

Good
Practice
Note

Environmental & Social
Framework for IPF
Operations

**Animal Health and
Related Risks**

Good Practice Notes (GPNs) are produced to help World Bank staff in providing implementation support to Borrowers in meeting the requirements of the Environmental and Social Framework (ESF). They are written in a style and format that is intended for all staff and development partners to use. GPNs are advisory in nature and are not World Bank policy nor are they mandatory. They will be updated according to emerging good practice.

First Edition

Published December 2020

This note was prepared by Franck Berthe (Senior Livestock Specialist, SAGGL), Ingrid Mollard (Consultant, SAGGL), Ian White (Partnership Officer, OPSSP) and Colin Scott (Consultant, OPSSP). The team gratefully acknowledges support and guidance from Caroline Plante (Senior Agricultural Specialist, SAFA4), Abdelaziz Lagnaoui (Lead Environmental Specialist, SAFE1), Agi Kiss (Lead Environmental and Social Standards Specialist, OPSSP), Brandon Enrique Carter (Senior Environmental Specialist, SAEE3), Kamau Ndirangu (Environmental Analyst, SESF2), Dania Mosa (Consultant, SAWE1), Chaogang Wang (Lead Social Development Specialist, SMNSO), Lia Sieghart (Practice Manager, SMNEN) and Julia Bucknall (Global Director, SESD2). This Note was peer-reviewed by Wolfhart Pohl (Lead Environmental Specialist, SEAE1), Sitaramachandra Machiraju (Senior Agribusiness Specialist, SEAAG), Hikuepi Epi Katjuongua (Senior Agriculture Economist, SAFA3), David Evan (Senior Industry Specialist, IFC), Mohammed Shamsuddin (FAO), and Catherine Machalaba (EcoHealth Alliance).

Abbreviations

ALOP	appropriate level of protection
ALOR	acceptable level of risk
AMR	antimicrobial resistance
AMU	antimicrobial use
AMS	antimicrobial stewardship
ASF	African swine fever
CAT DDO	catastrophe deferred drawdown option
CERC	contingency emergency response component
CITES	Convention on International Trade in Endangered Species
FAO	Food and Agriculture Organization of the United Nations
EFSA	European Food Safety Authority
ESF	Environmental and Social Framework
ESS	Environmental and Social Standards
GAP	good aquaculture practices
GAHP	good animal husbandry practices
GIIP	Good International Industry Practice
HACCP	Hazard Analysis Critical Control Points
HPAI	highly pathogenic avian influenza
IA	Implementing Agency
IPF	Investment Project Financing
IPPC	International Plant Protection Convention
ISPM	International Standard for Phytosanitary Measures
LMIC	low- and middle-income countries
LSD	lumpy skin disease
NAS	National Academy of Sciences (USA)
NRC	National Research Council (USA)
NGO	nongovernmental organization
OECD	Organisation for Economic Co-operation and Development
OIE	World Organisation for Animal Health
PPR	peste des petits ruminants
PVS	performance of veterinary services
TORs	Terms of Reference
TT	task team
WHO	World Health Organization
WTO	World Trade Organization

Glossary

Animal	Terrestrial —mammal, reptile, bird or bee—and aquatic —fish, mollusk, crustacean or amphibian.
Animal health management	A system designed to optimize the physical and behavioral health and welfare of animals. It includes the prevention, treatment and control of diseases and conditions affecting the individual animal and herd or flock, including the recording of illness, injuries, mortalities and medical treatments where appropriate.
Antimicrobial resistance	The ability of microbes to grow in the presence of substances specifically designed to kill them. It is the result of microbes changing in ways that reduce or eliminate the effectiveness of drugs, chemicals, or other agents to cure or prevent infections they cause.
Biodiversity	The variability among living organisms from all sources, including, inter alia, terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are a part; this includes diversity within species, between species, and of ecosystems.
Biosecurity	A set of management and physical measures designed to reduce the risk of introduction, establishment and spread of animal diseases, infections or infestations to, from and within an animal population.
Consequence assessment	The process of describing the relationship between specified exposures to a biological agent and the consequences of those exposures. A causal process must exist by which exposures produce adverse health or environmental consequences, which may in turn lead to socio-economic consequences. The consequence assessment describes the consequences of a given exposure and estimates the probability of their occurring.
Emerging disease	A new occurrence in an animal of a disease, infection or infestation, causing a significant impact on animal or public health resulting from either a change of a known pathogenic agent or its spread to a new geographic area or species; or a previously unrecognised pathogenic agent or disease diagnosed for the first time.
Hazard identification	Part of the process used to evaluate if any particular situation, intervention may have the potential to cause harm; for example, identifying pathogenic agents that could potentially be introduced with importation of live animals.

One Health	A collaborative approach for strengthening systems to prevent, detect, respond to, and recover from primarily infectious diseases and related issues, such as antimicrobial resistance, which threaten human health, animal health, and environmental health collectively. This approach uses tools such as surveillance and reporting, ultimately seeking to improve global health security and achieve gains in development.
Pathogens	Microbes that induce infectious disease patterns in their human, animal, or plant hosts, usually as a way to spread and advance their own reproduction.
Risk	The combination of the likelihood of the occurrence of a defined hazard and the likely magnitude of the consequences of the occurrence.
Risk analysis	The process composed of hazard identification, risk assessment, risk management and risk communication.
Qualitative risk assessment	An assessment of the likelihood of the outcome or the magnitude of the consequences, the outputs of which are expressed in qualitative terms, such as high, medium, low or negligible.
Quantitative risk assessment	An assessment of the likelihood of the outcome or the magnitude of the consequences, the outputs of which are expressed numerically.
Surveillance	The ongoing systematic collection, collation, and analysis of information related to public health (animal and human), and the timely dissemination of information so that action can be taken. The information is used, for example, in actions that prevent and control an infectious disease.
Uncertainty	The lack of precise knowledge of the input values which is due to measurement error or to lack of knowledge of the steps required, or the pathways from hazard to risk, when building the scenario being assessed.
Variability	A real-world complexity in which the value of an input is not the same for each case due to natural diversity in a given population.
Veterinary Services	The organizations that implement animal health and welfare measures and other standards and recommendations in the Aquatic and Terrestrial Codes in the territory, whether governmental or nongovernmental. The veterinary services are under the overall control and direction of the veterinary authority. Private-sector organizations, veterinarians, veterinary paraprofessionals or aquatic animal health professionals are normally accredited or approved by the veterinary authority to deliver the delegated functions.
Wildlife	Wild animals, captive wild animals and feral animals.
Zoonosis	A disease which can be transmitted to humans from animals.

Contents

1. Introduction	1
2. Objectives and Scope	2
3. Animal Health and Related Risks	4
ESS3: Resource Efficiency and Pollution Prevention and Management	5
ESS4: Community Health and Safety	7
ESS6: Biodiversity Conservation and Sustainable Management of Living Natural Resources	7
ESS10: Stakeholder Engagement and Information Disclosure	8
4. Good Practice in Animal Health Risk Assessment and Management	9
Approach	9
Scoping of risks	9
Team skills required	11
Risk communication	12
Typical outputs and recommendations	13
ANNEX 1: Addressing Animal Health-related Risks in Operations	14
ANNEX 2: Examples of Mitigation Measures	22
ANNEX 3: Examples of TORs for Risk Assessment	34
ANNEX 4: Examples of Indicators of Best Practice Implementation	36
ANNEX 5: Addressing Gender Through Livestock Projects	38
ANNEX 6: Animal Welfare	42
ANNEX 7: Antimicrobial Resistance	45
References and Resources	49
References	49
Resources - Existing Guidance for Risk Assessment	50

1. Introduction

The ESF and Animal Health

This note explains how the Environmental and Social Framework (ESF) can help identify, assess and manage health related risks in projects involving live animals. There are inherent environmental and social risks in operations involving animals, whether they are agriculture or livestock projects, or projects involving animals as assets, such as community development or landscape management. Through hazard identification, assessment and mitigation of related risks, the ESF provides a systematic approach with clearly defined roles for both Borrower and Bank staff.

Animal Health and Risks

Livestock are a critical part of food, health, economic and environmental systems. Along with providing food (e.g., fish, meat, eggs and milk), farm animals can also support livelihoods through provision of non-food goods and services (e.g., wool and leather, transport and draft power) that can be exchanged for other goods or cash. In addition, animal assets can be liquidated in case of necessity. Smallholders rely on livestock for their livelihoods, food, income and insurance against crop losses and other calamities.

Animals can also generate significant negative impacts. Infectious diseases may affect the quality or quantity of livestock production; they may pose a threat to public health, especially to the most vulnerable communities because of their limited resilience. The Bank's operations involving live animals, while promoting the public goods that animals can provide or contribute to, should address the potential adverse impacts and, in particular, the health-related risks for humans, for the animals themselves and for ecosystems.

Depending on circumstances, similar hazards may lead to very different consequences and hence different levels of risk, requiring different management options. Identifying hazards and characterizing and assessing potential risks during project preparation and implementation can reduce or avoid the impacts of diseases, protecting both people and animals. Unmanaged risks, on the other hand, can have significant social, environmental and economic consequences on food security, animal health and welfare, public health, biodiversity and ecosystem services.

How to use this note

This note explains how, throughout the project cycle, the ESF can contribute to sound project design and implementation in order to manage risks associated with live animals. As throughout the ESF, the Borrower meets the requirements of the relevant ESSs, while the Bank exercises its due diligence under the ESF as set out in the Environmental and Social Policy. Following section 2 below, which provides an overview of the potential risks, section 3 discusses each of the relevant ESSs as points of entry for risk assessment and management, and section 4 lays out good practice, step-by-step. The annexes contain more detail on identification, assessment and mitigation measures at project level, plus useful additional resources on good practices.

World Bank Good Practice Notes

The World Bank is providing a series of Good Practice Notes (GPN) to support the implementation of the ESF in World Bank-financed operations. GPNs are developed in partnership with specialists from inside and outside the Bank and are designed to be reviewed and updated periodically, when appropriate. This note focuses on managing risks and impacts associated with animal health. It supplements the provisions in the ESF – the Environmental and Social Policy and Environmental and Social Standards (ESSs) – with good practice and operational examples. It should be read in conjunction with the ESF, including the Policy, ESSs1-10, the accompanying Guidance Notes for Borrowers, and Bank Directives.

2. Objectives and Scope

This Good Practice Note (GPN) applies to Investment Project Financing (IPF) under the ESF involving live domestic animals (including livestock, food-producing and working animals, terrestrial and aquatic animals). It includes reference to scenarios and activities involving agriculture, landscape and environment, water, forests, education, etc., wherever risks may be identified and managed. Food safety aspects have been excluded from the scope of this GPN, which will be addressed elsewhere. The GPN does not address impact on animals caused by other types of projects such as, for example, destruction of habitat in a road or dam construction.

