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Pathways for building resilience to COVID-19 pandemic and revitalizing the Nepalese agriculture sector

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ABSTRACT

The COVID-19 pandemic has seriously affected the agrarian and remittance-based economy of Nepal. Dwindling the employment opportunities and disrupting the food production and distribution channels, the pandemic has further exacerbated the unemployment and food insecurity situation. Providing employment opportunities and livelihood support to pandemic-affected households has, therefore, become increasingly challenging but a necessary priority to the government. Therefore, to build a sustainable and resilient economy that generates employment and enhance agricultural productivity, revitalization of the constraints-ridden agriculture sector is essential as it still contributes 65% and 24.3% to employment and Gross Domestic Product, respectively. Against this backdrop, this paper presents major pathways and priority actions to rebuild and revitalize the growth of the agricultural sector in Nepal while addressing the challenge posed by the pandemic to generate employment and income-earning opportunities. We emphasize the need for scale-appropriate strategies, programs and plans to build resilience of production, supply chains, and agribusiness systems. We conclude that the government should initially focus on targeted priority interventions to the pandemic-affected farmers and agro-entrepreneurs, and strengthen their productive, competitive, and adaptive capacities. These need to be followed by long-term strategies such as development of agricultural infrastructure, innovative policies, legal instruments, and institutional arrangements, including strengthening of the recently established local governments in line with the federal structure of Nepal.

1. Introduction

COVID-19 (or SARS-CoV-2) is a global pandemic of enormous proportion that has severely affected human lives and the global economy (UNDP, 2020b). The virus has spread to over 213 countries and territories infecting more than 65.1 million people and killing over 1.5 million by 3 December 2020 (Worldometer, 2020). Lockdowns and mobility restrictions have been the common responses to the pandemic, but they have disrupted production, input and output markets, supply chains, global trade, travel, and tourism; delivering an enormous shock to the global economy in 2020 as indicated by early estimates of 495 million job losses and 5.2% contraction on global output (ILO, 2020a; World Bank, 2020b).

The health and economic impacts of the pandemic have been severe in countries that have weak health systems and rely heavily on trade, tourism, and remittances (World Bank, 2020b). Like many other severely affected countries, Nepal has been experiencing health and economic impacts of COVID-19. Over 237,589 infections and 1551 deaths have been reported in Nepal by 3 December 2020 (MOHP, 2020) and the country has entered a second wave that is more severe than the first (World Bank, 2020f). COVID-19 and associated nationwide complete (from 24 March to 21 July 2020) and partial (after 21 July) lockdowns have severely affected the Nepalese economy through multiple channels: a) the collapse of tourism, trade, and hospitality sectors, affecting over one million jobs; b) loss of foreign jobs and return of migrants, affecting remittance earnings; and c) disruption of production

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and supply chains of the industrial and agricultural products, affecting the livelihoods of millions of people (Baniya et al., 2020; ILO, 2020b; World Bank, 2020c).

The economy-wide impacts of COVID-19 in Nepal is manifested in the estimated decline in Gross Domestic Product (GDP) growth from 7% in 2018/19 to 0.2% in 2019/20 (World Bank, 2020f), which, in turn, is expected to cause increased vulnerability to poverty for one-third of the population living just above the poverty line. The collapse of the service sectors resulted to 31.5% of the total workers (41% women and 28% men) losing their jobs mainly in the informal sectors (UNDP, 2020a).

