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[ORIGINAL RESEARCH ARTICLE]

Nepal: Need for an Alternative Food System

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Abstract

The neo-liberal global food system is facing a huge criticism in recent years. It has some serious problems; two of them are the major ones. First, it could not provide enough and timely supply of food to the people of different regions and sections of the society. Another, it failed to cope with the changing socio-economic drivers of food system; such as migration and climate change. Therefore, searching for an alternative system to ensure food and nutrition security of the global humanity is going under different ways. In this respect, this paper critically evaluates the modern food system in Nepalese context. It utilizes two key perspectives; climate change and Global Value Chain (GVC) and argues that Nepal must find an alternative model of food system to ensure sustainable food supply and food security of the country. The paper primarily relies on secondary sources of data including journal articles, census and survey reports, and news articles.

Keywords: Modern food system, Food security, Climate change, Global Value Chains (GVCs), Sustainable agriculture

INTRODUCTION

Globalization -also known as a neo-liberalization- of food system is an important political phenomenon that broke out and reached to its climax in the last two decades of the second half of 20th century in the food system of the developing world. The salient feature of neo-liberalization of food system is to achieve “free trade” in agriculture led to an open global agricultural marketplace that favoured the food companies and fast-food chains dominated by

multinational companies of the developed world (Shiva, 2016). Nepal adopted neo-liberal policies in the mid-1980s and the policies had shown their impacts with the dismissing subsidies policies on buying fertilizers and host of other supports for production and distribution (Joshi and Khanal, 2020). Nepal was one of the first countries to embrace liberalization including free trade and break the boundary of the local economy to achieve economic growth and prosperity in the region (Khatiwada, 2005). However, the impacts of global food system backed by the neo-liberalization are surfaced over in the recent years in post COVID-19 situation in different countries and regions of the world. And, debates are already underway finding a better alternative of the global food system for sustainable food security in all regions of the globe.

In 2015, the global leaders had promised to end hunger and ensure food security by 2030 identifying it as a goal of sustainable development. They aimed 'to end hunger, achieve food security and improved nutrition, and promote sustainable agriculture' (UN, 2022). It was a challenging promise and they were aware of it. At the same time, they were also optimistic that with the right interventions, progressing on previous achievements, at scale, to put the things on track and fulfill the aim (FAO, IFAD, UNICEF, WFP and WHO, 2021). But, the situation is not heading to the desired direction. Followed by the outbreak of COVID-19 and subsequent restrictions on travel and transportation across the world had an extreme impact on the GVCs. It is reported that 'between 720 and 811 million people in the world faced hunger in 2020 – as many as 161 million more than in 2019' (FAO, IFAD, UNICEF, WFP and WHO, 2021). Furthermore, 'about 2.37 billion people did not have access to adequate food in 2020 – an increase of 320 million people in one year' (FAO, 2022). These figures show that the progress achieved in the several years has been erased in the last few years. Now the question is on the GVCs that the world had advanced in the last few decades and its inefficiency in the critical context of global humanity.

Examining the causes of the failure of the leaders to achieve their commitments, Nwuneli & Camp (2022) highlight two key problems related to the contemporary global food system. First, the system is highly problematic in the context of changing global climate. The conventional farming system consumes 70% of the freshwater of the planet, covers 40% of the planet's ice-free land, and is a leading factor 'driving deforestation' and 'extinction of biodiversity' upon which humanity is dependent (Nwuneli & Camp, 2022). Second, it has already failed to fulfil its primary goal to feed the global population (UN, (FAO, IFAD, UNICEF, WFP and WHO, 2021). Studies have already exposed the structural limitations of the food system (Nwuneli & Camp, 2022).

A serious concern here is that this fragility and failure of the global food system are more consequential for countries like Nepal. As social scientists and analysts have already warned, now it is essential and right time to face and tackle the serious structural limitations embedded in the global food system which relies on the growth model championed within the neoliberal economic frameworks (Tetart, 2019). This is also a right time to examine the limitations embedded in the food system and identify the better models of sustainable food production in all the socio-ecological regions of the country. This paper intends to pull the

attention of both academicians and policy makers to think in this direction and undertake more research and studies and contribute to construct the best policies on food security for Nepal's present and future generations.