Livestock and aquaculture are two of the fastest growing sub-sectors in agriculture. Both play a key role in achieving the World Bank's twin goals of poverty reduction and shared prosperity for the billions of people who depend on these sectors for their livelihoods and for the countries in which agriculture is a substantial part of GDP. Requests for World Bank support to livestock operations have increased since 2010, with most of this growth happening in Africa and Asia.

The primary audience of this GPN is World Bank staff, particularly environmental and social specialists, and task team leaders and members. The GPN will help Bank staff work with Borrowers to understand the key issues, challenges and limitations of good risk assessment practice in preventing and limiting health-related risks for animals, people and ecosystems. The GPN will strengthen the process of identifying hazards related to animal health, and assessing risks and mitigation options in IPF operations, by sharing relevant methodologies, providing access to technical information and international experience, and supporting Bank staff during initial environmental and social (ES) risk screening to ensure that related risks are handled in a proportionate and sustainable manner for the benefit of people, animals and their environment.

More specifically, this GPN will (i) assist Bank staff in understanding the requirements of the ESF regarding screening and scoping risks associated with projects involving animals; (ii) enable staff to support the Borrower in assessing and managing identified risks; (iii) provide guidance and offer examples as to when and how staff should apply the ESF's requirements for risk analysis; (iv) review existing guidance on risk analysis; and (v) share lessons learned from available case studies.

This GPN addresses animal diseases, zoonoses, veterinary public health, and animal health and welfare, with focus on:

- (i) diseases and conditions having an impact on animals; and
- (ii) diseases of animals transmissible to humans and having an impact on communities.

Box 1 provides an overview of the many dimensions of health risks at the human-animal ecosystem interfaces.

Box 1. Multiple dimensions of animal health... what should we look for?

There is a strong functional nexus between animal diseases, nutrition and health, and food security. The rapid growth of animal production for food, over the past decades, has come with profound transformations of the sector. While more traditional and diversified systems continue to exist, much of this growth has consisted of rapid expansion of modern, intensive production systems. Meeting the ever-rising demand, as the global population has expanded to nearly 7.6 billion in 2020 and may reach 8.5

billion by 2030, increasingly comes with problems related to animal health and welfare. This makes sustainable production a daunting task. A better understanding of the economics of animal health and welfare can help.

Infectious diseases: Infectious diseases often result in a decrease in production, reduced value of the animals, and sometimes their death, all of which have an economic impact on households and other producers. The burden of endemic infectious animal diseases, often neglected, persists in many countries, representing ranges up to 50 percent losses in animal production in low- and middle-income countries and 20 percent globally. A study conducted in Africa reported that only a small number of diseases were responsible for nearly US\$9 billion in losses per year due primarily to animal death (87% of all costs), dwarfing the costs of vaccination and treatment (8% and 5% respectively).

Zoonoses: Zoonoses, i.e., diseases that animals can transmit to humans, present a major obstacle to human and sustainable development efforts. Brucellosis, rabies, anthrax and tuberculosis, for example, are among the zoonotic diseases that together are responsible for the deaths of 2.2 million people and 2.4 billion illnesses each year, the vast majority of which occur in low- and middle-income countries.

Antimicrobial resistance. Antimicrobial resistance (AMR) is a global threat. Globally, about 73 percent of all antimicrobials sold are used in animals raised for food. Beyond potentially serious consequences for public health, the reliance on antimicrobials to meet demand for animal-sourced food is a threat to the sustainability of the livestock sector itself, and thus to the livelihood of farmers around the world. There is an absolute need to curb the use of antimicrobials in livestock and aquaculture. Failure to do so will undermine sustainable food production and jeopardize global capacity to deliver on the UN 2030 Sustainable Development Goals. See Annex 7 for more details on AMR.

Animal welfare: Animal health and productivity are linked to animal welfare. Well-cared for animals are productive animals; similarly, improving animal welfare enhances health, sustainability and production, opening up new trade opportunities for farmers and other actors along the value chain. Poor welfare in livestock, in working animals and food producing animals, can cause suffering, and affect their ability to provide expected services or production. The World Organisation for Animal Health (OIE), the intergovernmental organization that is responsible for improving animal health worldwide, has developed international standards to support animal health and welfare. Good animal welfare requires disease prevention; appropriate veterinary care, shelter, management and nutrition; a stimulating and safe environment; humane handling; and humane slaughter or killing. See Annex 6 for more details on animal welfare.

One Health: Human health and animal health are interdependent and bound to the health of the ecosystems in which people and animals live. The COVID-19 pandemic exemplifies the risks inherent in our connections with animals; the disease is of zoonotic origin and, like many other emerging infectious diseases, may have crossed over to infect humans from interaction with animals in close proximity, live or slaughtered. Other major health events in the recent past (such as Nipah, H5N1 and H1N1 influenza, MERS-CoV, Ebola, Rift Valley fever) underscore the connectivity between human and animal health, as well as the role of ecosystem alteration, climate change, globalization or inadequate biosecurity, among other drivers of disease emergence and spread. The One Health approach consists in cross-sectoral, collaborative interventions for strengthening systems to prevent, prepare for, and respond to infectious diseases and related issues, such as antimicrobial resistance, with an endpoint of improving global food and health security and achieving gains in sustainable development.

3. Animal Health and Related Risks

There are five Environmental and Social Standards (ESS) that have particular relevance for animal health and related risks to humans, animals and the environment:

- ESS1 (Assessment and Management of Environmental and Social Risks and Impacts),
- ESS3 (Resource Efficiency and Pollution Prevention and Management),
- ESS4 (Community Health and Safety),
- ESS6 (Biodiversity Conservation and Sustainable Management of Living Natural Resources), and
- ESS10 (Stakeholder Engagement and Information Disclosure).

Each of these standards are “entry points” for assessment and management of animal health and related risks for humans, animals and the environment, although they are not necessarily sequential and should be addressed collectively. Annex 1 of this note provides a step-by-step guide to recommended actions throughout the project lifetime, from identification to implementation and monitoring.

ESS1: Assessment and Management of Environmental and Social Risks and Impacts

ESS1 sets out the requirements for assessment and mitigation of environmental and social risks and impacts, including a number of specific environmental and social risks in paragraphs 28 (a) and 28 (b), respectively. As a starting point, the assessment under ESS1 should reflect the diversity of operations involving animals to which ESS requirements apply. This includes, for example, projects aimed at improving: (i) livestock production and productivity (including, e.g., expansion of feed resources, improvement of animal genetics, upgrading to larger-scale commercial farming); (ii) market access, development of value chains and post-farm-gate facilities (including, e.g., transport of livestock, export of livestock); (iii) input services and service delivery (including, e.g., strengthening access to public and private animal health services); (iv) emergency support for livestock (including, e.g., management of disease outbreak, livestock destocking due to drought); or (v) livelihood of communities (including, e.g., distribution of livestock for income-generating activities or as a safety net; use of livestock in the context of access to education, building roads).

For the purpose of this GPN, three main types of projects are considered: (i) livestock projects, i.e., with a primary focus on increasing livestock productivity/production and commercialization; (ii) livelihood and other projects with livestock activities, i.e., livestock distribution for income generating activities or safety net, education projects, road projects, environment projects, community-driven development projects; and (iii) emergency projects.

The wide range of interventions and activities involving animals means that the associated risks will vary greatly (see an overview in **Box 1** above), for example, transmission of communicable diseases when restocking, diffusion of pathogens from domestic animals to wildlife with risk for biodiversity or ecosystem integrity, poor animal welfare (for example, inadequate housing, long distance transportation of live animals, limited access to veterinary services), and water pollution (by livestock manure or chemicals). Recommendations for mitigation options should be tailored to the type of risks identified for specific interventions (some examples are provided in **Annex 2**). These can include activities such as vaccination programs, awareness campaigns, quarantine for newly purchased animals, strengthening of veterinarian services, etc.

Animal diseases may pose particularly serious risks to specific groups—particularly vulnerable ones, such as women, and even more so pregnant women, and young children—or communities because of their exposure or limited resilience. These adverse impacts on “at risk” populations are likely to happen unless

hazards are identified, and related risks assessed and mitigated. Particular attention should be paid to identifying the varied populations who may engage with animals in livestock interventions: this includes women (see **Box 2**, below, for an illustration); children (who often attend to domestic animals or act as shepherds when not in school); mobile communities, such as pastoralists (for whom consultations may need to be tailored to the season); workers manipulating raw products (in slaughterhouses, dairies and meat and wet markets); as well as ethnic groups and other minorities.

The risk assessment should also pay particular attention to risks related to cross-border livestock activities (e.g., importation and exportation of livestock for distribution or commercialization, importation of genetic materials and medicines) as they can have a significant impact on a large segment of the population and even a country as a whole, for example, when imported livestock introduce an exotic disease.

Box 2. Women's exposure to animal health and related risks

Women play an important role in the livestock sector and may be differently affected—compared to men—by animal health risks. For example, they face greater exposure to zoonotic diseases, and in particular foodborne zoonoses, when managing animals, milking or handling raw animal products such as milk, meat or eggs. Frequent daily contact with poultry and small ruminants exposes women to higher specific health and safety risks, such as avian influenza, tuberculosis and brucellosis, among other zoonotic diseases. Other risk factors for women include limited access to animal health services (e.g., vaccines, deworming) due to economic, social and cultural reasons as well as lack of mobility and time; lack of animal health advice relevant to specific production needs; and lack of resources to pay for private veterinary services. Often the final decision on animal health is whether to invest resources—medicines or vaccines—into an animal, and often that decision is not within a woman's power to make. Women may have less knowledge about zoonotic diseases than men, but they usually play an important role in being first identifiers of diseases in children and animals.

The assessment of risks related to animal health should carefully consider issues specifically related to women and provide the project with options for mitigation measures and best practices to address their needs, for example:

- Training women's groups on how to identify, prevent, and report livestock diseases;
- Raising awareness and disseminating animal health knowledge through mainstream media and communication channels that are most popular among women (or that specifically target women), such as radio, TV soap operas, billboards, flyers, leaflets, mobile theater groups, hotlines or text-messaging among others;
- Designing and implementing gender-specific food hygiene training, addressing key health and food safety issues, from the farm to the fork.