The impacts of COVID-19 on the economy resulting from the decline in labour out-migration and remittance earnings is substantial. Globally, Nepal ranks as the fifth-highest remittance recipient country after Tonga, Kyrgyz Republic, Tajikistan, and Haiti (IOM, 2020). Since the 1990s, labour migration to Gulf countries and Malaysia has been a major livelihood strategy of Nepalese households (Kapri and Ghimire, 2020; Maharjan et al., 2013; MOAD, 2015; MOLESS, 2020a). About 4 million people have formally left the country for foreign employment since the last decade (MOLESS, 2020a). Informally, a large number of Nepalese also migrate to India each year for seasonal jobs (IOM, 2019; MOLESS, 2020a). As a result, remittances accounting for more than a quarter of the GDP since 2012 (e.g., 26.9% in 2019), has been rapidly transforming the agriculture-based economy into a remittance-based economy (World Bank, 2020d), and significantly contributing to poverty reduction (Cosic et al., 2017; Wagle and Devkota, 2018). However, a significant number of Nepali migrants have lost their jobs because of the pandemic and many have been forced to either go on unpaid leave or return home. About 20% of the Nepalese abroad are estimated to be at risk of being unemployed due to this pandemic (Baniya et al., 2020). Similarly, a large number of seasonal migrants to India have lost their jobs and returned home (Baniya et al., 2020). Nepal's Foreign Employment Board estimates that over 0.4 million migrant workers are expected to return home from 37 different countries. This figure could go up to 1.3 million if the returnees from India are included (Baniya et al., 2020). Due to such losses in foreign employment, the World Bank (2020a) estimates a 14% decline in remittances in Nepal in 2020 alone, creating short- and long-term negative impacts on the economy, including increases in poverty incidence and unemployment rate in the country (see supplementary materials, Appendix – 1 for a detailed account of pre-COVID-19 historical trends on the sectoral contribution to GDP; overseas migration and remittance inflows; and the growth rate of economic sectors, including agriculture).

As agriculture is one of the major pillars of the Nepalese economy with its significant contribution to GDP (24.3%), employment (65%) and a major source of livelihoods to about two-thirds of the population (28.6 million) (World Bank, 2020d), the impacts of COVID-19 on the economy, through disruption in agricultural production and supply, would also be substantial. Moreover, the agriculture sector is plagued with low productivity growth in comparison to other south Asian countries due to structural constraints related to infrastructure, policy, institutions, and other factors of production (MOAD, 2015; Anik et al., 2017; Liu et al., 2020). Nepal's agricultural production has been decreasingover the years, whereas its food imports, particularly from India, and agricultural trade deficit are increasing (Kumar, 2020; Sharma et al., 2017).

The pandemic has further affected this sector by disrupting the supply of agricultural inputs (i.e., fertilizer, seed, feed, machineries, farm labour and extension services) and outputs (agricultural products) to and from farms due to lockdowns and other restrictions, thereby affecting the agricultural production systems and supply chains (Adhikari et al., 2021; Mercy Corps, 2020; WFP, 2020b; World Bank, 2020c). To exacerbate matters, the disruption in supply of agricultural products has resulted in sudden price hikes, increase in black markets, and product shortages in local markets (Adhikari et al., 2021; Poudel and Subedi, 2020; World Bank, 2020f). It is estimated that Nepal lost around 19 billion Nepalese Rupees (1 US$ = 119.6 NPR in May 2020) in the agriculture sector by mid-May 2020, and this figure is expected to rise further with the protraction of the current crisis (NPC, 2020a). Furthermore, it is projected that agricultural growth rate will decline from 5.05% in FY 2018/19 to 2.5% in 2019/20 (CBS, 2020; NRB, 2020). The World Food Program (2020a) predicts that Nepal would be among the hardest-hit countries by the pandemic due to low domestic income, and heavy dependency on remittance income and food imports. Therefore, ensuring food and income security through improved agricultural production systems, supply chains and agribusiness systems, while creating new employment opportunities has become a major challenge for the government.

Addressing these economic challenges of the pandemic through green growth has brought the agriculture sector into the forefront owing to the limited scope of other sectors (e.g., tourism, hospitality, and industrial). The sector is directly related to food security and has a higher capacity for creating mass employment opportunities. A study revealed that growth in agriculture, in general, remains three to five times more effective at reducing poverty than an equivalent amount of growth generated in other sectors (Christiaensen, Demery, and Kuhl, 2011). However, the sector is also exposed to long-standing constraints that have impeded its growth, productivity and competitiveness. Hence, despite its potential, it is challenging for the agriculture sector to effectively respond to the food security and employment challenges created by the pandemic in its current form. Therefore, building resilience and reinvigorating the agricultural production, supply chains, and agribusiness systems, while ensuring increased food security and improved livelihood opportunities to the people, are crucial for short-, medium- and long-term economic growth. Hence, the underlying question is how to revitalize the agriculture sector to make it resilient to facilitate economic growth *vis-a-vis* addressing the food security and employment challenges created by the pandemic?

