

Emergency Animal Health Management during Natural Calamities and Disasters in Nepal

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INTRODUCTION

Ecologically, Nepal is divided into three regions namely; the Terai (23%), the Hills (42%) and the Mountains (35%) (CBS, 2013). Agriculture sector contributes 26.5% in GDP, livestock and fishery contribute 29% of agricultural GDP and it is about 11% of total GDP (CBS, 2019). Livestock forms an integral part of agriculture system in Nepal. Large indigenous population of cattle, buffaloes and goats are there with less production per animal. There are 7.3 million cattle, 5.2 million buffalo, 12.28 million goat 0.8 million sheep, 1.43 million pigs, 69,588 yaks, 59,822 horses and 75.7 million fowls in Nepal. There is production of 21, 68,434 MT of milk, 386 thousand MT meat and 1,760 million eggs in Nepal (MoALD, 2019).

In poultry meat, Nepal is self-reliant. The prices of chicken meat however remains fluctuant which decreased significantly during Covid-19 pandemic because if reduced consumption triggered by fear among the consumers. Chicken contributes to about 20% of meat consumption in Nepal. Compared to meat, egg market remained as usual which fetched satisfactory prices even during the prolonged lockdown period in 2020 March to August. Nevertheless, movement of chicks, birds and live animals suffered great hurdles especially during the initial periods of lockdown. There was lower impact in goat and buffalo production but consumption was decreased due to COVID-19 related economic impacts. Nepal has 12.5 million goat population and 3.3 million goats are slaughtered every year in Nepal to meet public demand for goat meat. The goat production is doing well even in adverse situation. Nepalese people prefer goat meat and it contributes to nearly 20% of meat consumption in Nepal. Buffalo meat contributes over 50% of meat consumption in Nepal. Pork contributes about 10% of meat consumption in Nepal (MoALD, 2019). There is 95,000 MT of fish production in Nepal and around 9,000 MT are imported from India and abroad. There was some difficulty in transportation and marketing of fish during Covid-19 lockdown period. There is restriction of rearing, importing and transportation of live cat fish in Nepal. Farmers have problem of getting animal feed on time and selling of their products on time.

In term of butter storage there should be 2,000 MT storage facility near by city areas to cope with increase production. Ware house for Skim Milk Powder (SMP) shall be in place which will cater up to 3,000 MT. There is lack of poultry, pig, goat and buffalo slaughter house facility in the country. The cold storage facility for meat storage shall be in place which will be up to 10,000 MT capacity. The facility largely caters the demand of frozen chickens. Covid-19 pandemic effects largely on production of meat, milk, eggs and their products. Marketing and distribution chain become defunct. At present Nepal becomes self-reliant in milk and basic

milk products. Formal sector carries 25% stake in marketing of milk in Nepal. 30% milk distribution is from informal sector, where as 45% milk is consumed in household in rural areas. Pasteurization of milk, product diversification can be carried out in formal sector. In the lock down period collection of milk in formal sector increases dramatically even though it is dry period of milk production in Nepal. It leads to pile up of skimmed milk powder and butter in dairy industries. Nepal is able to export butter to Japan in the period.

The Government of Nepal has announced the 15th five years plan 2020-2025. The major objective of this 15th 5-years plan is to reduce poverty from 18.7% to 9.5% by the end of the plan year. This plan targets to increase the production and productivity of agriculture to ensure food security. Also, the plan targets to reduce the burden of infectious diseases to create a healthy society. Likewise, the United Nations Development Assistance Framework (UNDAF) 2018-2022 has four priority areas. The DLS animal health programmed contributes to the third priority area: Resilience, Disaster Risk Reduction (DRR) and Climate Change Adaptation by decreasing the threat of zoonotic pathogens. The “Health Policy 2019” also aims to reduce the burden of zoonotic diseases and Antimicrobial Resistance through the One Health approach. The Government of Nepal has endorsed the “One Health Strategy 2019” and have outlined 5 strategies including multi-sectoral collaboration, integrated disease surveillance, and capacity building of stakeholders.