ESS3: Resource Efficiency and Pollution Prevention and Management

Under ESS3, the risks associated with interventions in projects involving animals include water and soil pollution due to, inter alia, mishandling of carcass disposal during disease outbreaks; infrastructure wastes (farms, slaughterhouses, laboratory effluents), including manure, disinfectants, insecticides, antimicrobials and other chemical residues; and change in land use for livestock feed production. The inadequate and frequent use of antimicrobials by farmers in water and soil can also lead to antimicrobial resistance genes. Production levels and practices can be managed in ways that address adverse impacts on land, water, and the environment and the risks posed to animal and human health.

Box 3 provides examples of how managing animal health can reduce risks for the environment.

Box 3. Managing animal health reduces risks for the environment

African swine fever (ASF) is a viral disease affecting pigs, with a case fatality rate up to 100 percent. Pigs who died from ASF have sometimes been improperly disposed of (dumped in rivers or improperly buried) due to fear of the consequences of declaring an outbreak to the authorities, the high costs of proper disposal and inadequate financial compensation for farmers whose pigs are culled during a control program. The improper disposal of carcasses can pollute both ground and surface water sources, and contribute to further spread of the disease because of the high resistance of the virus in the environment. A single drop of blood from an acutely infected pig contains up to 50 million particles of the ASF virus; and a single viral particle in the water is potentially enough to spread the disease. In addition, large amounts of *Escherichia coli* and other enteric germs can enter water sources from the dead animals, leading to diarrhea, abdominal pain, severe dehydration, and even death of people who might drink the polluted water.

Affected farms that have had their herds culled require immediate destruction of all material such as feed, bedding and dung, and cleaning and disinfection of animal areas. Teams should wear protective clothing and disinfect themselves, particularly their hands and boots, after operations. Proper disposal of carcasses to avoid polluting soil or water includes: (i) use of a well trained and equipped team to carry out the cull; (ii) disposal of carcasses and material by deep burial or incineration; and (iii) decontamination of the premises.

Even in the absence of major outbreaks, unsustainable expansion of animal production can lead to environmental damage and water pollution, such as in Vietnam, for example, where there was no system in place to certify sources of healthy, quality shrimp seeds and ensure that adequate biosecurity measures would be taken at the farm level. Inappropriate and too frequent use of antimicrobials in aquaculture had a negative impact on animal and human health (emergence and spread of AMR) and food safety, and contributed to pollution of land and water in coastal estuaries, leading many farmers to abandon their farms, due to poor quality of the product.

The Vietnam Coastal Resources for Sustainable Development Project (CRSD) promoted the adoption of Good Aquaculture Practices (GAP) to manage shrimp health and environmental risks. The GAP include traceability, hygienic conditions, food safety requirements, animal health management, environmental protection and other social aspects. The project also identified and sought to address other weaknesses, including: (i) the frequent use of antibiotics and chemicals by farmers as noted above; (ii) capacity of public veterinary services to undertake aquaculture disease diagnostics, surveillance, containment, and response; and (iii) weak environmental monitoring, management, and enforcement, especially of pond-effluent treatment.

The project interventions to manage shrimp disease and environmental risks included: (i) adoption of GAP and establishment of GAP zones and GAP certification; (ii) use of high-quality seeds and broodstock; (iii) upgrading of wastewater treatment to improve pond water quality (bioflocs, bio-treatment, etc.); (iv) early and timely disease control and outbreak; (v) upgrading of infrastructure for biosecurity; (vi) enhanced veterinary services and extension services; (vii) information and awareness campaigns; (viii) training of farmers; and (ix) formation of a participatory community-based disease monitoring system.

- The project reduced shrimp lost to disease by 87 percent, and increased income from aquaculture by 76 percent. In addition, more than 9,000 shrimp farmers applied GAP to an area of over 12,500 ha; raising the proportion of production areas applying GAP and meeting national standards for

water effluent by 86 percent. The technologies introduced were particularly relevant to small farm conditions and made it easy for farmers to understand the benefits of applying GAP.

ESS4: Community Health and Safety

Under ESS4, the risks to community health and safety associated with projects involving animals can include infectious diseases with zoonotic potential (e.g., rabies, anthrax, tuberculosis, brucellosis, Q Fever), some of which can particularly affect workers (e.g., Rift Valley fever or Crimea Congo hemorrhagic fever in slaughterhouses, meat and wet markets are examples of occupational zoonoses). When animals are raised in high density with poor overall farm management and husbandry, the risk increases for emergence and spread of infectious diseases, including for example, highly pathogenic avian influenza (HPAI).

Box 4 underlines how good practices in animal husbandry can reduce risks for people and communities.

Box 4. Good animal husbandry practices to minimize impacts on human health

Good animal husbandry practices (GAHP) can significantly contribute to improving animal health and, consequently human health. It can reduce animal disease spread, improve animal survival rates, increase animal productivity, reduce risks of antimicrobial resistance and improve food safety. In Vietnam, the Livestock Competitiveness and Food Safety Project (LIFSAP)-Additional Financing has implemented GAHP with activities such as (i) training of farmers (poultry and pig), extension officers, animal production and veterinary staff in the application of GAHPs including feed conversion technology and proactive disease control measurements; (ii) provision of equipment and goods to strengthen provincial- and district-level livestock services delivery, including animal disease control and surveillance; (iii) support to waste management; and (iv) biosecurity investments at the farm level (e.g., matching grants for constructing biogas digesters and biosecurity measures).

The project has benefited over 151,000 livestock farmers. It has increased the production efficiency of household-based livestock producers; reduced the environmental impact of livestock production, processing and marketing; and improved food safety in livestock product supply chains (mainly meat) in selected provinces. One major outcome of the project is the reduction of the quantities of antimicrobials used by the recipients of the project, and hence lower quantities of residues in the food chain and in the environment. Overall, it has improved food safety and public health in the communities where the project was implemented.

ESS6: Biodiversity Conservation and Sustainable Management of Living Natural Resources

The risks associated with livestock interventions under ESS6 include animal welfare (in relation to housing, transport, and slaughter); diffusion of pathogens from domestic animals to wildlife, with risks for endemic species and biodiversity (e.g., sheep and goat plague in Mongolia affecting the saiga, an endemic species of wild antelope); the introduction of new breeds with potential risk of introducing exotic or new diseases; and the release of new species that are not endemic with competitive advantage, potentially putting endemic species at risk of extinction.

Animal welfare relates to how an animal is coping with the conditions in which it lives. An animal is in a good state of welfare if it is healthy, comfortable, well nourished, safe, able to express innate behavior,

and is not suffering from unpleasant states such as pain, fear or distress. Good animal welfare requires appropriate animal care, disease prevention and veterinary treatment; appropriate shelter, management and nutrition; humane handling, slaughter or culling. The OIE provides standards for animal welfare on farms, during transport and at the time of slaughter, for their welfare and for purposes of disease control, in its Terrestrial and Aquatic Codes. The 2014 IFC Good Practice Note: Improving Animal Welfare in Livestock Operations is another example of practical guidance provided to development practitioners for implementation in investments and operations.

Pastoralists rely heavily on livestock as a source of food, income and social status. Emergency projects to restock the herds of pastoralists affected by drought, disease or other natural disaster should pay particular attention to animal welfare (in terms of transport, access to water, feed, and animal health) to avoid potential disease transmission and ensure humane treatment of animals. Restocking also entails assessing the assets of pastoralists and their ability to maintain livestock in good conditions (access to pasture and water, social relationship, technical knowledge, etc.). Pastoralist communities also need to be engaged by the project to determine the type of animals and breed and the minimum herd size to be considered for restocking.

Box 5. Safeguarding the welfare of animals and related risks in project activities

In Haiti, the RESEPAG project (Relaunching Agriculture: Strengthening Agriculture Public Services) financed housing for goats and provided technical recommendations for improving their welfare, which is critical to avoid the respiratory infections, including pneumonia, that are serious diseases for goats. To prevent these diseases, requires optimal sanitation and air quality in herd housing. This involves ensuring that buildings have adequate ventilation and dust levels are reduced to minimize the opportunity for infection. Good nutrition, water and minerals are also needed to support the goats' immune function.

The project paid particular attention to: (i) housing design to ensure good ventilation; (ii) locating housing close to water sources and away from human habitation and noisy areas; (iii) providing mineral blocks for micronutrients; (iv) ensuring availability of drinking water and clean food troughs.

ESS10: Stakeholder Engagement and Information Disclosure

Readers should also refer to ESS10 and its guidance notes, plus the template available for a stakeholder engagement plan. More detail on stakeholder engagement in projects with risks related to animal health is contained in section 4 below.

The type of stakeholders (men and women) that can be engaged by the Borrower as part of the project's environmental and social assessment and project design and implementation are diverse and vary based on the type of intervention. The stakeholders can include:

- Pastoralists, farmers, herders, women's groups, women farmers, community members, fishermen, youths, etc.
- Cooperatives members, farmer groups, women's livestock associations, water user associations, community councils, slaughterhouse workers, traders, etc.
- Veterinarians, para-veterinary professionals, animal health workers, community animal health workers, faculties and students in veterinary colleges, etc.

4. Good Practice in Animal Health Risk Assessment and Management

Approach

Risk assessment provides the transparent, adequate and objective evaluation needed by interested parties to make decisions on health-related risks associated with project activities involving live animals. As the ESF requires, it is conducted throughout the project cycle, to provide or indicate likelihood and impact of a given hazard, identify factors that shape the risk, and find proportionate and appropriate management options.

The level of risk may be reduced by mitigation measures, such as infrastructure (e.g., diagnostic laboratories, border control posts, quarantine stations), codes of practice (e.g., good animal husbandry practices, on-farm biosecurity, quarantine, vaccination), policies and regulations (e.g., rules for importing live animals, ban on growth hormones and promoters, feed standards, distance required between farms, vaccination), institutional capacity (e.g., veterinary services, surveillance and monitoring), changes in individual behavior (e.g., hygiene, hand washing, care for animals). **Annex 2** provides examples of mitigation practices. This list is not an exhaustive one but a compendium of most practiced interventions and activities. The cited measures should take into account social, economic, as well as cultural, gender and occupational aspects, and other factors that may affect the acceptability of mitigation practices by project beneficiaries and other stakeholders.

Risk assessment is reviewed and updated through the project cycle (for example to take into account increased trade and travel connectivity between rural and urban settings and how this may affect risks of disease occurrence and/or outbreak). Projects monitor changes in risks (likelihood and impact) by using data, triggers or indicators.

Scoping of risks

Early scoping of risks related to animal health informs decisions to initiate more comprehensive risk assessment according to the type of livestock interventions and activities. It can be based on the following considerations:

- Type of livestock interventions supported by the project (such as expansion of feed resources, improvement of animal genetics, construction/upgrading and management of post-farm-gate facilities, etc. – see also Annex 2);
- Geographic scope and scale of the livestock interventions;
- Human and animal populations that are likely to be affected (farmers, women, children, domestic animals, wildlife, etc.); and
- Changes in the project or project context (such as emerging disease outbreak, extreme weather or climatic conditions) that would require a re-assessment of risk levels, mitigation measures and their likely effect on risk reduction.

