



GLOBAL AGENDA FOR SUSTAINABLE LIVESTOCK

Global Agenda for Sustainable Livestock (GASL) ¹

GASL STAKEHOLDER CONSULTATION ON COVID-19 IN THE LIVESTOCK SECTOR GLOBALLY IN APRIL-MAY 2020

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Executive Summary

The Coronavirus (COVID-19) pandemic has resulted not only in an unprecedented sanitary crisis affecting the physical and psychological health of billions of people, but also in the massive disruption of international and local economies. The globe is experiencing one of the most difficult challenges of the last 100 years: slowing down the spread of the disease and protecting the health of individuals, while avoiding the coming of another crisis in the economic sector. Actions taken worldwide have been varied. Spanning from drastic quarantines and borders' closure, to more relaxed measures aiming for herd immunity. Despite the diversity of approaches taken, this pandemic has resulted in the freezing of national and international commerce. With value chains being severely disrupted and access to markets limited, particularly for smallholders.

The pandemic's impact on economic activity has unavoidably led to repercussions in the social and environmental spheres of sustainable development efforts. The livestock systems, representing an important segment of the economy, have likewise been affected. With livestock value chains having suffered particularly hard COVID-19's economic consequences. In addition, concerns regarding pandemics have risen as significant components on everybody's political agenda, resulting in conversations placing livestock as a risk factor in such sanitary crises, especially modern large-scale cross-counties systems.

A consultation among a number of different countries and regions of the world has been undertaken by the Global Agenda for Sustainable Livestock (GASL) from April to May 2020. Given the limited number of countries represented by the respondents the intention of the report is to generally evaluate and provide better information on the impact of the pandemic regarding the global livestock sector. The information will guide and serve GASL partners to think about future actions and approaches to promote sustainable practices and policy options.

A total number of 79 responses from 39 countries in Africa, America, Asia, Europe, and Oceania addressing the following questions have been analysed:

1. Provide your name, occupation, affiliation and the region or country you will refer to.
2. What are the main impacts of COVID-19 in the livestock sector in your region or country and what should be done to mitigate those impacts in the short and medium run?
3. What should be the role of the livestock sector in contributing to avoid a new sanitary crisis like the present one with COVID-19?

Overall, it has been reported that the measures and restrictions on movement adopted by governments have disrupted the national and international livestock value chains. Leading to a decrease in production levels and producers' incomes, as well as in consumers' purchasing power. Both producers and farmers have encountered difficulties in accessing ordinary inputs such as feed, human resources and veterinary health services. Said complications have resulted in production difficulties, a decline in farmers and producers' incomes, and the increased risk of the spread of other animal infectious diseases. In addition, due to governments' absolute focus on the COVID-19 emergency, other important issues have been left on hold (e.g. locust invasion and animal health programs).

Regarding the issue of consumers' rapidly eroding purchasing power, the consultation's findings identified a relation between limited purchasing power and the reduced demand for livestock products, particularly those of premium quality. Demand has also been affected by the misleading information circulated in some countries that livestock food products could cause the transmission of the disease. Additionally, the decrease in demand has led to a surplus of production, which in turn has resulted in the dumping of milk and spoilage of food. These effects have negatively interfered with efforts to reduce food insecurity and safeguard social stability. Depression from social distancing has been reported, and youth unemployment in conjunction with episodes of violence and disputes at the household level, especially against women, are likely to increase.

Pertaining to the short-term mitigation efforts, the respondents brought up the significance of continuously monitoring the crisis, act according to price fluctuations, maintain input flows, and allow activities of important actors to continue in order for the livestock value chains to remain active. Governments in particular were called to take appropriate measures (loans, guarantees, subsidies) to ensure the continuous operation of the chains, incomes for all, rising employment possibilities, and protect vulnerable household incomes. The importance of training farmers and producers in the use of information and production technologies, as well as communication tools, has also been emphasized. Local markets, organic, feed grazing livestock production, and biodiversity maintenance have also been identified as significant to short-term mitigation measures. From a sanitary point of view, respondents highlighted the central role of implementing hygienic measures as well as the reduction and regulation of wildlife demand by means of internationally agreed on food safety standards. Lastly, the importance of clear communication with both the media and consumers was expressed.

In the long term, the respondents stressed the need to perform an in-depth re-examination of food systems, which promote regenerative models of agriculture. Thus, protecting soils, empowering farmers, and promoting animal health welfare. Also cited as significant were long-term prevention measures to face situations of restricted work mobility. Additionally, livestock health care has been emphasized as one of the main priority points, with particular focus on the promotion of biosecurity measures, research, and commitment to the One Health approach. The creation of contingency plans for the management of catastrophic risks and avoidance of early sanitary crises and emergencies has also been considered as significant to long-term mitigation measures.

Given its unique ability to contribute to the attainment of the SDGs, ensure nutritious food, economic incomes, and social stability, the importance of protecting the livestock sector was emphasized several times during the consultation. Since future sanitary crises of zoonotic nature cannot be ruled out, it is essential to better understand such scenarios in order to prevent and reduce the risks. As a result of this limited consultation to gain some important insights and impressions, GASL will take further action: an online global multi-stakeholder partnership (MSP) meeting taking place from 14 to 18 September 2020, with regional components in the 5 continents from 31 August to 15 September 2020. The meeting is titled ["From Crisis to Action – Lessons from COVID-19 for Building a Better Future through Sustainable Livestock"](#). This report will serve as a framework for said meeting, along with other documentation.

For a summary of impacts, mitigation measures with policy implications and the role of the livestock sector in the prevention of a sanitary crisis in the five continents, please see Tables 4.1, 4.2 and 4.3 in section 4.

Section 1: Introduction and Approach

Pandemics are large-scale outbreaks of infectious disease, which can spread aggressively over a wide geographic area and across different species. In the last 100 years emerging infectious diseases, such as Ebola, influenza, Severe Acute Respiratory Syndrome, Middle East Respiratory Syndrome, and, the most recent and devastating of the Coronavirus diseases (COVID-19) have caused unprecedented global crises. COVID-19 especially, with its large-scale mortality and morbidity rates, has had a deep impact on perceptions of the modern world, raising legitimate questions regarding the foundations of everyday life. Both the disease and the fear of infection have resulted in stringent measures worldwide, affecting freedom of travel and trade, quarantining billions of people, causing dramatic decrease in economic activities and the disruption of food and manufactured products' supply chains. The pandemic's impact on economic, social and political activities has consequently affected sustainable development efforts worldwide.

Evidence suggests that the spread of pandemics is facilitated by modern large-scale and cross country economic systems. Increased globalisation and economic integration, changes regarding the use of land, as well as the unsustainable exploitation of natural resources and the environment are all suggested factors, which increase the likelihood of pandemics. Without effective actions and investments meant to build preparedness and health capacity, pandemic threats are likely to continue and intensify. Significant policy focus is needed now more than ever in order to prevent and limit the possibility of new emerging outbreaks and foster economic recovery.

Given the significance of the COVID-19 sanitary crisis and its potential to undermine the sustainable development of the livestock sector, GASL decided to conduct an open consultation among its stakeholders to get first-hand insights and testimonies regarding the consequences of the pandemic from a diversity of associations, organizations and singular respondents representing several regions of the world.

The consultation will serve GASL and its partners to understand and rethink priorities, as well as to enhance GASL's support to sustainable livestock actions and mitigation measures in the coming years, under new global, regional and national circumstances. The added value of the multi-stakeholder partnership is of utmost importance to the report's effective presentation of society's sectors and its plurality of views, in addition to the insights of experts' and governments' officials.