Nepal is the member of World Organization for Animal Health (OIE) and regularly provides disease information to it. There is immediate notifications to OIE if there is outbreak of emerging and notifiable diseases. There are 753 local municipalities where there is livestock services section and they would send epidemiological information to the DLS. Similarly, from 77 districts Veterinary Hospital and Livestock Expert Centre (VHLEC) will report to epidemiology section of DLS. Ministry of Home Affairs (MoHA) is the focal ministry in Nepal to deal with disaster and natural calamities.

These are the major laws and regulation which are under livestock sector.

- Animal health and livestock services act, 1998 and Regulation, 1999
- Slaughterhouse and meat inspection act, 1998 and Regulation 2000
- Nepal veterinary council act, 1998 and Regulations, 2000
- Feed act 1976 and Regulations 1984

DISASTER SCENARIO IN THE COUNTRY

In a global comparison, Nepal ranks 4th in terms of climate risk according to the Global Climate Risk Index which assesses the impacts of meteorological events in relation to economic losses and human fatalities (Eckstein, et al., 2019). The country ranks 11th in terms of global risk for earthquake occurrence and impact (Maplecroft 2011). The country is in top 20 of all the multi-hazard countries in the world. Rugged and fragile geophysical structure, very high relief, high angle of slopes, complex geology, variable climatic conditions, active tectonic processes, unplanned settlement, dense and increasing population, poor economic condition and low literacy rate have made Nepal vulnerable to various types of natural disasters. Most part of the country are seismically active. Hence, the geomorphology is very

fragile. The constant tectonic action of different degree along with varied intensity of weather condition has adverse effect on stability of earth surface and river course.

The Himalayan region of Nepal can be considered as one of the severe flood hazard zones of the world. Besides, Heavy precipitation, high wetness and steepness of watersheds and river channels contribute to flood magnitudes. Mainly, the middle Hills are prone to landslides and the Terai to flood and forest fire. Thus, flood, landslide and fire are the most frequent natural disasters in Nepal. About 80 percent of the population of Nepal is risk form natural hazards (MoHA, 2017). FAO states that agriculture sector absorbs 23 percent of the total damage and losses in developing countries. Further, flood, drought and other climatologically disasters along with disease pest have 37%, 19% and 44 % respective contributions to the loss on agriculture and livestock production.

MAJOR NATURAL DISASTER IN AGRICULTURE AND LIVESTOCK SECTOR

Drought

Change in magnitude and frequency of droughts will have severe impacts on agriculture, especially crop production, cropping system and livestock (Karl et al., 2009). According to MoHA (2018) every year drought impacts agriculture, Livestock, environment and ecosystem negatively in the Terai and Western hills of Nepal and it has been identified as the most hazardous for agriculture. The droughts happened in 1972 and 1979 were the most seriously damaging and harmful to the people, livestock and crops and that of 1994 was the worst drought in its history that affected 35 districts of western hilly and Terai regions (NDRRP, 2019).

Flood

Flood Monsoon carries more than 70 percent of South Asia annual precipitation in a brief of four-month period. A good monsoon brings strong harvests and financial security, but a poorly timed monsoon, can result in human suffering and economic and animal loss due to either flooding or drought (WB, 2012). Nepal is also extremely vulnerable to water-related hazards. Nepal's hydrology is highly variable, with the monsoon bringing 80 percent of Nepal's rainfall in less than three months during the summer (WB, 2012). The flood water has wiped out 79.8 million USD worth of crops and livestock, as the massive floods inundated huge tracts of land in 31 districts of Nepal (MoALD, 2018). According to MoHA (2018), 42,995 hectares of agriculture land had been affected by heavy rainfall, landslides and flood in various years. Furthermore, this has damaged the irrigation system and rural roads and other physical infrastructure.

Earthquake

Although the frequency of earthquakes, in Nepal is low, it has affected the maximum number of people and has destroyed the country's economy among all disasters that occurred between 1990 and 2015. Earthquake has a significant effect on the agriculture production system. As per the Post Disaster Need Assessment Team (PDNA), the devastating 2015 earthquake in Nepal destroyed stockpile of stored grains and devastate the livestock sector. The loss of over 17,000 cattle and about 40,000 smaller domesticated animals has resulted in the downward revision of the projected growth in agriculture from 2.2 to 1.8 percent. The total effect of the disaster in agriculture and livestock was NPR 28,366 million.