Scenario planning can also help to identify project-specific vulnerabilities, country-wide or locally, and help shape pragmatic analyses that address single or multiple hazards.

In this process, some populations may be identified as having disproportionate exposure or vulnerability to certain risks because of occupation, gender, age, cultural or religious affiliation, socio-economic or health status. For example, women and children may be the main caretakers of livestock in the case of

household farming, which puts them into close contact with animals and animal products. In farms and slaughterhouses, workers and veterinarians are particularly exposed, as they may be in direct contact with sick animals (see **Box 2** for an illustration).

Fragility, conflict, and violence (FCV) can exacerbate risk, in terms of likelihood and impact. Migrants new to a geographic area may be immunologically naïve to endemic zoonotic diseases or they may inadvertently introduce exotic diseases; and refugees or internally displaced populations may have high population density with limited infrastructure, leaving them vulnerable to disease exposure. Factors such as lack of access to sanitation, hygiene, housing, and health and veterinary services may also affect disease prevalence, contributing to perpetuation of poverty in some populations. Risk assessment should identify populations at risk and prioritize vulnerable populations and circumstances where risks may be increased.

It should be noted that activities that seem minor can still have major consequences. See **Box 6** for an example illustrating how such small interventions in a project may have large-scale consequences. It highlights the need for risk assessment, even for simple livestock interventions and activities, and how this can help during the project cycle (from concept to implementation).

Box 6. Small interventions with large consequences: imports of livestock and introduction of exotic diseases

The Lake Victoria Environment Management Project included a program for distribution of goats to farmers across the country. A total of 5,438 male and female goats were distributed by government to farmers in various locations, of which 494 male goats were imported from Uganda. No ex-ante risk assessment was conducted to consider whether the imported goats were infected (due to a possible breach in vaccination in the country of origin). As it happened, they had “sheep and goat plague” (peste des petits ruminants, PPR), a highly contagious and fatal disease. More than 8,500 goats died of PPR in Burundi, affecting the livelihood of farmers and herders who rely on goat and sheep for everything from meat to fertilizer and as a source of cash.

The Government and the World Bank, with FAO and OIE, rapidly reacted to contain the outbreak and avoid further spread. The government response included a ban on the movement and sale of small ruminants in affected provinces, effectively freezing some of the mobile assets of a large part of the country. Those same people affected by the loss of their assets faced difficulties in buying seed and fertilizer, and paying for household costs such as school fees and medical expenses. Goat meat stalls stood empty by the side of the road. The response also included mass vaccination: over 3 million goats and sheep—the country's entire stock of small ruminants—were vaccinated in a first campaign. The cost of managing this crisis has been estimated at US\$3 million and required significant interventions, including:

Short-term response in the affected areas (3 months)

- Training of trainers: logistics, purchase of animals for demonstration and trainers.
- Information and Communication: radio campaign on vaccination, local meetings to inform, meetings of Provincial Crisis Groups.
- Vaccination Campaign: vaccines, syringes/needles, cold chain, biosecurity equipment, cell phone/GPS, training of vaccinators, implementation of vaccination and contingency funding in case PPR spread to another province.
- Analyses: laboratory kits and tubes and sampling in case of suspicion of PPR.

- Sero-monitoring and post-vaccination surveillance: sampling, laboratory kits and transport and laboratory testing.
- Coordination: transport and staff cost, epidemiologist/ crisis management expert.

Medium-term actions (21 months)

- Training: training on biosecurity/protection of staff, training of trainers, training of field staff, training on PPR diagnostic and other small ruminant diseases, etc.
- Information and Communication: communication on PPR (radio campaign, print and community meetings) and on PPR vaccination (radio campaign, print and community meetings).
- Vaccination Campaign: vaccines, syringes/needles, cold chain, biosecurity equipment and cell phone/GPS.
- Analyses: laboratory kits and tubes, laboratory equipment, and sampling in case of suspicion of PPR.
- Coordination: vehicles, including operation and maintenance, forums, consultants (experts in small ruminants, communication, project management, epidemiology), technical support, etc.
- Surveillance and Sero-monitoring: sampling, laboratory kits, transport and strengthening of surveillance at borders and livestock markets.
- Study and Monitoring and Evaluation: socio-economic impact of PPR, support to implementation of PPR strategy, etc.
- Rehabilitation of households affected by the PPR: restocking (to be undertaken once the vaccination campaign and epidemic have been declared completed).

Small ruminant markets were reopened shortly after the short-term response, although the import of small ruminants into Burundi remained prohibited. Results from the sero-monitoring campaign confirmed the high quality of the vaccine used, and the quality of the vaccination campaign carried out by the veterinary services. A socio-economic study was conducted to identify the specific circumstances faced by the populations affected by PPR and help with the design of further interventions to assist them in a sustainable manner.

An ex-ante assessment could have identified and characterized the risk and proposed prevention measures, such as quarantine, for example.

Team skills required

At a minimum, the basic skills required for undertaking a risk analysis consist in methodological capacity, subject matter expertise (i.e., animal health and welfare, veterinary public health), and a good understanding of the local context, together with well-developed communication skills. Depending on the project and type of interventions being considered, additional skills may be required, including those of microbiologists, economists, environmental scientists, gender specialists, etc.

Considering the range and type of skills required to undertake a risk analysis, it is unlikely that one person alone would have the requisite expertise; effective risk analysis requires a team. ESS1, paragraph 25, covers the use of independent specialists by the Borrower.

Risk communication

The importance of communication and information dissemination in risk assessment and risk management cannot be overstated; indeed, it offers a key potential area for added value. Incorrect information or poor messaging may have inadvertent economic consequences (e.g., unnecessary culling of animals, trade or travel restrictions, reduction of tourism), with environmental (e.g., carcass disposal, chemical residues) or social (e.g., after-effects, stigma) impacts, which can potentially worsen the situation. Thus, effective messaging must be in place for accurate, transparent, and coordinated information flow to the public, ensuring credibility so that information can be managed optimally, and potential misinformation quickly countered. In some cases (e.g., new emerging diseases), full knowledge about the risk is not available initially and assumptions may even be incorrect; it is therefore important to communicate clearly about uncertainty.

Box 7 underlines the health risks related to limited knowledge and capacity to manage livestock but notes that they can be mitigated in part through capacity building on basic biosafety actions and an emphasis on the importance of communication.

Box 7. Communicating on risks of zoonosis

Zoonotic diseases are those that occur in animals but can be transmitted to humans. They can particularly affect poor smallholder farmers with limited knowledge and capacity to manage livestock. The lack of biosecurity measures on smallholder farms can cause a range of illness in people, from minor topical infections to serious illnesses and death. Examples include foodborne diseases, avian influenza, brucellosis, tuberculosis, Q fever, etc.

Small-scale animal production, such as chicken, is beneficial for improving the nutritional status of children in low-income settings, through both better diet and increased family income. Nevertheless, supporting such production requires raising awareness of the potential increase in children's exposure to contamination from animals that can lead to fever, vomiting and diarrhea.

Farmers should be educated on risks and mitigation options such as basic biosecurity and hygiene (including refresher trainings during project implementation). This includes recommendations on:

- Hand washing. Hands should be washed with clean water and soap after attending animals or manipulating materials from their habitat (adults should supervise hand washing of young children);
- Livestock should not be allowed to enter homes, especially areas where food is stored, prepared, or served;
- Equipment or materials used to raise or care for livestock (e.g., water containers) should be cleaned outside the home;
- Farmers should have dedicated clothes and shoes to wear while caring for livestock; and avoid bringing the shoes into the home.

The multiphase programmatic approach to COVID-19 preparedness and response (SPRP) puts emphasis on risk communication, with one component (component 4) dedicated to community engagement and risk communication.

Typical outputs and recommendations

Risk assessment outputs can be expressed either qualitatively (using text) or quantitatively (using numbers). Outputs should include: risk questions, hazards identified, exposure assessment, consequence assessment, risk estimation, and management options proposed to the risk manager.

The analysis should be transparent. Transparency is defined as the comprehensive documentation and communication of all data, information, assumptions, methods, results, discussion and conclusions used in the risk analysis. This is necessary so that all interested parties are provided with clear reasons for mitigation. Transparency is also essential because data are often uncertain or incomplete and, without full documentation, the distinction between facts and the analyst's value judgements may blur.

It is important to use appropriate terms to describe or qualify risk. A risk matrix can help to define the level of risk by considering the category of probability or likelihood against the category of consequence or severity. This is a simple mechanism to increase visibility of risks and assist management decision making.

Box 8 illustrates a possible sequence between risk assessment and risk management as situation and risk evolve with time.

Box 8. Lumpy skin disease: from risk of entry and spread to mitigation based on vaccination

Lumpy skin disease (LSD) is an infectious, eruptive, occasionally fatal disease of cattle characterized by nodules on the body. Secondary bacterial infection often aggravates the condition. Traditionally, LSD is found in sub-Saharan Africa. Since 2000, it has spread to several countries of the Middle East and Turkey. In 2012, the disease spread from the Middle East to south-east Europe, affecting EU Member States (Greece and Bulgaria) and several other countries in the Balkans.

A first assessment provided scientific information. The disease is transmitted by blood-feeding insects, such as certain species of flies and mosquitoes, or ticks. It causes fever, nodules on the skin and can also lead to death, especially in cattle that have not previously been exposed to the virus. Control options include vaccinations and culling of infected animals. Lumpy skin disease can lead to significant economic losses.

A second assessment provided management options. In 2016, EFSA assessed the effectiveness of different measures to control the spread of the disease in the EU. They recommended that mass vaccination of cattle be implemented to minimize the number of outbreaks in the regions at risk from lumpy skin disease or where the disease had already been introduced.

Risk management. EU member states deployed a vaccination campaign in response to LSD outbreaks.

A third assessment confirmed the efficacy of mitigation measures. In 2017, EFSA experts concluded that the mass vaccination of cattle implemented in south-eastern Europe successfully contained the outbreaks of LSD in the region in 2015 and 2016.