Each contribution received is based on expert opinions and the information available at the time (April – May 2020). The consultation was based on three open questions sent via email to the GASL network, including GASL partners and other experts suggested by said partners.

The respondents addressed the following questions:

1. Provide your name, occupation, affiliation and the region or country you will refer to.
2. What are the main impacts of COVID-19 in the livestock sector in your region or country and what should be done to mitigate those impacts in the short and medium run?

3. What should be the role of the livestock sector in contributing to avoid a new sanitary crisis like the present one with COVID-19?

A total number of 79 responses were received from 39 countries in Africa, America, Asia, Europe, and Oceania, as well as some contributions which discussed the pandemic's impact on the livestock sector from a global perspective.

The present report intends to summarize the responses received per geographical region and highlight particular elements, derived from mitigation measures suggested by the contributors, relevant to policy implications.

Following this introduction, the rest of the report is organized as follows. Section 2 illustrates the general geographical coverage of the consultation. Subsequently, section 3 presents a summary of the responses received. The first part of the summary focuses on the impacts of the COVID-19 crisis on the livestock sector per geographical area, when possible these impacts have been subdivided into social, economic, environmental, and governmental categories. Mitigations measures and policy elements per each focus area finalize the first part of section 3. The second part of the section continues by addressing the question on livestock's role in the prevention of future sanitary crises. Section 4 makes explicit the common points between the various geographical areas by means of summary tables of the consultation. Conclusions, final remarks and next GASL steps are drawn in section 5. Lastly, section 6 presents academic sources referenced during the process.

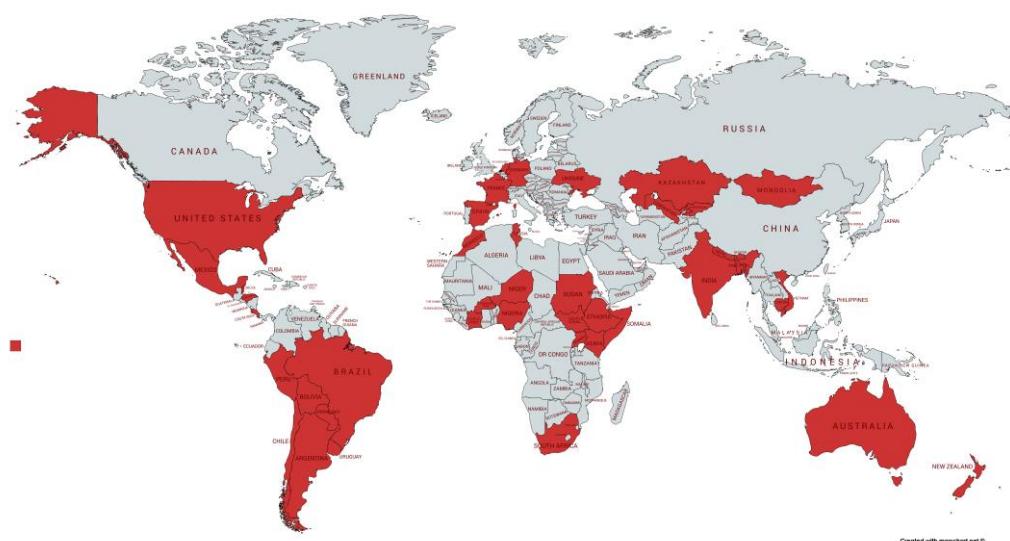
Section 2: Geographical Coverage of the Consultation

This section outlines in detail the geographical coverage of the received contributions during the consultation's two-month period. A total number of 79 contributors participated. The contributors brought insights from single countries, various nations and /or regions, and a few contributors highlighted a global perspective on the crisis. Combining the single and regional contributions, a total number of 39 countries were represented.

An exhaustive list of countries and regions represented can be found below, together with a visual representation in Figure 1. In regard to geographical regions where countries were not explicitly mentioned, the map shows a tentative representation of countries belonging to those regions.

- **Africa (30 responses):** Burkina Faso (2); East Africa region (2); Ethiopia (1); Horn of Africa (Kenya, Somalia, South Sudan, Sudan, Ethiopia, Uganda) (1); Ivory Coast/Africa (1); Kenya (3); Morocco (1); Niger (1); Nigeria (5); South Africa (1); South Sudan (1); Tunisia (1); Uganda (9); West/ Central Africa (1)
- **America (22 responses):** Argentina (5); Brazil (3); Belize (1); Costa Rica (1); Gran Chaco Americano (Argentina, Bolivia y Paraguay) (1); Honduras (1); Mexico (2); Peru (1); South America (Argentina, Bolivia, Brazil, Chile, Paraguay, Peru and Uruguay) (1); United States (4); Uruguay (2)
- **Asia (10 responses):** Bangladesh (1); Bhutan (1); Cambodia (1); Central Asia (1); India (3); Mongolia (1); Nepal (1); Vietnam (1)
- **Europe (9 responses):** Eastern Europe region (3); France (1); Germany (1); Netherlands (1); Spain (1); Western Europe region (2)
- **Oceania (3 responses):** Australia (1); New Zealand (2)
- **Global (5 responses)**

Figure 1. Geographical Coverage of the Consultation



Section 3: Responses of the GASL Stakeholders to the Consultation on COVID-19 in the Livestock Sector Globally

3.1 Question on impacts and mitigation measures

What are the main impacts of COVID-19 in the livestock sector in your region or country and what should be done to mitigate those impacts in the short and medium run?

3.1.1 AFRICA

Impacts

Economic impacts

The limitations on movement as well as transport restrictions, resulting from the measures of African governments to contain the spread of the virus, severely affected African markets and critically disrupted all the economic activities in the livestock value-chain (Barasa, African Horn). The lockdown resulted in market collapses, reductions of economic activities and the inability to move products and materials (Said, Morocco). The closure of borders provoked important reductions of trade, both for imports and exports resulting in a decline in earnings and revenues for livestock stakeholders (Odunze, Nigeria).

Market access for producers has been limited and, in some cases, markets have experienced a total closure, which led to increasing rates of livestock thefts ((Mbae, Kenya; Loma, Uganda; Arionga, Uganda). Since street sales of products have been prohibited, those actors working with 'informal markets' have also been severely affected. Because of the closure of activities, food distribution has been impacted and a reduction on livestock sourced food production has taken place. The difficulties regarding the movement of products have resulted in increasing waste and spoilage rates of food (Tarawali, Kenya; Olamide, Nigeria). Uncontrolled slaughtering practices; meat scarcity and closure of abattoirs are foreseen to happen (Tawah, Ivory Coast).

In terms of production, the supply of inputs has been affected due to private practitioners' inability to move freely given the high costs of fuel and hiring for big cargo automobiles (Ssendagire, Uganda). Also, higher input prices have increased the costs of production. Feed prices in particular have spiked because of shortages due to production deficiencies at the agricultural level, as well as droughts and water scarcity resulting from climate change (Tawah, Ivory Coast). Producers and farmers are now facing the challenge of sustaining animals without enough feed, which in turn, deteriorates livestock welfare and health conditions (Abubakar, Nigeria).

Movement restrictions also affected veterinary services and drug access, which are essential for maintaining animal health and the management of diseases. Moreover, due to limited financial resources and incomes farmers have been unable to take care of their animals (Miheso, South Sudan; Eyudu, Uganda; Arionga, Uganda). In addition, the communication between farmers and the competent authorities has proven flawed during this crisis (Ssendagire, Uganda).