Landslides

Landslide is one of the very common natural hazards in the hilly region of Nepal. Natural and human factors such as steep slopes, fragile geology, high intensity of rainfall, deforestation, unplanned human settlements are the major causes of landslide. In between 1971 to 2015, Nepal had to bear more than 2000 landslides, and this has great impact on livestock loss, destroyed irrigation system, roads, bridges and other infrastructure, causing great economic loss.

Hailstorm and Windstorm

Hailstorm is another most critical factor causing crop damage. Thunderstorms usually occur during the monsoon season; and hailstorms at the beginning and end of the monsoon season, causing potential damage to property and crops and increasing vulnerability to food insecurity, for instance (MOHA & DPNepal, 2015).

EXISTING POLICIES AND INSTITUTIONAL FRAMEWORK FOR DISASTER RISK MANAGEMENT IN NEPAL

- Government of Nepal has promulgated various acts, regulation, policies, standard, action framework and codes related to the management of natural disaster.
- For the first time the Constitution of Nepal (2015) has spelled out in its Directive Principles, Policies and Obligations of the State (Clause 51) about disaster management as to make advance warning, preparedness, rescue, relief and rehabilitation in order to mitigate risks from natural disasters. It has identified disaster management as one of the key priorities of 3 tiers of government in the list of concurrent powers of federal, provincial and local levels.
- In Nepal, disaster management is focused mainly on early preparedness, rescue, relief and rehabilitation. The Local Government Operation Act (LGOA) 2017, empowers local bodies to govern themselves. It recognizes that local people and local bodies as the most appropriate points of entry to meet the disaster management needs at the local level.

National policy

1. Legislative provisions for disaster risk management

Major legal arrangements dealing with the disaster risk management in Nepal.

- Soil and Watershed Conservation Act 1982;
- Water Resource Act 1992;
- The Forest Act 1993;
- National Building Code 1994;
- National Building code act 2004;
- Prime Minister Relief Fund Regulation 2007;
- Local Government Operation Act 2017;
- Disaster Risk Reduction and Management Act 2017
- Environment Protection Act 2019

Institutional set up for the disaster management in agriculture and livestock sector

- Federal Ministry of Agriculture and Livestock Development (MoALD) is the leading organization to deal with the disaster management in agriculture and Livestock sector.
- Among the 11 clusters identified by the Disaster Preparedness Response Plan (2019), MoALD is the leading organization for the food security cluster.
- Agriculture loan, Insurance and Disaster Management section under the Agriculture and Livestock Business Promotion Division is the focal section to coordinate, plan and prepare the disaster related programs and policies.
- In the provincial level, agriculture biodiversity and climate change section has been assigned to look after this subject.
- At local level, the agriculture section has the sole responsibility to deal with the entire agriculture and livestock related tasks including disaster.

Strategies for the disaster risk reduction and management in agriculture and livestock sector:

- Planned land use with crop rotation, rainwater harvesting, drought monitoring, using recycle water, developing irrigation system, water rationing are some of the strategies which help to minimize impact of drought.
- Nepal has limited crop and relatively low livestock insurance coverage. According to ADB (2019) the impact of natural hazards on farmers in Nepal would be significantly mitigated using insurance scheme. This calls for the crop and livestock insurance scheme to be extended and made ease access to all farmers.
- In Nepal, federalism is still in fledgling stage. The capacity and experience of the sub national government to manage disaster is poor. The institutional and organizational setup according the NDRRM act 2017 yet to be completed.
- There are skills and capacity gaps in the newly formed municipal and weak incentives for local governments to include Disaster Risk Reduction in development activities. So, the capacity of the local and provincial government in dealing with the natural disaster needs to be enhanced.
- Many municipalities do not have systematic process to integrate disaster risk management into their planning and programming despite the high level of risk. Some local governments have considered such components on an ad-hoc basis without any systematic procedure (WB, 2019). So, integrating the disaster risk management in annual budget from the 3 tiers of government is becoming fundamental to secure the livelihood of majority of the people

CONCLUSIONS AND RECOMMENDATIONS

Revision of existing laws and regulations pertaining to Disaster Relief Regulations (DRR) is envisaged to address the overlap, conflict or gaps in the legal provisions, and the process shall be prioritized. However, collecting, analyzing and managing disaster and climate related data remains inadequate, and it is not accessible to many of the local level planners, non-governmental organization and the private sector.