MATERIALS AND METHODS

This is a review paper based primarily on secondary sources of data including journal articles, national census and survey reports, news, and others to examine the food system and its impacts on the sustainable food security of the country Nepal. To construct a critical argument on the food system, it utilizes two key perspectives; climate change and global value chain adopted from Nwuneli & Camp (2022). It argues that Nepal must find an alternative model of food system based on sustainable food supply for the sustainable food security of the country and its population of diverse regions.

Nepal: A country situation

Nepal is a landlocked Himalayan country of South Asia sandwiched between two giant neighbours; India in the south, and China in the north. Along with its specific geopolitical context, Nepal's special geography (agriculture land), its population (for e.g., growth and distribution), and its economic situation are major social and economic drivers of the country's food system. Changes in population density, out migration from rural area, urbanization and availability of agriculture workers in agrarian farming are some of the key drivers influencing changes in food supply, food habits and diet (Kennedy, Nantel, & Shetty, 2004).

The total land mass of the country is 1,47,141 sq. km. and around a quarter of its area is suitable for land based agriculture and food production. Topographically, there are three ecological zones: a) Mountain, (b) Hill, and (c) Terai. Each zone has its own distinct character of climate, physical features, landscape, and altitude. There is also differential distribution of agriculture land in each of the zones. The Mountain region lies at an altitude of 4,877 meters to 8,848 metres above sea level and makes up 35% (51, 817 sq. km.) of the total land area of Nepal (CBS, 2022). The Hill region (also called Mid-hills) lies at an 'altitude of 610 to 4,877 meters above sea level. This zone covers 42% (61,345 sq. km.) of the land area of Nepal (CBS, 2022). The Terai region, lies in the foot hills of Himalaya 'at an altitude up to 610 meters above sea level, is the most fertile and low-lying region of Nepal. It constitutes 23% (34, 019 sq. km.) of the total land area of Nepal (CBS, 2022).

The latest census of Nepal conducted in 2021 shows that Nepal's total population is 29.2 million (CBS, (2079) (BS)). Furthermore, it exposes that Nepal's population has increased by 150% in the last 4 decades. Another distinctive pattern of Nepal's population in relation to food security and sustainable agriculture is that its regional distribution is highly disproportional (Table 1).

Table 1

Nepal's Population Distribution in different Ecological Regions in Five Decades (1971-2021)

Year	Population	Growth	Pop.	Mountain	Hill	Terai

		rate	Density			
1971	11,555,983	2.07	79.0	1,138,610 (9.9)	6,071,407 (52.5)	4,345,966 (37.6)
1981	15,022,839	2.62	102.1	1,302,896 (8.7)	7,163,115 (47.7)	6,556,828 (43.6)
1991	18,491,097	2.10	125.6	1,443,130 (7.8)	8,419,889 (45.5)	8,628,078 (46.7)
2001	23,151,423	2.24	157.3	1,687,859 (7.3)	10,251,111 (44.3)	11,212,453 (48.4)
2011	26,494,504	1.35	180	1,781,792 (6.7)	11,394,007 (43.0)	13,318,705 (50.3)
2021	29,192,480	0.93	198	1778104 (6.1)	11748548 (40.2)	15665828 (53.7)

Source: (CBS, 2079 (BS)),

Large numbers of people are concentrated in Terai and urban centers (like Kathmandu, and Pokhara) of Hill regions. It is also reported that the average population density of the country is 198 persons per sq. km. in 2021. The concentration of population in Terai is more than 2 folds of the national average while the pattern is decreasing in other regions. According to the census report (2021), Terai has 461 persons per sq. km. While, hill and mountain have 192 and 34 persons per sq. km. respectively.