All these factors, together with the lack of sanitation equipment, have led to uncontrolled management of animals and breeding programs (especially at the intensive systems level) increasing cases of diseases (e.g. Foot and Mouth Disease, East Coast Fever) and, consequently, reducing substantially herd livestock heads and farmers' production capacity (Olagbaju, Nigeria; Loma Uganda).

Because of the reduced production of animal sourced food (ASF), a sharp increase in the price of livestock commodities has occurred, with both the demand and supply having been affected (Barasa, African Horn; Abubakar, Nigeria). Consumers' purchasing power has eroded rapidly due to lockdown-induced unemployment and the collapse of informal/street business activity (Eyudu, Uganda). In addition to that, the demand for ASF decreased due to fake news which described livestock products as carriers of the coronavirus disease (COVID-19) (Mekuriaw, Ethiopia). This has resulted in the further reduction of incomes and profitability for livestock producers and farmers, as well as a greater vulnerability for pastoralists, especially the "irregular" ones (Miheso, South Sudan; Abuku, Uganda). The higher costs of production have led some producers to sell livestock. Motivation among producers is consequently low. (Karimou, Nigeria).

Social impacts

From a societal point of view, food security and household incomes have been greatly affected, also provoking youth unemployment and, in some areas, decreased marriage rates (Kaijutsya, Southwest Uganda). In addition, it is expected that stay at home policies, will likely result in disputes and increased violence at the household level, especially against women (Gatare, Uganda).

Furthermore, while communities get isolated and social distancing takes effect, the social support systems, and inter-communal cohesion and trust among said communities is likely to lesse. Perhaps, leading to violent means of conflict resolution, as well as animosity towards foreigners (from another country or community group), which are perceived as carriers of the virus (Gatare, Uganda).

It is also of significance that cattle keepers do not take up the necessary precautions against COVID-19 as they move in search of pasture and scarce water. The lack of sanitary measures leaves them at great risk of contracting the disease (Abuku, Uganda).

Environmental impacts

Animal diseases are likely to spread given diminished networking innovations such as workshops and meetings among veterinary officers and other stakeholders (Ssendagire, Uganda). Furthermore, government focus is currently on COVID-19 rather than on animal health and vaccination programmes, as well as on the critical problem of the locusts' invasion, which poses great risks to food security (Gatare, Uganda).

Pastoralists, who are already facing the problem of overgrazing, water scarcity and rising heard mortality rates due to climate change, have experienced limited market opportunities because they cannot move freely (Said, Morocco). Additionally, in the Karamjoa region (Uganda) peace building has decreased tremendously, leading to increased conflicts among pastoralists and their neighbors (Abuku, Uganda). For this reason, difficulties in the enforcement of Resources Sharing Agreements (community level agreements/contracts

negotiated over time between two or more conflicting communities) have also taken place (Gatare, Uganda).

Governance impacts

Because of the measures to contain the virus and the general recession of the global economy, funding to support livestock challenges has been reduced. Moreover, during the emergency government priorities have focused on other policy domains. Additionally, reduction on field activities, research and development has been evidenced in the livestock sector, though in some countries such as Ethiopia, animal research facilities have been adapted to support COVID-19 testing (Odunze, Nigeria; Tarawali Kenya).

In Uganda, the gap between informal and formal governance institutions has been highlighted, with the informal institutions being headed by elders who have not been considered in formal government decisions. This will likely have an effect on future collaboration, which may affect information sharing and early conflict warning and response (Gatare, Uganda).

Mitigation measures

Possible short-term mitigation measures for the various problematics discussed above include the preservation of input flows in the value chains. Such a protection could be achieved by supporting input provision. Additionally, actors in the livestock production sector should be allowed to continue to run some essential activities (e.g. treatment of sick animals, vaccinations against priority diseases) in order to avoid the disruption of livestock value chains. Extension workers should be facilitated with fuel and equipment provision for observing standard operation procedures (Abubakar, Nigeria; Loma, Uganda).

Livestock farmers should be supported in the building of cooperative links to markets and the establishment of community managed livestock health systems. The latter could serve as complements to government services (Abuku, Uganda). In addition, the creation of farmers' records and the facilitation of farmers' education in the field of information technologies (such as social media platforms), the latter in conjunction with the establishment of online livestock marketing, are critical to the discussion on short-term mitigation efforts (Patrick, Uganda; Loma, Uganda). Government support to pastoralists, as well as debt rescheduling, are also emphasized as significant measures. (Patrick, Uganda; Said, Morocco).

In addition, extensive trauma awareness and healing programs at a communal level are necessary, and should be supported, to deal with issues of isolation and social distancing. Support is also critical in the areas of community dialogue with elders and the formation of peace committees. Both integral to the fostering of community relationships and the promotion of information sharing. Also, the Resource Sharing Agreements should be institutionalized at the sub county level, in order to receive government resources. Negotiation to access pasture and water in neighboring regions should be supported as well (Abunkabar, Uganda).

In the medium term, farmers should be aided and educated in the use of production technologies, such as machines and communication tools (Eyudu, Uganda). Contingency plans for the management of catastrophic risks and avoidance of early sanitary crises, as well as consistent budgets and government guidance for emergencies and awareness, training programs and equipment for veterinary personnel should also be envisaged (Eyudu, Uganda;

Loma, Uganda). Additionally, guidelines on the optimal management of local markets, which would outline the enforcement of hygienic and physical distance measures, should be laid down (Mbae, Kenya).

Lastly, key livestock stakeholders should be integrated into developing policy-making consultations regarding imports and exports matters (Mbae, Kenya).

Mitigation elements with policy implications suggested for Africa

- Livestock value chains require “essential” status in order to preserve relevant services and keep inputs flowing, as well as avoiding food shortages and price volatility of inputs and products (Eyudu, Uganda).
- Pastoralists require special government support, as mobility is key to their livelihoods (Said, Morocco).
- Farmers’ training in production and communication technologies is crucial (Eyudu, Uganda).
- Contingency plans for the management of catastrophic risks and avoidance of early sanitary crises; consistent budgets for emergencies and awareness and training programs for veterinary personnel is necessary (Eyudu, Uganda).
- Guidelines and government enforcement are necessary for the optimal sanitary management of local markets (hygiene and social distancing) (Mbae, Kenya).
- The rescheduling of financial obligations is significant to all mitigation efforts (Boubakary, Africa).
- Certain cultural and social practices have livestock as an essential factor (Kaijutsya, Uganda).
- Key livestock stakeholders should be consulted in the development of policy regarding imports and exports (Mbae, Kenya).
- In order to support livestock producers, national budgets should be adjusted in order to better account for agricultural production assistance. Intervention funds for this type of crises should be created and subsidies for the price of certain essential livestock inputs, as well as insurance schemes for producers should be granted (Olamide, Ethiopia).
- Policies for the development of market networks, as tools to overcome bans on mobility, such as the establishment of internet-based auctions and webinars, should be implemented. In addition, more relaxed border measures, which would allow for the restoring of trade, should be established (Lindeque, South Africa; Karimou, Niger).
- Financial assistance should be granted to vulnerable households (Karimou, Niger).
- Policy support is central to the formation of a new livestock identification programme (Loma, Uganda).
- Conduct a Conflict Assessment on the secondary impacts of COVID-19 (Gatare, Uganda).
- Introduce a Target of Opportunity fund to deal with an emerging conflict (Gatare, Uganda).

