read multiple times and extra care was taken not to miss important points which could influence the coding.

## 6 Results

Several factors affecting farming were identified by the theme in the data. In addition, feedbacks for improvement of agriculture in Nepal were outlined by interviewees. Exemplar quotes for each of the key theme are presented in summarized form in table 1.

### 6.1 Livelihoods & Value Chain

Nepal has a variety of Argo-biodiversity. The main primary food crops are rice, maize, millet, wheat, barley, and buckwheat, oilseeds, potato, tobacco, sugarcane, jute, and cotton are significant cash crops, while lentils, pigeon peas, black gramme, horse gram, and soya bean are important pulse crops. However, it appears that majority of farmers are still leaning toward crops which are favourable to their soil and season as I discovered from the interview.

Several interviewees identified that the foremost reason of them getting engaged in farming is to support their livelihood such as household expenses, food, shelter, and education of their children. Majority reported that they are choosing crops based on their favorability of soil and season. However, the larger scale farmers choose their crops on basis of the market demand and profit margin. Some of them are engaging into farming to implies ideas they leant from working abroad.

*“I am growing cucumber because it can be grown over all season, market demand is high, and it has good margin of profit”*- Participant 5 (Large scale, Terai)

Other large-scale interviewee noted their difficulties in market competition, unavailability of new tools and quality seeds which they find demotivating to continue farming. Bringing modern agricultural equipment and high-quality seeds from outside and distributing them to farmers will help farmers work more effectively, improve production, and motivate them. Lack of equipment and market competitiveness may be disheartening at times. It would be preferable if the government worked to resolve such problems.

*“Lack of equipment, market competition is sometime discouraging.”*- Participant 1 (Large scale)



## 6.2 Uneven government support

Very contrasting views were reported from interviewees regarding government service and contribution in agriculture. Several interviewees were grateful about what government has done in agriculture sector. They have mentioned about receiving helps in various forms, such as financial help as grant, agricultural equipment, and tools (hand tractor, plastic mulching kit, water pump, spray tank, seeds, fertilizers, pesticides), loan with low interest rate etc. Few expressed their gratitude toward government for building water canals for irrigation. However, it was noticed that government is more likely providing benefits to farmers who are engaged in large-scale agriculture. Several small-scale holders including few large-scale holders noted their disappointment on not receiving any help from government. They have mentioned about the uneven distribution of grant and help by the authorities. People with connection with those authorities are more likely to receive such help. Other interviewees mentioned that they were not trying to reach or seek for any help. They would rather expect nothing than having to go through complicated procedure.

*“Comparing to past, I think our government is little bit paying more attention in agriculture. I have heard they are providing agriculture tools and some fund in grant to some people, but I have got nothing. Only few people who has connection with authority gets them.”*- Participant 10 (Small scale, Hilly)

Few spoke about the careless market management and middleman interrupting farmer to sell their crops which they find very demotivating. Awareness campaign introducing new way of farming, ideas on handling pest and diseases, and substitute for organic manure were cited in the interview. In general, nearly every interviewee wanted the government to act more fairly and bring good policies which fix current issues, protect farmers, and motivate them to move further.

*“Nepal government has to spread awareness about modern agriculture and introduce better regulation to protect farmers.”*- Participant 4 (Small scale, Terai)

### **6.3 Labour shortage and feminization of Agriculture**

In Nepal, the 'feminization of farming' has primarily been linked to man out-immigration (Tamang et al., 2014). Male out-migration for work is thought to be the main causes of the phenomenon's emergence. However, not every man returning to country is effective, and excellent earnings could increase crop yields and female equality. Women endure increased responsibilities and financial challenges when remittances are insufficient, contributing to their marginalization. Furthermore, wage work on industrial farms don't always empower women since workers, low-skilled professions are more common, and very few job skills are much more likely to be filled by males (Slavchevska, Kaaria, and Taivalmaa, 2016).