According to a country report of Ministry of Agriculture and Livestock Development (MALD), Nepal is doing agriculture in 21% of its total land mass (though the agriculture land covers 28% of the total area) that is 30,91,210 ha (MALD, 2022). Remaining 72% of the country's land mass includes forest, shrubland, grassland, water bodies and others. Out of the total arable land for conventional farming in Nepal, Terai, and Hill occupy around 56 per cent and 36 per cent respectively. In spite of the fact that Mountain region occupies 35 per cent of national geographic area of Nepal, it only has 8 per cent of temporary crop area. The topography, climate and soil types are not suitable for seasonal farming in the region.

The discussion of country's geographic and demographic situation and distribution of agricultural land shows that the divers of Nepal food system are highly volatile and dependent on various environmental and social factors. For instance, no region of the country is free from the changing population dynamics. Terai has experienced an increase in population, urban built-up, and an intensification in agriculture whereas Hill has increased the rate of out-migration. On the one hand it reduces claiming the agriculture land for housing and urbanization in the destination (in Terai) and so reduce the production land. On the other, it may reduce the labour availability in the place of origin (in Hill) of the migrants. In both ways, it could pose a challenge in country's food system. This volatility is equally relevant in the case of other divers of the system such as climate, food supply mechanism, and others.

RESULTS AND DISCUSSION

Food production and food import in Nepal

Nepal's food system is characterized by domestic production and import. Nepal produces food in a smaller fraction (in terms of the value of the food items) and imports the larger proportion from India and other countries. It produces most of the required quantity of cereals such as rice, maize, wheat, and others. According to Pokharel (2020) about 80% of the required cereal is produced in the country by individual small holding families. He has also claimed that the production of vegetables, potato, milk, sugar, and meat is satisfactory. However, the increasing rate of trade deficit for food and other agricultural inputs is alarming.

A review shows that there is about two third jump in the import of key agricultural products in Nepal from India between 2015/16 to 2019/2020 (Sharma & Pudasaini, 2020). Adhikari et. al., (2021) examine that in the same period the food trade which shows that Nepal's trade deficit has increased 16 times in a period of one decade between 2007/08 and 2018/19. They have shown that 'in 2007/08, the trade deficit in food products in Nepal was NRs 11 billion, but it increased to Rs 173 billion in 2018/19' (Adhikari et. al., 2021). The trend of purchasing agriculture inputs for the food that the country produces as well is also in the similar condition. Agriculture statistical report of Nepal (2018/19) shows that the country imported 424,333 kgs of vegetable seeds worth Rs 553.08 million and 4.22 million kgs. of maize seeds worth Rs 393.16 million (MALD, 2022). Similarly the imports of chemical fertilizer, pesticides, tools and equipment and other inputs is also increasing every year. What happens if the other countries do not send food to Nepal? It is only the remittance sending by the millions of youths working in Arabian and East Asian countries the country is able to buy food (Sharma & Pudasaini, 2020). But the heavy reliance on import for the basic requirement of the people; like food, is a serious threat to country's political future as well (Lama, 2019).

Nepal's specific geopolitical situation has already shown its brutal faces after the trade embargo and cross-border restrictions (such as the blockades of 1989 and 2015) by its southern neighbour, India. The reason is that Nepal's supply chain is weak and there is monopoly of Indian traders and businessmen. A bitter reality is that Nepal can turn into a hunger at any time if Indian suppliers stop sending food. If the food chain coincides with the geo-politics, it does not take long time to destabilize Nepalese food market and the whole supply chain of the country. So the question of sustainable food system for Nepal is not only a question of food security but also a question of its economic and political security. This is why the food system that brings the stuffs in our table matters (BBC, 2021). The following sections critically evaluates the food system and the policies that Nepal has adopted from two critical perspectives; *Climate change* and *GVCs* and underscores the importance of sustainable food system based on agro-ecology (Nwuneli & Camp, 2022).

Climate change and Nepal's food production

Climate is a major driver of Nepal's food production system in 21st century. The climatic factors like annual rainfall, natural hazards, drought, fire, and others influence both quantity and quality of food production. The traditional farming practice, the most dominant mode of farming system in Nepal, is highly dependent on annual precipitation. Nepal produces rice, maize, and other crops in the summer season. In winter it produces wheat, barley, potato, and others. In both seasons the amount and the intensity of the rainfall is detrimental for food production. If there is high rain in the summer, Terai gets flooded while it is susceptible to drought in the winter. Similarly, the Hills and Mountains face landslides in the rainy season and drought in the winter.