3.1.2 AMERICA (North, Central and South America)

Impacts

Economic impacts

The disruption of livestock supply chains due to COVID-19 has been evidenced throughout the American continent. In general, the mobilization of people and animals, as well as the difficulties for providing technical assistance to producers because of the measures adopted by the countries have affected and limited the national and local markets and the movement of products (Ibrahim, Honduras; Paz, Argentina). The impact has been reported on both small and medium sized dairy producing companies, as well as on the more industrialized ones (Chacón Navarro, Costa Rica). Meat processing plants and slaughterhouses have proved to be the most vulnerable segments of the value chain (Lim, USA). Especially in the United States, large meat and poultry processing plants had to shut down due to a lack of workforce stability, which in turn provoked a shortage in the supply of pork, beef and dairy products, a downturn in their respective prices, as well as in live cattle and hogs (Wilkinson, USA).

Given that animals cannot be transported to processing sites, farms have experienced issues of overcrowded stables and lack of sufficient quantity of feed. Therefore producers have been forced to dump unsold milk and euthanize perfectly healthy animals (Wilkinson, USA). This led the US government to purchase surplus and provide direct payments as well as loans to small business (Wilkinson, USA).

In some Latin American countries, adequate monitoring in the certification and control of animals has been difficult due to the restriction on movement (Ibrahim, Belize). For the same reason, on-going health plans and research projects have been delayed or suspended (Sepulveda, Costa Rica; Neumann, Argentina). In general, milk and meat prices have fallen and a decrease in production rates and competitiveness has been evident, discouraging new investments (Sepulveda, Costa Rica). In Peru, a fall in the price of alpaca fiber has also been reported (Porto-Huasco, Peru).

The reduction of economic incomes and consumers' purchasing power has led to a fall of demand at the national level, as well as to a progressive investment in basic product choices, shifting the internal consumption from meat products to cheaper ones such as eggs (Zani, Brazil). Furthermore, in Latin America a loss of front-line consumer markets, such as restaurants and hotels (owing to the freezing of the touristic sector) has been emphasized (Chacón Navarro, Costa Rica; Fabian, Argentina). Argentina reported that consumers have expressed concerns regarding the origin of food products (Preliasco, Argentina).

Regarding trade, many countries, except for Brazil, have reported difficulties in exporting due to the paralyzation of global exports (Ibrahim, CATIE, Mexico; López, South America; Mauricio and Molina, Brazil). Brazil's livestock sector has not been greatly affected in regards to production or exports (given an increase of imports by China), with the exception of poultry, swine and fish (that will have a higher price due to the elevation of the feed price, mainly soybean and maize) (Villa Alves, Brazil; Zani, Brazil).

Social impacts

From a social point of view, the economic crises have resulted in reduced household incomes and a decrease in food consumption (Ibrahim, Honduras). Additionally, in Peru, the returning to the fields of herders' children (sometimes infected with COVID-19) from the cities has been reported as significant (Porto-Huasco, Peru).

Environmental impacts

In some countries, the accumulation of free-range animals has led to overgrazing and pasture degradation (Ibrahim, Belize).

Mitigation measures

To mitigate the impact in the short to medium term, sanitary controls should be respected and restriction on imports of cattle should be envisaged. In addition animal health programs and control borders should be strengthened and improved (Sepulveda, Costa Rica). Organic production of feed grazing livestock should be guaranteed and biodiversity maintained (Porto Huasco, Perú).

Emergency plans, virtual training and capacity building programs (animal health, pre and post crisis management, infectious and zoonotic disease, ensuring animal feeding) should be envisaged as well. Farmers and producers' access to information technologies and innovations should be ensured (Ibrahim, Belize).

Governments should purchase farmers' production and provide credit guarantee reductions, exemptions and deferrals from the payment of basic services and taxes (López, South America). Additionally, they should provide accessible production subsidies, support green investments and guarantee universal bank credit systems, better public bank loans and more flexible unemployment insurance systems (Ibrahim, Mexico; López, South America).

Food supplements should be granted and market channels should be protected in order to preserve a free-flowing economy between suppliers and consumers. Local markets, as well as exchanges between neighbors should be strengthened (fodder, medicines or necessary inputs) (Ibrahim, Mexico).

In the long term, a strong re-examination of food systems, which ensure better concentration and consolidation should be advanced, as well as long-term prevention measures to face situations of restricted mobility (Odde, USA; Paz, Argentina).

Mitigation elements with policy implications suggested for America

- In the short to medium term, animal health, sanitary programs and border controls should be strengthened and improved. Restrictions on cattle imports might be envisaged (Sepulveda, Costa Rica).
- Governments should purchase farmers' production and provide credit guarantee reductions, exemptions and deferrals from payment of basic services and taxes. Additionally, provide accessible production subsidies, support green investments and guarantee accessible bank credit systems, better public bank loans and more flexible

unemployment insurance systems (Bisson, USA; Ibrahim, Mexico; López, South America).

- Training on pre and post- emergency crisis management is necessary (Ibrahim, México).
- The long-term re-examination of food systems, which ensure better concentration and consolidation, as well as long-term prevention measures to face situations of restricted mobility, are crucial (Odde, USA).
- Livestock production should be considered the engine of the economy. Higher food prices should be set, as well as a systematic checks on the dollar's exchange rate. The latter with the purpose of improving the resiliency of various sectors (López, South America; Lim, USA).
- Policy should focus on the promotion and implementation of hormone-free, low antibiotic and input-free livestock (Ibrahim, México).
- Policies should support producers' access to financial resources, credit requirements and guarantees convenient in terms of interest rate. Ultimately, governments should financially support local markets and exports (Ibrahim, Honduras).
- From a social point of view, a healthy livestock sector should contribute to the creation of employment and social stability (Chacón Navarro, Costa Rica).

3.1.3 ASIA

Impacts

Economic impacts

The COVID-19 crisis and measures taken by governments have led to a disruption of the supply chain in Asia, as well as to a reduction of markets (Padmakumar, Nepal). For instance, in Mongolia (even though the rate of cases has been very low), measures such as the closing of schools and universities, bans on public gatherings and restriction of inter-provincial travel have had a tremendous impact on the national economy and international exports. Especially the cashmere fibre sector, which provides employment and generates income for about 45% of country's working population in the textile sector, has been heavily affected (Touati, Mongolia). Similarly, in Central Asia and Eastern Europe food supply chains have been disrupted due to the closure of farmers' markets, and enforcement of the ban on informal trade. Effectively leaving semi-subsistence livestock keepers without any income (Nesterov, Central Asia and Eastern Europe). In contrast, Cambodia has experienced an increase in livestock products' exports due to rising demand in neighboring countries. However, the Cambodian government has also encouraged domestic production with loans at lower rates (Pamdakumar, Bangladesh).

An overall shortage and higher input costs have been reported, together with a decrease in livestock products consumption. Leading to a reduction of both, the demand and supply of products. The price of milk, eggs and poultry products is low. With farmers unable to sell their products (the price of a one-day chick is near zero, with 13 million chicks per day produced in Bangladesh, Ehsanul Bari, Bangladesh). However, in Vietnam the government has worked with private sector actors to keep the price of pork down, and markets/production have been less affected (which may also be due to the spill over from recent African Swine Fever outbreak effects). Additionally, national animal research facilities are being adapted and equipped to carry out COVID-19 testing (Tarawali, Vietnam).

Due to the closure of restaurants, hotels, schools and the lockdown which lasted more than a month, uptake of livestock products was very low especially milk. Farmers were forced to dump milk. Transport lockdowns also meant feed shortages for farm animals. Closure of livestock markets meant farmers could not sell livestock produce on time. (Ghotge, India)

Another issue (reported in India) is the spread of fake news on social media that has led many consumers to believe that COVID-19 is a zoonotic disease which is transmitted by the consumption of livestock products, thus reducing meat, egg and milk consumption too. Small scale commercial poultry units have faced a huge problem because of this and many have opted out of this activity (Ghotge, India).