ANNEX 1: Addressing Animal Health-related Risks in Operations

A critical task for the Bank task team (TT) is to define the Borrower's responsibilities for assessing, managing and monitoring environmental and social risks and impacts associated with each stage of a project with livestock interventions and activities. The table below guides the implementing agency (IA) and TT on key steps specific to livestock throughout the project cycle:

- (i) Project Identification: sensitization on risks and engagement of key stakeholders;
- (ii) Project Preparation: assessment and communication on risks and technical assistance;
- (iii) Project Appraisal: integration of mitigation measures and best practices in project design;
- (iv) Project Implementation: implementation and monitoring of livestock interventions;
- (v) Addressing crises; and
- (vi) Evaluation.



This table identifies all critical actions required for the IA and TT to: (i) identify animal health risks, mitigation measures and best practices; and (ii) implement mitigation measures/best practices required for these risks. The aim is to bring the risks to an acceptable level. Recommended actions vary depending on the type of project.

For the purpose of this GPN, three main types of projects involving livestock and two levels of action are being considered.

Types of projects:

- **Type 1: Agriculture and Livestock Projects**, i.e., with a primary focus on increasing livestock productivity/production and commercialization.
- **Type 2: Livelihood Projects and other Projects with Livestock Activities**, i.e., livestock distribution for income generating activities or safety net, education projects or road projects involving working animals for transport, environment projects, and community driven development projects.
- **Type 3: Emergency Projects** such as CERC, disaster risk management (e.g., livestock destocking related to drought and addressing livestock disease outbreak).

Levels of action:

-  Action is required.
-  Action should be considered.

Project Type	Action to Address Animal Health-related Risks	Good Practice Activities and Interventions	Who is Responsible?	Actions Level
PROJECT IDENTIFICATION: SENSITIZATION ON RISKS AND ENGAGEMENT OF KEY STAKEHOLDERS				
Sensitization on Safeguards and Stakeholder Engagement				
1,2,3	Sensitization of the IAs and government departments on animal health, public health and welfare risks related to livestock projects/interventions.	Hold discussions with all key stakeholders, taking stock of the current country experience with animal health, public health and other risks related to livestock. Identify potential opportunities for improvement and additional studies required, including to inform hazard identification.	Task team (TT)	
1,2,3	Conduct key stakeholders' engagement activities for stakeholders involved in the livestock sector (private sector, government, academia, animal health services, women livestock cooperatives, civil society, NGOs, etc.) related to livestock projects/interventions.	Identify opportunities for improvement for both the project and the overall sector, and additional studies required, including to inform hazard identification and risk profiles.	Implementing Agency (IA)	
1,2,3	Conduct Borrower's capacity assessment of the IAs and government departments on animal health, public health and welfare risks related to livestock projects/interventions.	Conduct capacity assessment of the IAs and government departments on animal health, public health and welfare risks related to livestock projects/interventions. Draft a synopsis of risk areas.	TT	
PROJECT PREPARATION: ASSESSMENT AND COMMUNICATION ON RISKS AND TECHNICAL ASSISTANCE				
Support Government in Animal Health Interventions				
1,3	Ensure that the team includes the required technical skills to support the client during project preparation.	Involve World Bank livestock specialist with animal health/welfare expertise or contract animal health/welfare consultants - see examples of Terms of Reference (TORs) in Annex 3).	TT	
Opportunities to Improve Animal Health Capacity				
1,2,3	Ensure that the social and environment assessment includes the underlying risks and	Conduct hazard identification related to animal health, and risk characterization. Confirm risks related to animal health (use Annex 2: Examples of Mitigation Measures).	IA (project preparation team) for social assessment and ESMP.	

Project Type	Action to Address Animal Health-related Risks	Good Practice Activities and Interventions	Who is Responsible?	Actions Level
	social/environmental issues related to animal health.	Have Environmental and Social Management Plan/Environmental and Social Management Framework (ESMP/ESMF) include mitigation measures based on the environmental and social assessment (it will also reflect risks).	TT to review and clear ESMP.	
1,3	Ensure that the IA has the capacity to address animal health-related risks during preparation and during implementation.	Have an animal health/welfare specialist as part of the IA's team (IA staff or consultant) for project preparation and for implementation. (see standard TOR in Annex 1).	IA TT to provide standard TOR.	
1,2,3	Review the capacity of government (and potentially other implementers/service providers*) to effectively manage and implement livestock interventions; including capacity to manage and reduce risks and impacts on animal health, public health and animal welfare. Pay attention to the gender aspects of the intervention. * See list of examples of potential providers based on intervention (private veterinary services, staff from slaughterhouses, insemination centers, wet markets, etc.) (use Annex 2: Examples of Mitigation Measures).	Use existing recent OIE Performance of Veterinary Services (PVS) reports or conduct a follow-up evaluation to get an update of the situation.	IA with support from TT and/or consultants.	
		Inform project budgeting to include funds dedicated to capacity building in animal health/veterinary public health/animal welfare.		
		Develop project indicators with targets to track improvement in animal health capacity (monitoring and evaluation manual).		
1,2,3	Review project interventions and assess risks and impacts on animal health, public health and animal welfare, taking into account the context of the project and differentiating the level of risk for stakeholders (e.g., women/children, workers along value chains, etc.). Identify any other interventions that would have less risks and impacts and	Conduct risk assessment taking into account the project's specific livestock interventions and capacity assessment (see Annex 2). The mitigation measures will be defined based on the risks (likelihood and impact).	IA with support from TT and/or consultants.	
		Conduct stakeholders' workshop to discuss results.	IA with TT support.	

Project Type	Action to Address Animal Health-related Risks	Good Practice Activities and Interventions	Who is Responsible?	Actions Level
	identify activities that will help mitigate risks and impacts.			
1,2,3	Identify opportunities for the project to provide technical assistance to mitigate risks related to animal health and enhance the impact of livestock interventions in areas such as: (i) veterinary services; (ii) food safety (slaughterhouse, wet market, live animal market, breeding services, etc.); (iii) biosafety; (iv) women in livestock; (v) management of slaughterhouses; (vi) animal welfare (transport, production, etc.); and (vi) communication on outbreaks. (See Annex 2: Examples of Mitigation Measures.)	Determine needs for technical assistance throughout project implementation based on government capacity and the potential livestock risks/hazards identified under the project. Develop user-friendly training manuals based on needs.	IA with support from TT and/or consultants.	
1,2,3	Prepare Environmental and Social Commitment Plan (ESCP) and submit with financing agreement.	Identify animal health, public health and animal welfare commitments to include in the ESCP and define the dates to meet commitments.	IA TT to review.	
PROJECT APPRAISAL: INTEGRATION OF MITIGATION MEASURES AND BEST PRACTICES IN PROJECT DESIGN				
Livestock interventions risks (likelihood and impact)				
1,2,3	Prior to finalizing the design of the project, identify for each livestock intervention best practices and mitigation measures for potential risks (to be consistent with international best practices).	Take stock of in-country and international livestock activity best practices and mitigation measures and requirements.	IA with support from TT and/or consultants.	
1,2,3	Integrate good practice activities/mitigation measures in project implementation manuals/guidelines and project budget.	Develop the implementation manuals/guidelines for livestock interventions. This includes identifying all key processes and key steps to ensure good practice activities/mitigation measures are the guiding principles for implementing livestock interventions.	IA to develop implementation manuals, with support of consultants	

Project Type	Action to Address Animal Health-related Risks	Good Practice Activities and Interventions	Who is Responsible?	Actions Level
		<p>Define key processes with IA to monitor the implementation of good practice activities/mitigation measures.</p> <p>Develop user-friendly training materials to train IA staff on implementation manuals/guidelines at all project levels (if possible, in local language for beneficiaries, based on needs) – see example in Annex 3.</p> <p>Identify training of trainers within the IA to conduct trainings.</p> <p>Include key indicators in the monitoring and evaluation manual and plan for process monitoring/auditing.</p> <p>Budget for good practice activities/mitigation measures (equipment, capacity building, etc.) and monitoring/auditing of processes and quality of implementation of livestock interventions.</p>	<p>TT (including livestock expert/consultant) to review the manuals' quality and provide support if needed to improve content</p>	<p>Red</p> <p>Yellow</p> <p>Yellow</p> <p>Yellow</p> <p>Red</p>
<p>1,2,3</p>	<p>Ensure that stakeholders in charge of implementing livestock interventions have the required capacities.</p>	<p>Conduct training of trainers to train the various stakeholders undertaking the activities on the implementation manuals/guidelines at all project levels.</p> <p>Develop capacity building plan for the life of the project, based on capacity needs assessment of implementing staff/partners (veterinarians, veterinary para-professionals, slaughterhouse workers and operators, animal health clinic staff, etc.) of livestock interventions at all levels (national, regional and local). The capacity building plan includes trainings on project manuals and guidelines, animal health, public health and animal welfare risks related to livestock interventions.</p>	<p>IA to develop training materials and capacity building plan with support of consultants.</p> <p>TT to review the training materials and capacity building plan.</p>	<p>Yellow</p> <p>Yellow</p>

Project Type	Action to Address Animal Health-related Risks	Good Practice Activities and Interventions	Who is Responsible?	Actions Level
1,2,3	Updating of safeguard instruments based on the more detailed project design (based on needs).	Review how livestock components and interventions have evolved, based on the nature, scope and geographic location of interventions, while taking into account the capacity assessment.	IA with TT support.	
Financial Management				
1,2,3	Ensure that annual activities and budget plan fully capture the need of livestock interventions to address animal health, public health and animal welfare.	Adjust annual plan of activities and budget in order to fully capture needs for capacity building and other interventions related to livestock to address animal health, public health and animal welfare (capacity building, equipment, infrastructure upgrading/construction, operation and maintenance, staffing, etc.).	IA	
Procurement				
1,2,3	Capture in bidding documents required livestock interventions to address animal health, public health and animal welfare.	Develop technical specifications for equipment, animals (e.g., breed, sex, age, health status), infrastructure, etc. Require contractors to follow those technical specifications and monitor their compliance.	IA with TT support.	
PROJECT IMPLEMENTATION: IMPLEMENTATION AND MONITORING OF LIVESTOCK INTERVENTIONS				
Implementation				
1,2,3	Implement identified mitigation measures/best practices.	Ensure implementation of mitigation measures/best practices is timely and according to standards set by the project.	IA TT to conduct at least bi-annual assessment of the quality of implementation of mitigation measures/best practices during supervision.	