To support the process of prioritizing investments, and to further the understanding of sectoral impacts of climate change and disasters to the vulnerable sectors, collection and analysis of data should be reinforced at all levels of government through technical support and capacity building. A need remains to collect local level risk information based on levels of risk for all urban and rural municipalities. The vulnerable sectors of which more data is required to determine risks included. As a member of World Organization of Animal Health (OIE) Nepal needs to send regular epidemiological reports, disease surveillance and disease status to OIE in stipulated time frame. There is contingency plan for control of highly pathogenic avian influenza and PPR. The HPAI control decree shall be updated and harmonized with federal structure of the country. The research mandate is given to the Nepal Agriculture Research Council (NARC) of Nepal. There is limited research on disaster relief and animal diseases in NARC. More focus on the area is needed. Contingency plan of the infectious animal diseases shall be made, and more focuses shall be given to the zoonotic diseases. The importance of One Health approaches shall be kept in mind of policy makers.

It is very necessary to establish a Regional Information Center to share the information to SAARC region which will help to cope with the natural disasters. Moreover, there should be regional planning and joint effort to solve the disaster problems particularly in agriculture and livestock sector. Natural disaster has significant negative impact on economic sector. The impact is more visible on agriculture, livestock and fishery. Annually a huge amount of loss is being observed in those sectors. Despite the several efforts made by national and international to rebuild the agriculture and livestock resilient disaster management, the profound effect is yet to be seen.

Strengthening the institutional set up in the three tiers of government, establishment of information flow system and early warning system along with incorporation of disaster risk management in annual plan, programs and budget are essential to prevent and address the impact of disasters in agriculture and livestock sector of Nepal. Field epidemiological study, laboratory strengthening shall be done in very transparent ways. Capacity building of veterinarians and paraprofessionals are important tool to strengthen the national veterinary services of the country. Priority diseases of the livestock in Nepal includes FMD, HS, PPR, HPAI, IBD, ND and rabies.

Though covid-19 does not affect livestock directly, but there is direct effect on sale of meat, milk, eggs and break of their distribution chain. There is outbreak of lumpy skin disease (LSD) in eastern Terai of Nepal during COVID 19 pandemic. Central Veterinary Laboratory (CVL) procures RT-PCR kits and LSD identifies for the first time in Nepal. It is immediately notified to OIE. There is formation of task force to deal with Covid-19 problems in agriculture and livestock sector. MoALD takes lead on the team. There is continuous engagement of Chief Veterinary Officer (CVO) with concerned agencies to ease lock down problem case by case basis. The mobile number of CVO was given for emergency communication point. It makes soothing effect in livestock related problems including transportation of feed and livestock products. Movement of animals were restricted due to LSD problem. But chickens, goats and fish transportation were made easy by following Covid 19 protocol. There is difficulty in transportation and marketing of fish in Covid-19 lock down period. Egg production is as usual, and eggs have got satisfactory prices even in prolong lock down period. Movement of chicks, birds and live animals have great hurdles in lock down period. Even though it was hard time, but Nepal becomes self-reliant on livestock products for the first time in history. It is basically due to strict quarantine measures aftermath of

COVID-19 pandemic. Farmers have problem of getting animal feed on time and selling of their products on time. Therefore, there is good animal husbandry practices and value chain mapping for each municipalities and supply chain shall be maintained even in pandemic situation with the help of 3 tier government in Nepal. There will be poultry, pig, goat, and buffalo slaughter house in and around urban area is essential to cope with emerging demand. The cold storage facility for meat storage shall be in place which will be up to 10,000 MT capacity.

Nepal is natural calamities prone country and contingency plan for disease surveillance, animal feeding and marketing of livestock products in the time of disasters shall be done by three tiers of government in coordinated approach. The approach shall be sustainable and farmers friendly. Because majority of farmers are of small holder in Nepal. The livestock insurance is doing well in Nepal and 95% of insurances shall be done by livestock and fishery sector. Implementation of animal slaughter house and meat inspection act, 2055 is an urgent need of the country. The role of the local municipality is great and it should be harmonized with our federal systems. Formulation of the infectious animal disease act is very much essential.

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