In addition, access to veterinary services and animal healthcare inputs has become limited due to lockdown and border closing measures (Touati, Mongolia). Veterinary services have been declared essential but farmers in remote areas are unable to access health services in several parts of India (Ghotge, India)

Also, in Bhutan the breakdown of the supply chain has led to a shortage of liquid nitrogen, which halted artificial insemination services (Tamang, Bhutan).

Social impacts

In India many shepherds and pastoralists live in remote areas and are not targeted by health advisories. Furthermore, they do not have access to regular water supplies to clean and sanitize their hands. The economic lockdown has disrupted the supply chains, with poor and unorganized farmers being unable to get inputs for support. Additionally, the affected small farmers do not have technological skills, or access to digital platforms and services such as bank accounts. The latter being increasingly necessary to receive direct payments. (Ghotge, India). Pastoralists have been prevented from entering villages in some areas as villages began to lock themselves in and refuse entry to people from outside (Ghotge, India) Moreover, since gatherings are not allowed, farmers are not receiving any form of educational support regarding pandemic awareness and possible mitigation measures. (Touati, Mongolia).

Overall, a negative impact from decreased incomes and livelihoods has been registered in Mongolia. Where the reduced purchasing power (especially of cashmere herders) might also lead to malnutrition/nutritional deficiencies in pastoral communities (Touati, Mongolia).

In the regions of Central Asia and Eastern Europe, the return of urban people and expatriates, who have lost their employment, to rural and peri-urban areas has been recorded. Many of these individuals have turned to subsistence farming (backyard/smallholder livestock keeping) as a strategy to cope with the new economic crisis (Nesterov, Central Asia, Eastern Europe regions).

Environmental impacts

In Mongolia, the COVID-19 pandemic has triggered a shift in policy and resource allocation on pandemic response and management. Critical actions addressing livestock challenges have been, therefore, deprioritized, with expected tremendous impacts on animal health, welfare, herd productivity and the environment (Tamang, Bhutan; Touati, Mongolia). In India, the State's use of large amounts of chemicals and antibiotics to sanitize and clean areas has emerged as a critical issue. For it could lead to big soil, environmental and health complications (Ghotge, India).

Mitigation measures

Short-term strategies envisage the utilization of emergency funding to provide new backyard farmers with start-up kits and training, while facilitating the establishment of digital (internet + mobile) platforms for the purpose of establishing connections between family livestock keepers and the urban consumers. This must be done in close collaboration with food safety and animal health authorities (Nesterov, Central Asia, Eastern Europe regions).

Furthermore, farmers should be supported with additional payments to ensure access to feed. The delivery without hindrance of animal based products should also be guaranteed, given their perishable quality, as well as safety concerns (lack of aflatoxins and antibiotic residues). Strategic use of local breeds and improved animal and farm management is/will be important (Nair, India). Also, there is a need to look for market channels, which guarantee animal-based foods will reach sites where there is demand. Meaning there must be transparency in the value chain. In addition, research and evidence-based facts must be emphasized.

Although veterinary care has been declared an emergency service, veterinarians need additional support to be able to address the needs of livestock farmers especially when there are sudden and repeated lockdowns. Pastoralists while on migration also require additional support. Farmers and pastoralists also need health messages and advisories specific to their context and needs. Digital technology has been important in the transmission of news, information, data and cash. Its use to reach out to livestock farmers should be enhanced (Ghotge, India). The country of Bhutan envisages the repairing of a liquid nitrogen plant and sourcing budgets to buy and install the liquid nitrogen from private firms (Tamang, Bhutan).

The long-term strategies count on the research and development of the Coronavirus vaccine and welfare packages, as well as education and awareness programmes on sanitation practices and zoonosis prevention. (Padmakumar, Nepal). Governments should promote countries' self-reliance. For instance by banning and restricting imports. (Padmakumar, Cambodia).

Mitigation elements with policy implications suggested for Asia

- A compromise regarding cashmere price regulation is urgent between policy makers and the textile industries. Both the industries' market realities and herders' financial needs must be acknowledged (Touati, Mongolia).
- The prioritization and safeguarding of livestock healthcare inputs, supplies and health services in order to preserve pastoral communities from too high animal losses is needed (Touati, Mongolia).
- Mobile health and veterinary services must improve, together with efforts to raise awareness by means of media campaigns. Also, technical and financial support for veterinary services, animal identification, disease-free establishments, feedlots and slaughterhouses is urgent (Touati, Mongolia) (Ghotge, India)
- There must be careful monitoring of socio-economic impacts on pastoral communities and, consequently, implementation of appropriate measures to ensure basic living conditions (Touati, Mongolia).

- There should be a refocus on livestock products export strategies, particularly in the meat sector. It is also vital to take advantage of opportunities, such as the ASF-related increasing Chinese demand for cattle/sheep/goats (Touati, Mongolia).
- Policy briefs, guidelines and minimum operating standards are fundamental to enhance sanitary and phytosanitary measures in the livestock value chain (Touati, Mongolia).
- Promotion and commitment to the One Health approach is crucial (Touati, Mongolia)(Ghotge , India)
- Changes must be implemented on the national policy level to ensure that local food supply systems are prioritized and small livestock keepers are not marginalized (Nesterov, Central Asia, Eastern Europe regions).
- Support for local supply chains needs to increase (Nesterov, Central Asia, Eastern Europe regions).
- Local produce, especially from poor livestock rearing households must get a minimum support price to ensure they can stay within livestock rearing instead of dropping out (Ghotge, India)
- Support to the cooperative dairy sector so they in turn support both farmers and consumers (Ghotge India)
- Support short value chains and encourage the consumption of local produce (Ghotge India)
- Governments should promote countries' self-reliance. For instance by banning and restricting imports (Padmakumar, Cambodia).

3.1.4 EUROPE

Impacts

Economic impacts

Overall, in Europe, the livestock sector has been protected quite effectively (Robinson, Europe). Of note is that at the beginning of the lockdown individuals rushed to the supermarkets in order to purchase conserved products (Steinfeld, Europe). Nevertheless, the sector has also suffered from the disruption of the supply chains and reduced demand for animal products, especially meat, from restaurants, caterings and exports that were blocked due to lockdown measures (Robinson, Europe; Ansón Navarro and Ruíz García, Spain).

The drop of consumers' "out of home" eating practices has led to a decrease in prices for beef and veal products (Agethen, Germany). Also, supply inputs were affected due to the increased difficulty of cross border movements. For instance prices for feed conservation have spiked (Steinfeld, Europe).

Additionally, the fall in families' incomes has led to a shift in consumption. Particularly, towards less pricy products. The domestic demand of poultry experienced an increase, leading to a reduction in production periods and a reduction in weights of animals (Ansón Navarro and Ruíz García, Spain).

Dairy production has also experienced some disturbances due to the impossibility of technical maintenance and repair services at production level, as well as the impossibility to import and export (for high value cheeses especially) (Ansón Navarro and Ruíz García, Spain). Extreme competition for shipping containers across the globe has occurred with rising

dairy surpluses in export regions. Consequently, the milk had to be dumped or stocked (Guedes, Europe).

At a general production level, the reduced mobility of workers has influenced slaughterhouse capacities, collection, logistics and transports (Agethen, Germany). These factors, together with the reduction of meat prices have led major slaughter companies to offer house-prices (prices below market notation) (Agethen, Germany).