*"I work with my wife and daughters as my sons have do other work to make money to pay our expenses"* Participant 10 (Household, Hilly)

Several interviewees with small-scale noted that they are farming with their female members of their household. Also, they mentioned about the shortage of manpower to work in field causing them to pay high wages for the limited manpower available. It was identified that almost every family engaged in household scale farming would have a man travelling abroad for work, which was the main source of income for them. Female members however aren't going abroad as much as man do and they are devoted into taking care of household, children, and work in field at their spare time. Large scale-farmers, however, haven't mentioned anything about the shortage of manpower. Several of them did mention about the motivation of doing something in their own country. Some even came back after working several years abroad.

*"I finished my bachelor's degree and went to South Korea where I was working in orange farming for 5 years. I came back to Nepal thinking to do something in my own country and started this farming."* -Participant 1 (Large scale, Hilly)

## **6.4 Climate Change**

Rainfall is a major source of irrigation in many poor nations; thus, climate change will be continuing to have a substantial influence on family agricultural production. Nepalese farmers face several issues, climate change is a major issue for all farmers, as bad weather and untimely rainfall cause serious problems for farmers.

Nearly all interviewees mentioned difficulties regarding climate change and its effect on their crop's productivity. Some mentioned that lack of rainfall during monsoon and extreme temperature during summer are making their day-to-day life hard. Several small- and large-scale farmers expressed their dissatisfaction toward government on not providing them with sufficient irrigation facilities. It appears that most of the farmers are still dependent on natural rainfall. Pest problem is another issue identified by interviewee which they said is gradually increasing due to climate change.

*“Due to heavy rainfall our paddy is damaged by flood, and it also brings new disease which is killing our crops.”*- Participant 9 (Small scale, Terai)

Other interviewees noted difficulties regarding heavy rainfall which caused flood and destroyed their crops. Few mentioned about shifting of season which is highly affecting their crop productivity. So, most frequently interviewees expressed their concern and frustration toward climate change and were hoping to be taken care by concern authority within the nation and the whole world.

*“Yes, climate change has huge effect in our crops. Especially, due to climate change we do not get rainfall in time which rise the temperature because of that our crops can't grow well and die.”* Participant 5 (Large scale, Terai)

## **6.5 Shifting to modern and organic farming**

Modern agricultural contributes to soil richness preservation by utilizing machinery and technologies to produce soil quality that are conducive to planted development while minimizing rate of soil erosion, drought, pests, illnesses, and other dangers. Farming and animal production, health, and consistency are all enhanced when current genes are used.

Current farming characteristics include access to quality watering, gathering, storing helping to implement, and loss prevention strategies (Parajuli, Shrestha, and Ghimire, 2020)

*“People nowadays are using excessive chemical fertilizers and pesticides to enhance their productivity and in name of modernizing agriculture which not only has bad effect to soil fertility, but it also affects in our health and social aspects. So, we must avoid excessive chemical fertilizers and prioritize on local fertilizer like manure.”* - Participant 7 (Small scale, Hilly)

Many interviewees reported that there has been excessive use of chemical fertilizers in the recent days. Farmers seems to be using harmful pesticides and fertilizers to increase their productivity so that they can make more profit. It was also noticed that most of the interviewees were aware about the effect of using chemicals fertilizers in their crops and were willing to shift towards organic option upon available. Small scale farmers were more likely concerned about the negative effect of chemical fertilizers than the large-scale farmers, as they are the first user of their own food crops. Large-scale farmers, however, were leaning more towards modernizing the way of farming. They identified the difficulties in finding and getting quality seeds and were expressing their hope on how modern tools and technology could enhance their productivity and motivate them to continue further.

*“Bringing new agriculture tools and quality seeds from foreign country by government and providing it to farmers would help farmer to work more efficiently, increase productivity and it would motive farmers.”* Participant 1 (Large scale, hilly)

## **7 Discussion**

The finding of this qualative study indicates that the state of agriculture in Nepal is still substandard. Several aspects were identified as major factor influencing the cause.

Researcher suggests that the people as well as farmers involved in organic farming seems to be unsure about their role and lack precise criteria. They are unable to provide a

thorough and timely explanation of why it is essential, how much of it is organic, and which techniques are appropriate for Nepalese conditions (Tamang, Dhital, and Acharya, 2011). This study finds the similar ornamentation of feedbacks from the farmers. They are concern about the fatalistic effect of using chemical pesticide & fertilizers in their crops and want to switch towards organic subsidies so as to avoid the harm, but they don't seem to have a clear idea about the precision about organic farming.