Project Type	Action to Address Animal Health-related Risks	Good Practice Activities and Interventions	Who is Responsible?	Actions Level
1,2,3	Updating of safeguard instruments based on implementation and need.	Review how livestock interventions have been implemented, with a particular focus on mitigation measures/best practices. Review safeguard documents, including ESCP. Based on results of the review, propose some updates if necessary. This can also lead to updating of the implementation manuals of the project.	IA with TT support.	
Monitoring and Evaluation				
1,2,3	Report on the implementation of the livestock interventions and take required actions based on results.	Conduct regular monitoring/auditing of livestock interventions (to check they are in line with best practices and respect mitigation measures).	IA TT to conduct at least bi-annual supervision missions, review report and provide technical assistance if needed.	
		Report on selected indicators for livestock interventions, quality of implementation and cases of non-respect of best practices and mitigation measures in bi-annual progress reports; report immediately in case of potential serious issue in order to conduct immediate investigation/response if need be (see also below, “addressing crisis.”		
		Discuss and address identified issues and disseminate lessons across the project.		
		Collect best practices implemented for livestock interventions for dissemination across the project and government.		
ADDRESSING CRISIS				
1,2	Identify risks of crisis rapidly (for example, disease outbreak in animals or in humans that is potentially related to livestock activities, etc.) Revise existing risk assessment(s) or conduct risk assessment for livestock health, public health and animal welfare.	Sensitize staff and contractors implementing livestock activities on crisis identification and prevention.	IA	
		Coordinate with livestock disease surveillance/control and response system and/or food safety agencies.		
		Conduct public awareness campaign of households engaged in livestock activities (not limited to the project).		

Project Type	Action to Address Animal Health-related Risks	Good Practice Activities and Interventions	Who is Responsible?	Actions Level
1,2	Assess crisis situation, prepare action plan and implement the plan.	Assess the situation and develop plans for crisis management based on assessment and local context (potential elements of a plan: diagnostic and treatment of individual animals/herds, culling and/or vaccination programs, enhanced surveillance, veterinary public health measures, disposal of dead animals and material/equipment, etc.).	IA with TT support.	
1,2	Ensure post-crisis follow up	Continue post-crisis livestock disease surveillance (e.g., post-vaccination sero-monitoring)	IA with TT support.	
EVALUATION				
1,2,3	Take stock of implementation to strengthen future operations or/and scaling up of livestock interventions within government system.	Conduct evaluation of livestock interventions.	IA	
		Collect best practices on livestock interventions (including successful mitigation measures).		
		Conduct evaluation of ESS implementation performance.		

ANNEX 2: Examples of Mitigation Measures

The table below lists proposed mitigation measures and best practices based on the type of project and interventions: (i) improving livestock production and productivity; (ii) improving market access and value chains; (iii) improving input services and services delivery; (iv) providing emergency support to livestock; and (v) developing livelihood of communities.

It supports the identification of risks and mitigation measures and best practices. It is not possible to be exhaustive as the list of hazards is long, and the spectrum of risks related to animal health is broad. The table addresses animal health, public health and livestock welfare risks linked to specific project interventions (for example, improvement of animal genetics, export of livestock and livestock products, etc.). It provides examples of mitigation measures and best practices that are required or should be considered, based on the level of risk. The relevance of mitigations measures and best practices has to be tailored to the level of risk and project specificities (scale of livestock activities, capacity of institutions, geographical scope, etc.) and interventions.

From this table, each project team can identify examples of risks, best practices/mitigation measures based on their specific project interventions/activities. The table below is a tool from which project teams can pick and choose the best practices/mitigation measures that match their interventions/activities.

Types of projects:

- **Type 1: Agriculture and Livestock Projects**, i.e., with a primary focus on increasing livestock productivity/production and commercialization.
- **Type 2: Livelihood Projects and other Projects with Livestock Activities**, i.e., livestock distribution for income generating activities or safety net, education projects or road projects involving working animals for transport, environment projects, and community driven development projects.
- **Type 3: Emergency Projects** such as CERC, disaster risk management (e.g., livestock destocking related to drought and addressing livestock disease outbreak).

Type of Projects	Type of Livestock Interventions/ Activities	Examples of Potential Risks	Examples of Best Practices/Mitigation Measures	ESS
IMPROVE LIVESTOCK PRODUCTION AND PRODUCTIVITY				
1,2	Expansion of feed resources and feeding	Animal feed can potentially be harmful to animal or public health. For example, it can be a pathway for the entry and spread of contagious epidemic diseases, such as foot and mouth disease or ASF. Another example is the risk of mycotoxins from molds on plants damaged in the field, or under storage conditions. Aflatoxins remain as a threat to the health and welfare of livestock by their continuing intermittent occurrence in feed.	<ul style="list-style-type: none"> - Feed or feed ingredients should be purchased from reliable sources with clear origin and the full information must be recorded in feed purchase papers. - For feed prepared on-farm, equipment, feed mixer and surrounding area where feed is prepared should be kept clean. Equipment should not be moldy or rusty. - When using feed or feed ingredients from sources that may not be fully reliable, apply mitigation measures such as cooking to inactivate pathogenic agents. - Storage of feed and feed ingredients on farm should be done in clean areas. <p>Further guidance is available in Chapter 6.4 of the OIE Terrestrial Code, or Chapter 4.8 of the OIE Aquatic Code, and the FAO Codex Code of Practice on Good Animal Feeding (CAC/RCP 54-2004).</p>	ESS4, ESS6
1,2	Improvement of animal genetics	Imports of live animals can be a pathway for the entry and spread of contagious epidemic diseases, with impact on local stocks or breeds as well as wildlife. Imports of genetic materials (eggs and gametes) can also introduce infectious diseases.	<ul style="list-style-type: none"> - Select animals for improved performance within the existing herd, when possible. When sourcing animal genetics from outside the herd, domestically or internationally, animals must have clear origins from reliable breed producers. - Quarantine (isolation/observation) for newly purchased animals (Infrastructure for quarantine periods can be built) is usually recommended, either before introducing animals, or on-farm. - Ensure traceability through identification of supplier herd. Information about the animals must be recorded and records kept. - Transparency: knowledge of health status of supplier herd (depends on the quality of veterinary services as defined by the section 3 of the OIE Codes). The buyer must request health certificates granted by the relevant competent authorities. Animals should be healthy and vaccinated. <p>Models of certificates are provided in Chapter 5.10 of the OIE Terrestrial Code. Further guidance is available in Chapter 5 of the OIE</p>	ESS4, ESS6

Type of Projects	Type of Livestock Interventions/ Activities	Examples of Potential Risks	Examples of Best Practices/Mitigation Measures	ESS
			Terrestrial and Aquatic Codes. Measures for specific diseases are provided in the disease-specific Chapters of the Terrestrial and Aquatic Codes.	
1,2	Upgrade/expansion of farms to larger-scale and commercial farming	<p>Risks related to this type of activity can be grouped in three clusters 1) those arising from modifying the farm design; or 2) changing management and husbandry practices; and 3) those linked to inputs and services.</p> <p>1. Poor design of a farm can lead to increased incidence of disease and poor animal welfare. For example, poorly designed housing for dairy cows may induce increased incidence of mastitis and lameness. Care should be given to length and width of individual stalls, and quality of the floor. More generally, the quality of air and lighting can have a strong influence on the welfare of animals. Also, farms can produce a significant amount of animal wastes. In the absence of waste treatment, intensification of production may increase risks related to pollution, such as water contamination by farm effluents. This is why proper design is so important.</p>	<p>The best practices and mitigation measures in the preceding rows also apply to this section, because improved animal genetics and expansion of feed resources are often part of farm expansion</p> <ul style="list-style-type: none"> - When new facilities to accommodate animals are planned, or when existing facilities are modified, professional advice on design with regard to health and welfare of animals should be sought. - Housing systems and their components should be designed, constructed and regularly inspected and maintained in a manner that reduces the risk of injury, disease and stress for animals. Facilities should allow for the safe, efficient and humane management and movement of animals. In systems where animals could be exposed to adverse weather conditions, they should have access to shelter. - Housing conditions should include considerations for: space allowance, flooring, bedding and resting surfaces, air quality, thermal environment, air quality, noise, lighting. Quality housing is important for animals, as well as handlers and other workers. - In the case of aquaculture, the water supply should be of sufficient flow, quality, and quantity to ensure the well-being of the species being farmed. The physical environment should be designed, sited, and maintained so as to promote fish health and welfare. - There should be a separate pen or area where sick and injured animals or animals that exhibit abnormal behavior can be isolated, observed, and treated. Certain animals may need to be kept individually. When a separate space is provided, this should accommodate all the needs of the animal, e.g., recumbent or lame animals or animals with severe wounds may require additional bedding or an alternative floor surface, and water and feed should be within reach. This area can also be used to quarantine 	ESS3 ESS4 ESS6

Type of Projects	Type of Livestock Interventions/ Activities	Examples of Potential Risks	Examples of Best Practices/Mitigation Measures	ESS
			<p>(isolation/observation) newly purchased animals before they are introduced to the farm.</p> <ul style="list-style-type: none"> - Full fencing around and closed entrance to farm area is recommended to control access to the farm. - Appropriate distances should be maintained between farms where possible (it may be difficult to apply in densely populated areas). - A loading area/bay at the farm (dedicated housing can allow for specific loading structures and protocols) should be created. In small-scale systems, a facility can be built in the community and shared by the community members. - Footwear cleaning stations should be established. 	
		<p>2. Overall management of the farm and husbandry practices will contribute to animal health and welfare. Higher density of animals and concentration may favor the emergence and spread of infectious diseases, including potential zoonoses, such as, for example, HPAI. Animal health and animal productivity are linked to animal welfare. Poor welfare in animals impacts their ability to provide expected services or production. Many management practices can induce poor welfare of animals.</p>	<p>Management at the farm level includes management of the farm and its human resources, i.e., the selection and training of handlers, and animal management practices. At the animal handler level, this requires a range of well-developed husbandry skills and knowledge of how to care for animals.</p> <p>It is important to:</p> <ul style="list-style-type: none"> - Ensure traceability and transparency, including identity of supplier herd, health status of supplier herd, availability and accessibility of records. Breeding farms engaged in trading livestock, in particular, should record health and breeding data and provide that information with animals that are sold. - Limit the number of sources of replacement stocks (requires good communication on risks related to purchase from multiple sources). - Strictly control entrance/exit of people and vehicles. Vehicles of any kind (car, motorbikes, bikes, tracks, etc.) should be clean and disinfected before entering the farm and before leaving (see also relevant section on transport). - Maintain specific clothing and footwear for use at the farm (separate animal housing allows sanitary protocols to be implemented). If non- 	

Type of Projects	Type of Livestock Interventions/ Activities	Examples of Potential Risks	Examples of Best Practices/Mitigation Measures	ESS
		<p>3. Upgrading of farms to larger-scale and commercial activities usually requires increased access to animal health services and inputs, such as preventive and curative veterinary medicinal products. They can minimize the negative economic impact of diseases. Veterinary medicinal products have to be used in the correct circumstances and in accordance with prescribed conditions and dosages if they are to be effective. If not, their use can lead to increased drug resistance in animals and food contamination due to drug residues. Sub-standard and falsified antimicrobials also can contribute to the emergence of AMR. Animal health workers, when working across a community, can facilitate the spread of infectious diseases, such as foot and mouth disease or ASF.</p>	<p>resident workers are hired, they should not take farms clothing and footwear outside the farm.</p> <ul style="list-style-type: none"> - Exclude stray dogs, wild animals and pests from the farm. Predators should be excluded from the areas where fish are stocked. - Put in place protocols for cleaning and disinfection of premises. <p>See also section on on-farm management, which includes examples of best practices to improve disease prevention and control by proper biosecurity measures.</p> <p>It is important to:</p> <ul style="list-style-type: none"> - Establish an animal health workforce, including veterinarians and para-veterinarians, from the competent authority at the central level down to community level. - Provide basic veterinary education to ensure that the competencies of graduating veterinarians ('day-1 competencies') are acquired. Provide post-graduate education (or access to it) for specific competencies. Provide regular training and opportunities for continuing education. Provide training and education for veterinary para-professionals and community animal health workers. - Promote development of a robust and coherent legislation on animal health and welfare, covering areas such as farm registration, animal identification, traceability, licensing of veterinary medicinal products, reporting and notification of diseases, animal welfare, emergency response and contingency planning. - Promote the development of public-private partnerships. - Undertake vaccination campaigns for priority diseases. - Adopt prudent and responsible use of antimicrobials to avoid the emergence and spread of AMR. This includes phasing out antimicrobials as growth promoters. - Improve animal welfare, as noted elsewhere in this table. 	