Against this backdrop, this paper aims to present potential pathways to revitalize the Nepalese agriculture sector while addressing the challenges associated with the COVID-19 pandemic. We first present a brief summary of the constraints faced by the sector, and then discuss pathways for building resilience and reinvigorating the sector in line with evolving sectoral policies, plans, and programs.

2. Major constraints of the agriculture sector in Nepal

Although the agriculture sector is the major employment provider and GDP contributor in Nepal with its significant role in reducing poverty, stimulating economic growth, and inducing multiplier effects on other economic sectors; it has been the least productive sector in the country (Wagle et al., 2012). Various factors have hindered its growth in Nepal, including subsistence-based farming; inadequate access to irrigation and inputs; limited access to credit, market and market information; market and production risks; lack of proper storage facilities and inefficient product handling and packaging; lack of research and extension; poor technology; supply chain inefficiencies; and less competitive product prices compared with India (Wagle et al., 2012). Ever since the first five year plan (1956–1961), the government has made significant efforts to develop this sector, yet the returns have not been substantial (Wagle et al., 2012). After the adoption of the new constitution on 20 September 2015, Nepal was transformed into a federal democratic republic with three levels of government: central (federal), provincial (x7) and local (x753) (Shrestha, 2019). This transition from a unitary to a federal system of governance has brought changes in institutional arrangements and authorities in many sectors including agriculture, as well as challenges in formulation and enactment of relevant laws, and development of policies and guidelines including institutional arrangements at all levels (Shrestha, 2019). In a nutshell, the agriculture sector in Nepal is constrained with various long-standing structural and institutional factors (see Box 1; for details see supplementary materials, Appendix - 2) that need to be appropriately addressed to improve its productivity, competitiveness, and

Box 1
Structural, institutional and policy challenges of the agricultural sector in Nepal.

i. Small and fragmented land.
ii. Land degradation, increasing land abandonment and inappropriate use of agricultural land.
iii. Poor and unreliable irrigation services.
iv. Low priority on agricultural research and extension, and limited services and linkages with agricultural research and development (R&D) agencies.
v. Lack of timely supply of quality inputs (including seeds, chemicals and fertilizer).
vi. Poor access to scale-appropriate agricultural mechanization services.
vii. Limited access and use of agricultural credit and insurance services.
viii. Inadequate agricultural processing/value-addition services and markets/marketing information.
ix. Middlemen trap in agribusiness affecting producers and consumers' welfare.
x. Inadequate capacity of local governments in agricultural development planning and implementation, and lack of evidence-based actionable policies, programs, legal instruments and appropriate mechanisms for effective service delivery.

attractiveness. The pandemic has further intensified the need to address these constraints to bolster local economy and generate employment opportunities for youths.

On the other hand, despite agriculture and food-related services and operations being designated as essential during the pandemic, the sector has been impacted through the enforcement of containment measures, such as lockdowns causing disruptions in agricultural production, supply chains and agribusinesses. The disruption on import of chemical fertilizers from India and other countries is a prime example that has affected rice production and, in turn, the food security situation in the country (Adhikari et al., 2021; Prasain, 2020). The lockdown also hampered the supply of other agricultural inputs such as seeds, pesticides, fingerlings/hatchlings, poultry chicks, livestock hormones, medicines, feed and other raw materials and the timely execution of various agricultural operations. Similarly, supply chains of perishable commodities such as vegetables, poultry, dairy, fish, fruits, and (cut) flower were adversely affected due to disrupted supply and contracted demand (NPC, 2020a; UNDP, 2020a). In addition, agricultural extension services have been severely affected due to lockdowns and the limited number of extension staff available at local levels. The demand contraction, supply disruption, shut down of domestic agro-based industries, and stringent sanitary and phytosanitary (SPS) measures enforced by foreign countries on exports have also largely affected the agriculture sector, with agricultural growth rate expected to drop by 50% in 2020 alone (NPC, 2020a).