Social impacts

Occasionally, the issue of labour shortages has aroused, particularly in Italy, which relies greatly on migrant informal labour in agriculture, especially in fruits and vegetables (Steinfeld, Europe).

Mitigation measures

In the short term, in Spain, the main goal would be to stabilize the most affected markets, especially the sheep meat sector and the sheep and goat milk sector. Spain has asked the European Commission to set market measures in the scope of the Common Agrarian Policy, to avoid the generation of surpluses (Ansón Navarro and Ruíz García, Spain). In addition, out-of-home eating sites should re-open as early as possible for they constitute a big part of the European demand for livestock products, which mainly comes from the restaurant sector (Agethen, Germany). Measures in Europe are currently being defined at the European level to aid the most affected sectors (Urwana, France).

Danone is working to develop and promote regenerative models of agriculture that protect soils, empower farmers and promote animal welfare. These models will help to promote regeneration of farms and reinforce their economic sustainability performance and competitiveness. Lastly, improved animal welfare standards show significantly higher milk production and quality (Guedes, Europe).

Mitigation elements with policy implications suggested for Europe

- It is of utmost importance that food systems build resilience and develop programs for calamity, as well as effective small and medium business management. The programs will improve the safety of small farm and homemade products by restricting the chain of sale to a maximum of two steps and organize simple control measures (Commandeur, Netherlands).
- For the economic crisis, businesses running restoration should be supported to reopen. (Agethen, Germany).
- It is also vital to strengthen the sustainability and resilience of food and livestock systems, particularly in the face of this type of health crisis (Urwana, France).

3.1.5 OCEANIA

Impacts

Economic impacts

Oceania reported distribution issues due to the closure of butchers, as well as some issues regarding product demand as a result of the disruption of international supply (Hill, New Zealand). In Australia, the demand for livestock products has dropped due to national and international isolation and movement restrictions. Fast food chains, restaurants and cafes have for the most part closed. Therefore, the demand for chicken, beef and pork has dropped considerably. An over-supply of pork and chicken has been reported, and beef, normally exported in large volumes, has had a reduction in demand. The latter as other countries have also experienced a decreasing demand (Rowland, Australia).

The livestock sector in New Zealand represents 75% of export earnings in the country. From a value chain perspective, the processing step is the one facing the greatest challenges. Many processing plants are closed, due to workers testing positive to the virus or the enforcement of physical distancing. Therefore, animal processing capacity has been reduced. Farmers, who just emerged out of a draught period, are ill equipped to face the crisis. Furthermore, due to the limited access to processing plants, animals remain in the farms, which are experiencing feed scarcity and lack optimal animal welfare conditions. Additionally, there is an issue with the coming autumn calving, where bobby calves will need to be transported to other farms, as well as a general movement of animals to winter farms, which are more resilient to wet soils. This is understood as an essential service but logistically difficult under lockdown conditions (Wedderburn, New Zealand).

Online information sharing and diverse forms of assistance are also fundamental to post crisis management. No face-to-face contact is allowed in the country, but farming is an essential service and a lot of remote farmers keep working with extension services, and feed budgets. Currently, farmers are also looking at ways in which to perform the processing step themselves (Wedderburn, New Zealand).

In addition, the prices of beef are decreasing given the lack of demand from restaurants. Likewise, farmers markets have been greatly affected due to low demand. Despite the challenges, the population still needs to eat. Consumers seem to be adopting containment diets focused on safe and healthy food choices. With products moving less through premium channels. Of relevancy, is the increase of online sales (TaoBao, Alibaba, Chinese online store) (Wedderburn, New Zealand).

New Zealand is also trying to export products with a cooperative agreement supportive of small and medium size businesses. This could impact the demand for New Zealand's products in two ways. Firstly, for countries that are traditionally not food importers yet remain financially strong, New Zealand could become a dependable supplier of animal based foods. In contrast, New Zealand cannot export to countries whose borders remain closed. This could also result in changes regarding land use within those countries, as a measure to decrease reliance on imported products (Wedderburn, New Zealand).

Mitigation measures

New Zealand imposed a very strict lock-down regime very early in the pandemic and eradicated the virus six weeks later (Wedderburn, New Zealand).

A major concern is the ability to manage livestock breeding and feed numbers, in accordance to what is occurring in the market place(s) and return to "normal" practices (eating out, consumption patterns, exports, etc.) (Rowland, Australia).

Something to be previewed for the future is the implementation of stricter safety protocols with high transparency along the value chain, from farm to processor. New Zealand has no informal markets, but in developing countries, this is a way of life. If greater food safety regulations are put in place and/or the product price at the farm level is reduced, one can expect a surge in the informal markets (Wedderburn, New Zealand).

3.1.6 GLOBAL

Impacts

In many countries in the South, the big/commercial livestock producers have not been greatly affected. In contrast, smallholders have suffered. Particularly, due to lost access to local markets (Gomasasca, global).

Owing to misleading information, panic and disaggregated measures, the livestock sector's access to markets has been limited. Additionally, supply and demand have been disrupted. In particular, perishable livestock products that were not able to enter the market have been discarded (Tekola, global).

Furthermore, the purchasing power of consumers has diminished, with preference for dry staples reducing the demand for higher-cost animal-source foods like meat (Gomasasca, global). However, international trade seems to have remained active. Consequently, big producers have been able to export their national surplus (Bisson, USA and global).

Additionally, milk local markets (informal and semi-formal exchanges) may experience increased importance if other food supply chains become disrupted (Bisson, USA and global).

Lastly, access to inputs (including veterinary drugs) has been limited, as have been pastoralists' movements (Gomasasca, global).

Mitigation measures

Short and medium term measures include tracking livestock market numbers and prices, in conjunction with the monitoring of market disruptions and reactions. Plans, based on transmission risks, for livestock markets are required (Bisson, USA and global).

From a sanitary point of view, hygienic measures should be secured, while demand for wildlife should be reduced. Ultimately, clear messages should be given to both the media and consumers (Bisson, USA and global).

The Food and Agriculture Organization (FAO) has published guidelines, which serve both animal health experts and support farmers in the fields. Additionally, to avoid any kind of confusion due to COVID 19 misinformation, FAO and the World Animal Health Organization (OIE) are working with specialists to go through a critical, on the field investigation regarding animals' ability or lack thereof, to serve as hosts and sources of virus

transmission for humans. As of this report, there seems to be no evidence of animal origin infection. Rather evidence suggests humans can infect animals (Tekola, global; Dop, global).

Mitigation elements for policy implications suggested globally

- Governments should purchase products. If the latter is not possible governments should provide guarantees to producers. Likewise, the private sector, associations that advocate for policy change, as well as local and regional research institutes that generate data for policy should be guaranteed support (Bisson, USA and global).
- Policies that reduce demand for wildlife should be developed/supported (Bisson, USA and global).
- Ultimately, clear messages regarding the pandemic should be given to both the media and consumers (Bisson, USA and global).
- Drivers of the crisis must be monitored. Additionally, plans for price fluctuations should be developed (Hemme, IFCN, Global)

For a summary of impacts and mitigation measures with policy implications in the five continents, please see Tables 4.1 and Table 4.2 in section 4.

3.2 Question on the role of livestock to avoid a sanitary crisis

What should be the role of the livestock sector in contributing to avoid a new sanitary crisis like the present one with COVID-19?

3.2.1 AFRICA

Minimize misconceptions

From a health perspective, it is of primary importance to minimize the misconceptions that link animal sourced foods (ASF) to the transmission of the COVID-19 pandemic (Mekuriaw, Ethiopia).