Type of Projects	Type of Livestock Interventions/ Activities	Examples of Potential Risks	Examples of Best Practices/Mitigation Measures	ESS
IMPROVE MARKET ACCESS AND DEVELOP VALUE CHAINS				
1	<p>Construction/upgrading and management of post-farm-gate facilities (for example slaughterhouses, dairy processing, and wet markets)</p>	<p>There are many risks related to slaughterhouses, including: risks related to animal health (such as dissemination of disease via transport of live animals), animal welfare (in relation to transport, holding pens, stunning and slaughter), public health (occupational diseases such as contamination of workers by zoonotic diseases).</p> <p>Meat inspection is the cornerstone of veterinary public health. Not only does it contribute to food safety, it is an important source of information about welfare of animals on farm and during transport. It is also a means to collect information on critical zoonoses such as, for example, bovine tuberculosis.</p> <p>Most risks listed above are linked to poor infrastructure design, management and maintenance.</p> <p>Workers in slaughterhouses often belong to disadvantaged social or ethnic groups or minorities. Attention should be paid to possible implications in relation to inequalities.</p>	<ul style="list-style-type: none"> - The facility should be built or upgraded to provide appropriate space for lairage and quarantine, adequate unloading of animals, proper meat inspection, and respect of basic principles such as separation of clean areas. When new facilities are planned, or when existing facilities are modified, professional advice on design with regard to safety, health and welfare of animals and workers should be sought. - It is important to ensure that slaughterhouses are registered, inspected by a veterinarian or a para-professional, and their veterinary inspection data are available. - The facility should provide a room for workers to change, including access to clean water and soap, and toilets. - Workers should wear slaughterhouse clothing and footwear, which are never taken outside of the slaughterhouse premises. This means that workers need to be educated about the risk of spreading diseases via their slaughterhouse clothing and shoes if worn outside the premises. - Regular training sessions should be provided to workers on hygiene, work safety, and animal welfare. - Protocols for the treatment and disposal of by-products and wastes should be established and followed. Slaughterhouse wastewater should not be discharged without proper treatment to avoid impact on the environment and neighboring communities. - Animals should be clinically inspected on arrival and those with clinical signs or injuries handled appropriately. Sick animals should not enter the food chain. - Long distance transport should be avoided. Animals may need to rest before slaughter. During this period, they should be provided with water and feed. - At the end of the workday, the premises should be thoroughly cleaned. 	<p>ESS3 ESS4 ESS6</p>

Type of Projects	Type of Livestock Interventions/ Activities	Examples of Potential Risks	Examples of Best Practices/Mitigation Measures	ESS
		<p>In wet-markets and live animal markets, risks may exist related to animal and public health (such as HPAI), and animal welfare (in relation to transport and holding pens). Women are often those working in markets.</p> <p>Risks listed above are linked to poor infrastructure design, management and maintenance.</p>	<ul style="list-style-type: none"> - Operators and workers should be prohibited from visiting farms, or even from farming themselves. - Stray dogs and other animals should not enter the slaughterhouse premises. Pest management program should be in place and include protocols to control pest invasion of slaughterhouse premises. - Carcasses, meats and meat by-products should be stored in closed and refrigerated containers while transported. - Stunning equipment should be regularly tested to ensure good functioning and procedures put in place to monitor proper stunning of animals before killing. <ul style="list-style-type: none"> - Facilities should be designed, constructed and regularly inspected and maintained in a manner that reduces the risk of injury, disease and stress for animals. Facilities should allow for the safe, efficient and humane management and movement of animals. When new facilities are planned, or when existing facilities are modified, professional advice on design with regard to safety, health and welfare of animals should be sought. - Butchers and meat-market workers should wear specific clothing and footwear, which are never worn outside of the market. This requires educating workers on the risk of spreading diseases via their work clothing if worn when outside work premises. - Butchering equipment, including benches and surfaces, should be thoroughly cleaned at the end of the day. - No stray animals should be allowed to wander in the market premises. A pest control program should be put in place and implemented. - Protocols for the disposal of solid and liquid wastes should be established and followed to avoid impact on the environment and neighboring communities. 	

Type of Projects	Type of Livestock Interventions/ Activities	Examples of Potential Risks	Examples of Best Practices/Mitigation Measures	ESS
			<ul style="list-style-type: none"> - The market should be regularly inspected, and inspection reports provided to the authority in charge of the premises for recordkeeping and, when necessary, corrective measures. - Animals that are taken to a market but not sold should not be re-introduced to the farm. This requires that adequate facilities be provided to accommodate the animals that remain. It also means that farmers need to be educated about this practice through extension services. - Live animals should be clinically inspected on arrival and those with clinical signs or injuries isolated and handled appropriately to avoid risk of spreading diseases. 	
		<p>Quarantine stations are also addressed in one of the following sections of this table.</p>	<ul style="list-style-type: none"> - Facilities should be designed, constructed and regularly inspected and maintained in a manner that reduces the risk of injury, disease and stress for animals. Facilities should allow for the safe, efficient and humane management and movement of animals. When new facilities are planned, or when existing facilities are modified, professional advice on design with regard to safety, health and welfare of animals should be sought. - Workers should wear specific clothing and footwear, which are never worn outside of the quarantine station. This means that workers should be educated on the risk of spreading diseases. Regular training should be provided. - No stray animals should be allowed to wander in the quarantine station. A pest and vector control program should be put in place and implemented. - Protocols for the disposal of solid and liquid wastes should be established and followed to avoid release of potential pathogens and other impacts on the environment and neighboring communities. - The quarantine station should be regularly inspected, and inspection reports provided to the authority in charge for recordkeeping and, when necessary, corrective measures. 	

Type of Projects	Type of Livestock Interventions/ Activities	Examples of Potential Risks	Examples of Best Practices/Mitigation Measures	ESS
			<ul style="list-style-type: none"> - Animals should be clinically inspected and tested according to established protocols. Those with clinical signs should be handled appropriately to avoid risk of spreading diseases. - During their stay in quarantine, animals should be provided with good care, including feed and water. - Upon their release from quarantine, animals should be accompanied by a health certificate. 	
	<p>Transport of livestock and livestock products</p>	<p>When live animals are transported in vehicles (whether by land, air or sea), the main risks are related to their health (e.g., spread of infectious diseases) and welfare (e.g., injuries, thirst, hunger, heat stroke or exhaustion). Transport of animal products may also cause animal health risk (for example, transport of white spot syndrome virus in frozen shrimp).</p> <p>Animals moving from one place to another on foot (pastoralism), whether short or long distances, may also experience health or welfare issues.</p>	<ul style="list-style-type: none"> - Vehicles that are used to transport live animals should be appropriately designed, constructed and regularly inspected and maintained in a manner that reduces the risk of injury, disease and stress for animals during transport. Animals should not be transported in open vehicles, if possible. - Brokers, collectors and transporters should understand the animal health and welfare issues that can arise during transport of live animals. Training should be provided to educate collectors, traders and other service providers on the appropriate protocols. - In the case of disease outbreak in a village/commune, brokers, collectors and transporters should strictly follow instructions received from the veterinary service before and during any transport of animals. This may require cooperation with police and roadside controls for compliance. - Protocols for cleaning and disinfection of vehicles should be established and followed, e.g., wheels (wheel arches and mud flaps), vehicle bodywork and inside of the cab. - Transport service providers should wear protective clothing and footwear before entering farm buildings and their entry should be limited only to necessary personnel. - The movement and transport of live fish and other aquatic animals should be done without unnecessary delay, with an adequate oxygen supply, avoiding rapid changes in variables such as temperature and water quality, and in containers designed to eliminate injury. 	<p>ESS4 ESS6</p>

Type of Projects	Type of Livestock Interventions/ Activities	Examples of Potential Risks	Examples of Best Practices/Mitigation Measures	ESS
	Exports of livestock and livestock products	<p>Exports of live animals involves transport (see above) with a number of associated risks. Cross-border movements require compliance with sanitary obligations (e.g., health certificate), which—if not addressed in a timely manner—can delay/obstruct clearance, with potential consequences for the health and welfare of the animals.</p> <p>Quarantine stations are sometime used; there are animal health and welfare risks linked to the design of their infrastructure, its maintenance and management.</p>	<p>The best practices and mitigation measures for:</p> <ul style="list-style-type: none"> - Certification - Transport - Animal welfare - Quarantine (pre or post import) - Vaccination <p>Have been discussed in the table rows above.</p>	ESS4 ESS6
IMPROVE INPUT SERVICES AND SERVICES DELIVERY				
	Public and private animal health services	<p>Lack of access to quality animal health services hampers the preservation and development of animal resources. Addressing “risk at source” for emerging pandemic threats, AMR and food safety crises safeguards the welfare of the wider population as well as the health and livelihoods of rural producing communities. Weak or failing services carry a broad number of risks for animals, humans and their environment.</p>	<p>It is important to:</p> <ul style="list-style-type: none"> - Establish an animal health workforce, including veterinarians and para-veterinarians, from the competent authority at the central level down to community level. - Provide basic education to ensure day-1 competencies are acquired by animal health professionals. Provide post-graduate education (or access to it) for specific competencies. Provide regular training and opportunities for continuing education. - Adopt robust and coherent legislation on animal health and welfare, covering areas such as farm registration, animal identification, traceability, licensing of veterinary medicinal products, reporting and notification of diseases, animal welfare, emergency response and contingency planning. - Promote the development of public-private partnerships 	ESS3 ESS4 ESS6