3. Potential pathways to build resilience and revitalize the agriculture sector in Nepal

The importance of locally-grown economy has been a lesson of COVID-19 pandemic. Reflecting on the challenges imposed by the pandemic, Nepal has an opportunity to re-build its economy by refocusing on the agriculture sector to generate employment and to improve food security in the country. A precursor, however, is the imperative to address the constraints, develop resiliency of the agricultural systems, and reinvigorate the sector through corrective actions. Moreover, developing the agriculture sector, has high multiplier effects and can therefore stimulate economic growth (Loizou et al., 2019; Devkota, 2020).

To develop resilience and revitalize the agricultural sector, a holistic agricultural systems-based strategic approach is needed that targets farming systems level (production) activities in conjunction with agribusiness systems level (whole supply chain) strategies. Pathways and priority actions to build the resilience of the sector and revitalize it to improve food security and sustainable livelihood opportunities are discussed below.

Pathway # 1: Setting-up and mobilization of appropriate mechanisms to rapidly build resilience.

Given the uncertainty associated with the control of COVID-19, appropriate measures should be adopted quickly to minimize the impacts in the agriculture sector. As a first step, the central government, in consultation with provincial and local governments, farmers and the agribusiness sector, should establish a dedicated task force to assess the sectoral impacts and suggest response mechanisms under the coordination of the Ministry of Agriculture and Livestock Development (MOALD). The task force should be mandated to monitor ongoing developments and identify both positive and negative impacts in the sector (farming systems level and broader agribusiness level), develop response plans, and take relevant measures to strengthen the agricultural input and output supply chains. For example, the "agriculture ambulance" to transport and market agricultural products (e.g., Province 5 - Lumbini); interest subsidy on agricultural loans taken by pandemic-affected farmers (e.g., Province 2); and cash grants to farmers if they farm existing fallow lands (e.g., Gulmi district in western hills) are some worthy initiatives and responses from the governments (Adhikari et al., 2021), which need to be adapted and expanded to other areas based on their efficacy. Other response strategies could include interventions that improve local food production and supply systems, and create greater livelihood opportunities to the rural poor, women and smallholders.

Priority actions:

i. Establish Coordination and Response Committee (CRC) at the central, provincial, and local levels and mobilize them to monitor and assess field-level impacts, build coordination, and undertake appropriate measures promptly to minimize the negative impacts of the pandemic.
ii. Provide relief packages, such as cash transfers including subsidized agricultural inputs, subsidy on loan interest and other incentives (such as tax exemption or interest rebate) to farmers and agro-entrepreneurs to quickly build their resiliency.
iii. Strengthen the agricultural supply chain via innovative marketing (e.g., promotion of direct marketing through mobilization of local markets/agri-product collection centers including farmer groups/agricultural cooperatives, and agri-input suppliers) and develop instant agro-advisory service mechanism at local level.
iv. Create an environment for safe agribusiness operations (e.g., awareness-raising, development of precautionary health protocols/guidelines, digital business, hygienic practices).

Pathway # 2: Land, labour and agricultural project banking.

Recognising the challenge of small and fragmented land holdings and lack of land use plans, the Nepalese government has recently introduced a land banking concept at the local level and plans to establish 300 land banks by 2020/21. Legislative support for this provision was introduced in the new Land Use Act (2019), which also classified land into various land use zones (LUZs) with penalties for not using the land in accordance with its suitability and specifications (Chand, 2019; Samriddhi Foundation, 2020). Through land banking, smallholdings and/or fragmented land parcels belonging to various households can be pooled together and rented out for commercial agriculture, which could attract landless and households with small landholdings to engage and invest in the agriculture sector, particularly returnee migrants and the youth. The lending of such land can be linked to agricultural inputs, technology, market, credit and insurance, and subsidy services from local governments to facilitate commercialization. However, there is an urgent need to develop institutional mechanisms and capacity to develop, monitor, and regulate land use plans and land banking at local level for smooth implementation of land banking (Chand, 2019).