As an adverse effect of global warming, fast shift in climate trends is the biggest danger to farming. Nepal is highly susceptible to climate, ranking fourth among the world 's poorest nations (Dangal, 2011). Unsurprisingly, this study suggests that Nepalese farmers are already suffering, and a huge damage is being caused to their crops leading to poor production. Heavy rainfall during monsoon, extreme temperature in summer and unfavorable weather throughout the year is giving hard time to farmers.

As per researcher, several research stations are spread throughout the nation, each represents a unique natural area. However, Nepal's agricultural study and extensions sector is often chastised for failing to meet expectations (Kyle, and Resnick, 2019). No evidence of any research practiced by people or the farmers has been reported in this study. Nonetheless, the study suggest that the government of Nepal appeared to be actively involved in providing helps and support in different forms. Large scale users, however, are to be prioritize and more likely to receive the aid first. The study finds that there is an uneven distribution of government support.

Kollmair and Hoermann suggest that agricultural and home responsibilities are now a component of women's responsibilities as rising attention and desire in formal schooling among all households, where children attend schools and young adults enticed by overseas work, are no longer seen in farm areas (Kollmair and Hoermann, 2011). This study finds the evidence of manpower shortage and most likely female memebbers of a household are left behind and have to take over field work. The main cause behind the shortage is their man moving abroad for seeking job and childers to school.

## **7.1 Limitation**

There were several limitations during the process of this study. Due to global pandemic and restriction to travel during COVID-19, field visits weren't possible, and interviews had to be conducted via phone call through Skype. This made the selection and identifying the right people to interview, challenging at times. Literature reviews and interview with farmers were the basis of the finding in this study. Finding wasn't presented back to farmers to confirm and gather feedback. So, there is no verification of findings.

## **8 Conclusion**

This study illustrates that the current situation of agriculture in Nepal is still substandard. Majority of small-scale farmers more likely from hilly region due to geographical difficulties are still practicing the traditional way of farming which has been passed on by their predecessor. Large-scale user, however, seems to be practicing new techniques and gradually evolving with the modern farming and technology. It has been discovered that large scale farmers are better users than smallholders. Lacking basic requirements such as quality seed, fertilizer, pesticide, and a proper irrigation appeared to be the prime factors affecting agricultural productivity as per our finding.

The study points an uneven distribution of aids/support by the government which has given an unenthusiastic impression of authority toward farmers. This study also finds evidence from the hills of Mid-Western Nepal of discussions occurring on the topic of the feminization of agriculture's complicated procedures. Because climate change is real and happening now, there is a need to identify and adapt to its effects in order to deal with the agriculture industry's vulnerability. The total effects of climate change on farming sector are expected to be detrimental in the long term, according to the findings.

It must be borne in mind that this study was only conducted on a small group of individuals within few districts over a short period of time. Further study is hence needed to determine the context of agriculture on a national level before generalised conclusions can be drawn.

## **9 Recommendation**

Because of lacking basic requirements agricultural production is not at its best, therefore Nepalese growers are unable to compete with Indian and other foreign producers. Therefore, the administration must assist farmer with furnishing basic requirements and enhance industrial growth.

Geography difficulties is challenging for farmers in Hilly and mountain region. Nepal government should invest and work on developing infrastructures such as roads and irrigation as the foremost priority. This will create an easy access between and across different regions providing more leverage to farming in performing agricultural activities.

For the growth of sustainable production, awareness programme educating farmers about soil fertility, modern techniques to deal with pests, quality seeds and fertilizers, and promotion of government support & policies reaching every level of farmer should be established. Subsidies should be given based on the volume of output to encourage producers to promote their products more easily.

It is necessary to chronicle developments at all levels, from the regional to the domestic. Certain results and evidence-based information may be generated through investigations, which can then be shared with the like working groups and immediately with farmers. Publishers and the media may play an essential role in introducing the topic into the farmers from every corner of the country (province, municipality, district) then through the homes.

## 10 References

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