The drought of 2008/09 is an important case to understand the relation between climate and food production in Nepal. Winter (Dec-Feb) is the driest season with 3-5% of national annual rainfall of more than 300 mm. In the winter of the year, the country received less than 50% average precipitation. The drought in the year had a significant impact on the winter crop production. An assessment had shown a national decrease in wheat and barley production (the two major winter crops) of 14.5 and 17.3 per cent respectively, when compared to the previous year (NeKSAP, 2009). It had further suggested that the overall production in the Mountain, Hill, and Terai districts had decreased by 40 per cent, 25 per cent, and 10 per cent, respectively in the same year (MoAC, WFP, FAO, 2009).

There is another climatic variable related to precipitation which has direct relation with the food system of the country. It receives 80% of its annual rainfall just between May to September. It causes landslides and soil losses in the mountain and hills, and floods in the plain. The loss of crop and production potential with the heavy loss of soil is another challenge posed by the climate change on the country's food system. It is estimated that soil losses range from 5-10 tones and 40-200 tonnes per hectare on well-managed land to degraded land respectively (NeKSAP, 2009). This is a huge loss of the production potential of the land. This climate variable gets couple with the socio-economic drivers and exerts severe climate impacts. The country has 47.7% marginal and small holder farmers having 0.1 to 0.5 ha of landholdings, are largely affected by recurrent and severe droughts, erratic and unpredictable climatic adversaries causing detrimental effects on food production (Sharma & Pudasaini, 2020). Other effects of climate change in Nepal included increased outbreaks of insect pests, weeds and crop diseases, and decline in soil quality.

So, it is the country's given condition at present that the largest proportion of Nepal's food production system has to cope with the climatic factors. There are also ecological, social, and cultural variations in the country which distribute climate change impacts differently across the country. And the people's capability and their traditional knowledge and practices to respond to the impacts also vary from one section and group of the society to others.

Now a critical observation is required in Nepal's food system in relation to climate change. It is a fact that climate change is a global phenomena. However, the climate impacts and their consequences are local; local

communities and individual families have to suffer more from the impacts. Particularly, the marginal communities and poor population have higher chances to have adverse effects. So the question is where Nepal should position in this global phenomenon. The important point to note here is to approach climate phenomena and approach global climate policy framework from local perspectives so that the sustainable food security is ensured. On the contrary, policies on climate change adopted in global and even in national scales can hardly fit into the local contexts of various ecological regions and social segments of Nepal. Therefore, it is necessary to review Nepal's growing reliance on food import and revisit country's own food system.

Nepal's position in GVCs

Global value chains (GVCs) is another and equally important driver of Nepal food system after climate change. The global food system in the 21st century has evolved into a global food trade system. The system builds a singular chain of relation between food producers and consumers across the countries, which is called GVCs. The intended objective of the GVCs is to improve the returns to farmers and food makers along the value chain by using inputs from other countries to produce agri-food products, and having access to foreign consumers through these chains (OECD, 2022). However, critics argue that the system of GVCs is the result of the gradual evolution of neo-liberal global agro-industrial development model that combines ecological 'intensification' and technological mastery over the diversity of nature (Tetart, 2019). Nepal's experience with GVCs is a proof to support this criticism. It is also an example of the failure of this neo-liberal model of agriculture development that has turned the country from food self-sufficient to net food importer in the last few decades.

Nepal's food system had already begun to get connected with the global routes since the mid-1970s following the success of the 'Green Revolution' in India. While, the solid connection with the international food trade established in the 1990s following the Treaty of Trade and Transit, 1996 with India (Joshi and Khanal, 2020). The treaty left India not just as the major trading partner between the countries but also as a single major player in the GVCs of Nepal. Consequently, Nepal lost the game and continuously increased its import from India.