Preventing livestock zoonoses

The sector should ensure that awareness is created within livestock communities regarding the pandemic's epidemiology. To prevent the spreading of other possible zoonosis, strong support for research as well as the One Health initiative is needed.

The One Health approach includes strong collaboration among all key actors of the sector, especially medical workers and veterinarians. The latter should be particularly engaged and trained to work on a better implementation of strict biosecurity programs for transboundary diseases, which would improve surveillance, control and reporting methods that can limit the interaction between livestock, humans and game animals. In reference to that, wildlife consumption should be discouraged. Moreover, certain wildlife species should be domesticated.

Biosecurity measures should be better implemented also at the market-place level, where biological hazards can be eliminated with sanitation and hygiene measures. The spread of diseases may be avoided with less crowded markets, protective equipment and the implementation of physical distancing. Confidence in food safety and quality should be

ensured with improved traceability practices. Standards on sanitary production, biosecurity and food safety must be harmonized at the global level (Loma, Uganda; Tarawali, Kenya; Fintan, East Africa; Tawah, Ivory Coast).

Early warnings and leadership

Overall, the sector should plan and think about innovative early warning systems, as well as resilient measures to sanitary crises in order to minimize their effects. Preventive measures and better risk communication practices are of primary importance, particularly in conjunction with the establishment of key livestock networks that advocate for best practices as well as a strong collaboration between the private and public sector, and other agencies. Also, of significance is that critical livestock stakeholder leadership be increased. Especially, leadership involved in national decision-making bodies. The sector should play a major role in influencing policy through fora and providing evidence in terms of data (Lindeque, South Africa; Miheso, South Sudan; Mbae, Kenya; Arionga, Uganda).

Production practices

Regarding production practices, alternatives to intensive systems should be established, such as natural based solutions and organic livestock farming that support biodiversity, protect traditional knowledge and make certain types of breeding more conventional. For instance, local and crossbreeding programs are preferred over industrial breeding. Institutions should financially support vulnerable pastoralists due to their systems serving as good examples of sustainable use and management of natural resources. Communities could be empowered by means of income generation programs (Kaijutsya, Uganda; Boubakary, West and Central Africa; Arionga, Uganda).

3.2.2 AMERICA (North, Central and South America)

Awareness

The livestock sector should be part of the conversation and decision-making process regarding future pandemics. There should be global awareness on the importance of livestock agriculture. In addition, consumers should be educated in the work of livestock farmers (Odde, USA).

One Health reinstalled

Health policies should be fostered within the One Health vision, which should be reinstalled. Animal health and welfare through biosecurity measures, disease control and eradication plans should be emphasized as well. (Preliasco, Argentina; Helms, USA).

Harmonization of global standards

Healthy animals with zoonotic-disease-free certifications and treated with good hygienic practices could considerably improve the safety of animal products and lead to better food safety results. However, in order to have an optimal situation regarding food safety, global standards should be harmonized. Additionally, live animals for sale in wet markets should be banned and cooking methodologies of animal food should be improved (e.g. ethanol stoves and ventilated places over stoves/ wood burning in unventilated places) (Zani, Brazil; Helms, USA).

Silvopastoral systems

Also, of importance is the promotion of silvopastoral systems and avoiding the use of chemical and transgenic inputs on livestock farming. Research on the subject should increase (Jimenez Ferrer, México; Frère, Gran Chaco Americano).

Industry

At industry level, the establishment of protocols on good sanitary management and emergency operations, both in animal and human crises, is important. Livestock production should be considered the engine of the economy and higher food prices should be set. Market access and technology use for improvements in the offer and delivery of products should be promoted, for instance, with social networks (López, South America; Lim, USA; Ibrahim, CATIE, Belize).

3.2.3 ASIA

Awareness

In the livestock sector, awareness regarding the importance of sanitation and biosecurity practices should be fostered (Padmakumar, Nepal).

Production optimization

The veterinary sector should shift from maximum production practices to an optimal production mind-set (Nair, India).

Natural medicine

Chemical veterinary drugs should be reduced to a minimum. Instead, efforts should concentrate on finding more cost effective, safe and efficacious herbal alternatives for the prevention and cure of clinical conditions (Nair, India).

3.2.4 EUROPE

Healthy herds

The One Health approach together with surveillance mechanisms, biosecurity measures and management of animal diseases are crucial points. Having a healthy herd is the first step towards a high-quality final product, safe for commercialization and consumption (Guedes, Europe).

Origin of COVID-19

It is also important, with regard to COVID-19, to continue investigations to determine the origin of the coronavirus. While this origin is not yet known, it is useful to recall that for other coronavirus diseases, the animal origin has been demonstrated, and that beyond farming systems, zoonoses may involve wild animals (Urwana, France).

Spatial techniques

Spatial analytical techniques could be used to predict areas/systems where the emergence or re-emergence of novel pathogens might occur. This requires cumulative knowledge regarding factors such as: climate, agro-ecology, land-cover, distributions of wildlife, people and livestock, livestock agrifood systems, livestock infrastructure (e.g. wet markets, cattle markets) and transportation networks. (Robinson, Europe).

Risky wild animals

A list of risky wild animals with zoonotic potentials should be developed. Traceability, quality controls/protocols, good education and international standards will ensure the safety of food (Agethen, Germany; Urwana, France).

3.2.5 OCEANIA

Food safety perceptions

Perceptions on whether New Zealand's food is safe will depend on how effectively the government manages the outbreak in the country as well as its ability to assure the provenance of food challenges. This highlights the importance of traceability and the capacity to verify information, such as the use of block chains. Responsible biosecurity practices, more education and the One Health approach are also important to provide a great response platform for human diseases (Wedderburn, New Zealand; Rowland, Australia).

Shift to affordable foods should not jeopardize access to ASFs

The impact of the crisis on the global economy could lead to consumers selecting more affordable foods in all categories, including livestock sourced products. Thus, it is of the utmost significance that good nutrition remains accessible (livestock sourced foods have an important role to play in the supply of quality protein, vitamins and minerals) (Hill, New Zealand).

For a summary regarding the role of the livestock sector in the prevention of a sanitary crisis in the five continents, please see Table 4.3 in section 4.

Section 4: Summary Tables for the Five Continents of COVID-19 Impacts, Mitigation Measures with Policy Implications and Role of the Livestock Sector to Avoid a Sanitary Crisis

This section presents tables that summarize the main findings produced by the consultation. The tables capture common elements between the different continents reported during the survey regarding COVID-19's effects on the livestock sector, mitigation measures, policy implications, as well as the role of livestock in the prevention of future sanitary crises.

As explained in the second section of the report, 79 contributors from the 5 continents participated in the consultation, representing an estimated number of 39 countries. Certain participants contributed with the presentation of a general global picture.

Table 4.1 shows that as COVID-19 spread, certain patterns regarding its impact on the livestock sector emerged, regardless of geographical location. Firstly, consumers' purchasing power decreased. Consequently, the demand for more expensive and high-quality livestock products dropped. The limitations on movement and travel restrictions affected both local and international value chains. Leading to small and medium-sized farms to experience production and income difficulties. This caused a production surplus, which in turn, resulted in the dumping, wasting, and stocking (where possible) of products.