Local governments, with the support of related institutions and experts, can develop potential agricultural/agribusiness projects based on comparative advantage of project locations to generate income and employment opportunities. Such projects could: a) focus on agricultural diversification by utilising local and modern technologies (i.e., organic farming, protected agriculture, agro-tourism), b) support in moving from low-value to high-value products (e.g., niche and market-specific targeted products, value addition, processing, packaging and quality certification), and c) fulfil local or domestic market demand and substitute imports. Such agricultural projects could be linked to land banks to invigorate local agricultural innovations and value chains through capacity building of farmers, agricultural cooperatives and agribusinesses.

Local governments should also develop a labour bank database - with a focus on youth and returnee migrants – that captures interests, skills and experiences of unemployed. This can be done as a part of or in conjunction with establishing Employment Service Centres as per the Prime Minister Employment Program, which was initiated in 2019 with the objective of providing short-term employment (minimum 100 days of work) or a subsistence wage to the eligible unemployed (MOLESS, 2020b; World Bank, 2020e).

Priority actions:

i. Develop local-level land and labour databases (digital) and develop plans for their appropriate use.
ii. Devise and implement appropriate policy, plans, and legal measures for land banking as well as proper utilization of fallow and underutilized lands.
iii. Stimulate rural economy by utilising local resources and knowledge and by promoting large-plot farming, collective farming, and contract farming, including *One Village - One Product* and *One Municipality - One Product* approaches in line with market demands. Such practices have been found effective in contributing to rural development in many countries (Thanh et al., 2018).
iv. Develop targeted plans and programs based on labour bank data and provide skill development training and credit support to unemployed to improve their employability and income-earning opportunities from agribusinesses with a focus on high-value products, and protected agriculture, agro-tourism and food processing businesses.

Pathway # 3: Enhancement of the productive, competitive, and adaptive capacity of smallholders.

To mitigate the economic impacts of COVID-19 and revitalize the agricultural sector, the constraints highlighted in Box 1 need to be addressed appropriately to enhance the productive, competitive, and adaptive capacity of smallholders. Despite these long-standing constraints, the pandemic provided an opportunity to critically analyse and address the issues to revitalize the sector by focusing on smallholders who are disproportionately bearing a higher burden of the pandemic (Adhikari et al., 2021; Guido et al., 2020; FAO, 2020).

Priority actions:

i. Strengthen public-private-community partnership mechanisms for development, multiplication and efficient supply of quality seed/sapling, and animal breed (e.g., breeder/source seed exchange between public research centers and private seed companies, contract seed production between public/private seed companies and seed producer groups, partnership between animal breeding centers and nucleus/herd multiplier groups, promotion and regulation of resource centers and nurseries, matching grants to seed and breed firms/companies).
ii. Establish an efficient procurement and distribution system (shortening the existing lengthy administrative process, diversifying import entry points) to ensure timely and adequate supply of fertilizers.
iii. Establish market infrastructures, such as market yard, store/warehouse, cold storage, collection centres at municipal and provincial levels, and promote collective or cooperative and digital marketing including dissemination of product price and market information.
iv. Develop innovative and diverse agricultural loan products and expand outreach to rural areas with improved client services. In addition, strengthen the Agricultural Development Bank Limited to function as a specialized bank that exclusively works in the agriculture sector.
v. Emphasize market development and strengthen agricultural inputs and outputs supply chains at the local level, either through the establishment and promotion of collection centres or the Three Window Shop to provide services related to agricultural inputs, product marketing, and agricultural extension.
vi. Reduce the risk associated with marketing/price, and production of agricultural products through effective implementation of the support price schemes/policy and agricultural insurance services.
vii. Promote small irrigation schemes and custom hiring centres for improved access to irrigation and scale-appropriate farm machinery.
viii. Regulate the unnecessary dominance of intermediaries (middlemen trap), artificial price hikes, and the uncontrolled flow of poor quality products from neighbouring countries.
ix. Support farmers with output-based and credit-based (interest subsidy) subsidy for increasing agricultural production including agri-product transportation subsidy for remote areas.

Pathway # 4: Institutional development and strengthening.