There are many examples to prove the Nepal's defeating position in the GVCs. Two examples of crop failure and farmer's protest for fair price are crucial to mention here. These are drawn from the national news reports published in The Himalayan Times in 2019 and in 2018. In 2019, there was a news on a new rice variety called 'Garima' (Deuba, 2019). Farmers waited for 3 months after planting with providing all the required inputs but the paddy plants did not bear seeds. The news broke out in the national media and government did investigation of the case. The report came out that it was the hybrid variety of paddy seed produced by an Indian company and distributed by a Nepali company. The paddy planted in about 35000 ha. was lost and no farmer was compensated. No government decision came out charging penalties to the

company that produced and distributed wrong paddy seed. This is a bitter example of Nepal's losing position in the GVCs.

Second example is related to the farmers protest in Kathmandu. In 2018, vegetable farmers from all across the country had protested against the government to ensure the fair price of their products in Kathmandu (THT, 2018). They had raised the issue that they were failing to get the right price due to various reasons. First, the vegetable produced by the local farmers could not be delivered to the market on time and there was a huge loss by rotting, and getting damaged. Second there are middlemen to collect the vegetables from the farmers who monopolize the price. Third, there was high supply of Indian products which was low in price. For these reasons farmers were not getting fair price. It is clear that consequences of the GVCs have direct effects on the price of the crops that the local farmers produce. It provides reason why Nepali farmers cannot compete with the products imported from India.

Another scenario that reflects Nepal's position in GVCs is the condition of Nepali kitchen. In the recent decades the food habits and the preferences of *Nepalis* have gone drastic changes. They eat other than the staple foods and consume more vegetables, fruits and meat imported. Similarly, their taste has shifted to packaged and junk food mostly produced in foreign factories. There are frequent discussions among Nepalese families 'see the *Nepali* kitchen, you will know if there is anything we have not imported'. Until three decades before, farmers from hill to plain used to grow the food grains like rice, wheat flour and lentils on their own. But, now they rely upon import for those food items as well. This scenario shows that the country's reliance on import is more than assumed. Just in the gap of last three decades, Nepal has turned from self-sufficient in food production to net food importer country (Adhikari et al., 2021).

These three examples in relation to the food production, food price, and the food habits of *Nepalis* put Nepal in the defeated position in the GVCs of the food system. In the present context there is no effort seems to be taken in the near future either from government or from individual farmers to avert or change the tendency of food import and influence the value chain. It does hardly make any sense that on the one hand half of the country's population is working in agriculture and food production, and on the other there is no hope of the situation of food security in the near future. So the attention must be given to the structural reasons of the food system and food governance that has failed to address the new challenges (Beck, 2006). If Nepal continues to follow this value chain, there is no way to come out from this 'import trap' and suffer under the constant threat of food insecurity.

CONCLUSION

Following the discussion on country's general geographic, demographic, and economic (agriculture) characteristics this paper discusses on Nepal's food system. It applies two major perspectives; climate change and GVCs to assess the system. The discussion shows that Nepal's food system is highly susceptible to the effects of climate change and it is in the disadvantaged position of GVCs. The annual rainfall, draught, and other natural hazards are frequent throughout the

country. Methods and capacities to respond the climate impacts also varies from one region of the country to the other. Likewise, the food supply chain is more interconnected with the international/global food system. There is a paradox in Nepal's food system. On the one hand Nepal's largest proportion of the population is involved in agriculture for food and employment. On the other, the country is increasing the import of food required to feed its people and agriculture inputs for the food it produces every year. Therefore, the situation of food security in Nepal is critical and demands serious attention to review the existing food system based on neo-liberal import based. It has already been proven that the neo-liberalized global food system could no longer ensure food security for the country like Nepal with diverse climatic and cultural conditions. So, it's a time rethink the existing system. How could it be fair to benefit international companies encouraging GVCs in the cost of risking the environment and lives of the people in the rural and marginal areas of Nepal? It cannot be fair. So, Nepal has to find an alternative model of sustainable food system that suits its own conditions.

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