Table 4.1. Global Summary: Impact of COVID-19 on Livestock Sector

IMPACT	AFRICA	AMERICA	ASIA	EUROPE	OCEANIA
Consumers' purchasing power eroded rapidly, less food security, livelihoods decreased and demand dropped	X	X	X	X	
Limitations of movement as well as transport restrictions affected markets severely and increased waste and spoilage	X			X	X
Important reduction in trade activities, less farm earnings due to limited market access due to price drops	X		X		
Small, medium and large sized dairy and meat farms affected, meat processing plants most vulnerable	X	X		X	X
Milk local markets (informal and semi-formal) appreciated	Globally				
International trade continued but slowdown in imports, logistic problems		X		X	X
Input flows interrupted and pastoralists mobility reduced (overgrazing, water scarcity, heard mortality)	X				
Informal markets severely affected	X				
Reduction in livestock sourced food production due to lower input flows, higher input prices, market closures and fake news	X		X		

Uncontrolled monitoring of health and slaughter management of animals due to reduced veterinary extension and drug services	X	X	X		X
Reduction of field support and research activities, labs adapted for testing	X	X			
Supply chain disruptions and reduced demand for meat products	X	X	X	X	X
Drop in “out of home” food to decrease in beef and veal prices				X	X
Fall in real incomes led to shift in consumption towards less pricy products		X		X	X
Dairy products have experienced price volatility in the different phases of the crisis	X	X		X	
Dumping or stocking of milk		X	X	X	

Table 4.2 shows that globally the respondents stressed the importance of monitoring the drivers of the crisis and making plans for price fluctuations. Cooperation among all stakeholders belonging to the sector is critical. Moreover, the livestock sector should be considered essential and supported accordingly by governmental measures (loans, guarantees, and subsidies) to ensure the continuous operation of the chains. Thus, securing incomes for producers and farmers, employment possibilities, and social stability. The significance of research and clear communications to the wide public is also highlighted.

Table 4.2. Global Summary: mitigation elements with policy implications

MITIGATION ELEMENTS WITH POLICY IMPLICATIONS	AFRICA	AMERICA	ASIA	EUROPE	OCEANIA
Livestock chains require “essential” status to keep food chains operating and assure employment and social stability	X	X		X	X
Sanitary programs and border controls, tracking livestock market numbers and price disruptions		X			
Livestock market price interventions and import restrictions		X		X	
Ensure hygienic measures across the board		X			
Demand for wildlife should be reduced	Globally				
Governments to purchase products, give loans, guarantees to producers or subsidize stocking		X	X	X	
Government support for private sector and associations that advocate for policy change	Globally				
Government support for local and regional research institutes that generate data for policy making	Globally				
Promotion of hormone-free, low antibiotic and input-free livestock		X	X		

The drivers of the crisis must be monitored and plans for price fluctuations should be made	Globally				
Clear messages should be given for both the media and consumers	Globally				
Pastoralists need government support as mobility is essential for livelihoods	X				
Farmers training on production technologies and communication tools	X				
Contingency plans for catastrophic risks and sanitary crisis and resilience for calamities	X	X		X	
Enforcement of sanitary management of local markets	X	X		X	
Rescheduling of financial obligations for producers / processors, including taxes	X	X			
For certain cultural practices (marriages) livestock is essential	X				
Financial assistance for vulnerable households	X		X	X	
National budgets adjustment to support agricultural production	X				
Support for market networks to overcome mobility bans	X				
Key livestock stakeholders to be consulted in policy making	X				
Long-term re-examination of food systems concentration and consolidation, and ways to overcome mobility restrictions		X			
Research and development of the Coronavirus vaccine			X		

Table 4.3 shows there is a general consensus pointing to the prevention of zoonotic livestock diseases and ensuring food safety as activities that are key to the avoidance of future sanitary crises. Investments and research efforts, as well as the implementation of the One Health approach and better biosecurity practices, will be essential. Likewise, international cooperation and the harmonization of global standards with stricter safety protocols, better traceability information and regulation of wildlife animals and informal wet markets, are required. The topic of optimal production with the examples of extensive, organic, and silvopastoral systems compared with maximum production intensive systems has also been raised.

Table 4.3. Global Summary: role of livestock sector to avoid a sanitary crisis

ROLE OF LIVESTOCK SECTOR TO AVOID ANOTHER PANDEMIC	AFRICA	AMERICA	ASIA	EUROPE	OCEANIA
Minimize misconceptions, COVID-19 linked to ASF	X				
Preventing livestock zoonoses: research, One Health, biosecurity, transboundary diseases, training, wildlife markets, wildlife animals with zoonotic potential	X	X	X	X	
Early warnings and leadership: is our food safe?	X				X
Production practices: intensive vs extensive systems, natural and organic products, local vs industrial breeding	X		X		
Awareness: livestock sector part of global policy efforts to avoid future pandemic		X			
Harmonization of global standards: stricter safety protocols, health certifications, banning of live animals in wet markets, informal markets		X		X	X
Increase in silvopastoral systems research		X			
Good industry sanitary management and emergency protocols				X	
Switch from maximum to optimal production criteria			X		
Government vs private sector coordination, economic measures			X		
Surveillance and spatial analysis for prediction systems				X	
Traceability and verification of information, e.g. block chains					X

Section 5: Conclusions and GASL's Next Steps

While other pandemics have occurred in the past, epidemic infections in the last 100 years have increased and intensified. Even though there is no evidence of livestock contributing to the spread of COVID-19, the role that livestock farming plays in the development of zoonotic pandemics remains a leading concern.

Although the cross-species transmission of infectious diseases is generally a natural phenomenon, evidence shows that in current times the threat is accelerated by a complex combination of human activity pertaining to agriculture, including animal husbandry, environmental contamination, trade and economic integration.

Following the COVID-19 crisis, with this limited consultation GASL has observed that its fallout on several socio-economic and environmental fronts has been detrimental to efforts made to reach the SDGs. In general, the measures and trade restrictions adopted by various governments to limit the spread of the disease have posed a heavy burden on economic and social growth, freezing important segments of commercial activity.

Consequently, livestock value chains have experienced strong disruption. Access to basic resources such as feed and animal health services has become increasingly difficult, with both the production supply and the producers' incomes being affected by the crisis. Additionally, as consumers' purchasing power has eroded, the demand has also changed. A common observable trend among the various represented regions of the world has been the shift from premium livestock products to more affordable ones.

Given the unique ability of the livestock to ensure nutritious food, economic incomes, and social stability, the importance of protecting the livestock sector was emphasized several times during the consultation. Governments in particular are called to support the sector using the appropriate market measures in order to ensure the continuous operation of the chains and guarantee social stability for vulnerable households.

It is recognized that the occurrence of a sanitary crisis of zoonotic nature in domesticated animals cannot be ruled out. Therefore, it is essential to better understand such a possibility in order to prevent and limit the risks, while continuing to communicate the contributing role of livestock to the SDG's.

While this risk can potentially arise from any practice involving livestock, some systems are more prone than others because of the different factors, including production conditions, hygienic and food safety standards and legislations and cultural preferences. Given the wide diversity of situations worldwide and the adaptation of livestock systems to local needs, all stakeholders need to converge to share knowledge and experiences to find solutions across the different sectors and levels.

Therefore, and without minimizing the significant psychological, economic, and social consequences brought forth by the COVID 19 crisis, the latter should be developed as an opportunity for action to build a better future for the livestock sector through the employment of better sustainable approaches. GASL supports the idea of furthering the discussion in an online global multi-stakeholder partnership (MSP) meeting taking place from 14 to 18 September 2020, with regional components in the 5 continents from 31 August to 15 September 2020. The meeting is titled ["From Crisis to Action – Lessons from COVID-19 for](#)

[Building a Better Future through Sustainable Livestock](#)". This report will serve as a framework for said meeting.

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