With the implementation of the new federal structure, restructuring of agricultural institutions at the national, provincial and local level has been happening at the same time of the COVID-19 pandemic. In the new system, most of the agricultural development activities lie with the local governments, while large-scale programs and policy development fall under the provincial and central governments (Devkota and Thapa, 2019; Shrestha, 2019). During the transition to new institutional structure, in parallel with the COVID-19 crisis, institutional inconsistencies including conflict of power, authorities and jurisdiction are being witnessed (Devkota and Thapa, 2019) that require an urgent need for harmonised governance structure across the three tiers of governments with clear mandates, power and authority.

Two recent acts (Land Use Act, 2019, and Right to Food and Food Sovereignty Act, 2018) have given prominence to agriculture sector development in Nepal, but relevant policy and legal instruments, operational (not aspirational) plans under these legislative instruments are lacking, which are urgently needed to design, implement, and regulate agricultural programs (Amnesty International, 2019; Samriddhi Foundation, 2020). In addition, the Agricultural Development Strategy (ADS, 2015–2035), a key policy document of the agriculture sector, did not envisage the federal governance structure (Devkota and Thapa, 2019) and therefore, it requires harmonization with the new governance structure.

As a response to COVID-19 and the limited extension services, Community Agricultural Extension Service Centres, as envisioned by ADS, need to be emphasized at the local level to facilitate agricultural extension and related services. Currently, agricultural research, extension, and education are largely working in an independent manner - these need to be integrated to strengthen coordination and develop synergies in addressing the problems hindering agricultural development in the country (Timsina et al., 2018; Jaishi, Nepali, and Shahi, 2018; Jaishi et al., 2018).

Priority actions:

i. Develop risk preparedness and response plans for the agriculture sector for sudden shocks such as the COVID-19 pandemic. For instance, establishment and operationalization of the food bank, community seed bank, and buffer stock of fertilizers would be vital in reducing vulnerability in times of crisis and building resilience (Chhetri, Basnet, and Dhungana, 2020; Adhikari et al., 2021).
ii. Strengthen local governments with sufficient and competent human resources as well as financial resources along with promoting farmer call centres, and other information and communication technologies (ICT) to increase access of farmers to technical services.
iii. Institutionalize public agricultural research, extension, and education agencies to enhance synergies under the common umbrella of the Ministry of Agriculture and Livestock Development and strengthen the capacity of agricultural R&D organizations through increased investment, and infrastructural, institutional and human resource development. This could include upgrading public research centres, farms, and resource centres as Centres of Excellence and encouraging the establishment of agribusiness incubation centres and improved public-private-community partnerships for agricultural development.
iv. Develop a robust mechanism to promote coordination, cooperation, and support among the three tiers of government and other stakeholders (e.g., private sector, agriculture industry, agriculture bank) to address immediate pandemic-related impacts as well as long-standing challenges.
v. Establish a Policy Research and Analysis Institute as stated in the Fifteenth plan to carry out policy research and analysis (NPC, 2020b) and provide strategic guidance on immediate and long-term agricultural development issues.
vi. Develop an umbrella agricultural legislation (Act) to regulate and enforce appropriate agricultural interventions with a strong statutory base.

4. Conclusion

The COVID-19 pandemic and the associated lockdowns have affected the economy and the agriculture sector in Nepal, in particular, the households that are heavily dependent on agricultural income and remittances. Agriculture is a major driver of the Nepalese economy and a major source of livelihoods for about two-thirds of the population, but its growth has been constrained by several structural, institutional, and policy challenges. Besides, given the much lesser scope of other sectors to generate immediate employment opportunities during the pandemic, a revitalized agriculture sector has the potential to generate employment and enhance productivity. Building resilience and reinvigorating this sector through various pathways and actions would better utilise land and labour, improve food security and address the challenges imposed by the pandemic. Therefore, as argued in this paper, revitalization of the Nepalese agriculture would require the strengthening of the productive, competitive, and adaptive capacities of farmers, agribusinesses, and local governments; and development of infrastructural, institutional, policy and legal instruments. The proposed pathways and priority actions would be vital in shaping the future of the agriculture sector in Nepal while addressing short-term COVID-19 specific challenges.

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Declaration of Competing Interest

None.

Appendix A. Supplementary data

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