Type of Projects	Type of Livestock Interventions/ Activities	Examples of Potential Risks	Examples of Best Practices/Mitigation Measures	ESS
			<p>-Source drugs/vaccines from international markets when no domestic sources exist. Proof of compliance with international standards should be requested from drug/vaccine providers.</p> <p>- Adopt prudent and responsible use of antimicrobials to avoid the emergence and spread of AMR. This includes phasing out antimicrobials as growth promoters.</p> <p>Further detailed information is available in the OIE Terrestrial Code and OIE guidelines for Public-Private Partnerships (PPPs).</p>	
PROVIDE EMERGENCY SUPPORT FOR LIVESTOCK				
3	Control of disease outbreaks	Risks related to interventions during the management of disease outbreaks include further spread of the disease itself, risk to workers and populations living in the affected area (e.g., increased exposure to specific hazards), risk to the environment (e.g., disposal of carcasses or residues, chemicals used for disinfection, reverse spillover of a pathogenic agent to wildlife or local stocks or species/breeds), and animal welfare (e.g., on farm mass culling). The impacts on communities should also be considered when ethnic or religious minorities are associated with the activity under consideration (e.g., Copt community and the culling of pigs in Egypt in response to H1N1 swine influenza).	<p>- The culling of animals should be thoroughly planned ahead. Animals should be humanely culled using a method that does not increase the risk of disease spread. The culling should be performed under the supervision of a veterinarian or a person having received proper training.</p> <p>- Carcasses of animals killed on the farm premises, should be treated with disinfectants and transported in closed containers to the burial place. The use of biodegradable plastic films to cover carcasses and waste before disposal should be encouraged.</p> <p>- Measures should be taken to avoid risk of water pollution.</p> <p>- Vehicles, equipment, etc. used in culling of animals and burial of carcasses should be thoroughly cleaned and disinfected before being used in a second operation. This requires development and implementation of a protocol for the cleaning and disinfection process.</p> <p>Further details are available in the Chapter 7.6 of the OIE Terrestrial Code and 7.4 of the Aquatic Code.</p>	ESS3 ESS4 ESS6
3	Livestock destocking due to droughts or extreme weather conditions	Most of the risks listed in the row above would equally apply to this type of intervention.	<p>Considerations made above would apply in relation to:</p> <ul style="list-style-type: none"> - Culling - Animal welfare - Transport 	ESS3 ESS4 ESS6

Type of Projects	Type of Livestock Interventions/ Activities	Examples of Potential Risks	Examples of Best Practices/Mitigation Measures	ESS
			<p>See also the Livestock Emergency Guidelines and Standards (LEGS), a set of international guidelines and standards for designing, implementing, and evaluating livestock interventions to help people affected by humanitarian crises.</p> <p>See also the FAO livestock-related interventions during emergencies, a how-to-do-it manual</p>	
DEVELOP LIVELIHOOD OF COMMUNITIES				
2	<p>Distribution of livestock for income-generating activities or as safety net, including enhancing livestock productivity of smallholder farmers</p>	<p>Introduction of live animals can be a pathway for the introduction and spread of contagious epidemic diseases, with impact on local stocks or species/breeds as well as wildlife. Transport of live animals carries risks for animal welfare (see the relevant section above).</p> <p>Livestock distribution to project beneficiaries with no experience in livestock raising brings additional risk related to poor handling capacity and possible consequences on animal health and welfare, as well as human health. Specific groups (e.g., women, refugees) may benefit from distribution of animals and provision of services if this is conducted in an enabling environment.</p>	<ul style="list-style-type: none"> - Identify animal health workers who can prepare households with basic training in animal health, public health and animal welfare. - Provide close monitoring of the animals by animal health workers and support to project beneficiaries. 	<p>ESS4 ESS6</p>

ANNEX 3: Examples of TORs for Risk Assessment

Terms of Reference for Consultant

Date:

Name: Team of Experts (livestock specialist, food safety specialist, risk assessment specialist)	
Job Title: Livestock specialist, Food safety specialist, Foresighted risk assessment specialist	
Division/Department: -	
Programme/Project Number: -	
Duty Station: -	
Expected Start Date of Assignment: -	Duration: -
Travel Start Date: -	Travel End Date: -
Reports to: -	Title: -
General Description of Tasks and Objectives to be Achieved	
<p>Starting ---, the consultant will support the above-mentioned project under the supervision of the World Bank task team Leader. The total commitment for this assignment is -- Weeks.</p> <p>Background</p> <p>The -- Project was approved by the Executive Directors of the International Development Association (IDA) on -- in the amount of -- million (US\$--- million equivalent). The objective of the Project is to --. The Project components will focus on: (i) --; (ii) --; (iii) --; and (iv) Project Management, Monitoring and Evaluation.</p> <p>The Financing Agreement for the Project was signed on -- between the -- and IDA (World Bank) and became effective on --.</p> <p>Component (---), Improving Risk Management and Resilience of Livestock Production Systems, includes the provision of a broad risk analysis to underpin the development of a national risk management plan for livestock, including capacity, climate, markets, food safety, and public health risks. The capacity to assess and manage risks along animal value chains is of paramount importance. Food-borne pathogens as well as frequent emergence and re-emergence of transboundary animal diseases, including those with zoonotic impacts, pose threats to livelihood, food security and safety of millions and can quickly jeopardize outcomes of any large investment. Furthermore, the identification of emerging risks supports managers in anticipating risks and taking cost effective and timely prevention measures to protect consumers.</p> <p>Mission Objectives</p> <p>The objectives of the mission are to:</p> <ol style="list-style-type: none"> 1. initiate the risk analysis (involving animal health, public health, food safety, market, climate resilience, institutional capacity) process through interactions with key stakeholders and review of literature and produce an initial report by ---; and 2. implement a detailed risk analysis and propose recommendations on mitigations, by ---. <p>To this end, the mission will work with the relevant national services, Project Management Unit, any relevant government ministries and agencies, City Corporation, producer organizations (POs), micro, small, medium enterprises, NGOs, financial institutions and any other relevant stakeholders.</p>	

Tasks

- Prepare an inventory of relevant risk analyses through literature review, and in collaboration with technical teams in World Bank, IFC, FAO,, OIE, WHO as well as the relevant national services and ministries, and government agencies. Relevance will pertain to: (1) methodological aspects, and (2) studies performed in-country or in similar contexts;
- Establish the methodology proposed to be utilized for the risk analysis;
- Identify biological and chemical hazards through literature review and key informant interviews; prioritize selected hazards;
- Assemble a multidisciplinary team, including expertise on food safety, risk analysis on food safety issues and animal health and production specialist for food chain risk analysis, gender in close collaboration with relevant ministries;
- Initiate a risk assessment for selected hazards;
- Identify management options and mitigation interventions and assess their potential for risk reduction;
- Identify market risks and map out private sector stakeholders and their roles in mitigating them;
- Identify opportunities for private sector / businesses/ services providers to be engaged in the risk mitigation measures of the relevant ministry;
- Identify next steps for improving risk analysis capacity and mainstreaming the approach within a potential strategic risk foresight analysis unit of the relevant ministries; and
- Identify capacity building needs and process to implement risk mitigation measures.

During this period, the expert will report directly to the task team leader.

Key performance indicators

Expected Outputs:

First set of deliverables:

1. A comprehensive summary of the review of literature, findings from interactions with key stakeholders and informants and from field visits.
2. A technical note on perspectives of respective expertise: animal production and health; food safety; capacity, climate, markets, risk analysis.

Second set of deliverables:

Final full detailed report on risk analysis and recommendations on mitigations and action plan.

At the end of the mission, the team will submit an Assignment Summary Report. The team is also requested to provide a copy of the following: Aide-Mémoire, Back-to-Office Report (if suitable) and Final Report or any other related documents or materials it has prepared or contributed to for the purpose of the work carried out under the terms of this assignment.

Required
Completion
Dates:

ANNEX 4: Examples of Indicators of Best Practice Implementation

Type of Projects	Type of Interventions	Potential Indicators
IMPROVE LIVESTOCK PRODUCTION AND PRODUCTIVITY		
1,2	Expansion of feed resources	<ul style="list-style-type: none"> - Percentage of feed sourced from international markets - Compliance of improved feed with feed guidelines (Y/N) - Number of animal health workers and farmers trained on feed safety (disaggregated by gender).
1,2	Improvement of animal genetics	<ul style="list-style-type: none"> - Compliance with quarantine guidelines (time, infrastructure, location) for imported animals (Y/N) - Percentage of imported animals quarantined according to guidelines (time, infrastructure, location) - Percentage of animal health workers/veterinarians and quarantine station staff trained on quarantine compliance (disaggregated by gender).
1	Upgrade/expansion of farms to larger-scale commercial farming	<ul style="list-style-type: none"> - Number of government experts and commercial farmers trained on infrastructure and overall management of large-scale farms (disaggregated by gender) - Percentage of farm supported by the project in compliance with guidelines for infrastructure and management requirements (Y/N) - Percentage of animals vaccinated (based on OIE guidelines) (disaggregated by species).
1	Construction/upgrading and management of post-farm-gate facilities (for example slaughterhouses, dairy processing, and wet markets)	<ul style="list-style-type: none"> - Percentage of post-farm-gate facilities compliant with infrastructure and management guidelines - Number of government and private sector experts/managers/staff working in post-farm-gate facilities trained on infrastructure and management requirements (disaggregated by gender).
1,2	Transport of livestock and livestock products	<ul style="list-style-type: none"> - Transport in compliance with biosecurity and welfare guidelines (Y/N).
1	Exports of livestock and livestock products	<ul style="list-style-type: none"> - Compliance with food safety guidelines (Y/N) - Number of government food safety inspectors trained in food safety (disaggregated by gender) - Number of food processor/farmers trained in food safety (disaggregated by gender).
IMPROVE INPUT SERVICES AND SERVICES DELIVERY		
1,2	Public and private animal health services	<ul style="list-style-type: none"> - Number of veterinarians trained on animal health, food safety and animal welfare (disaggregated by gender). - Number of animal health workers trained on animal health, food safety and animal welfare (disaggregated by gender). - Compliance of animal health infrastructure with guidelines.
1,2	Provision of input and services	<ul style="list-style-type: none"> - Drugs/vaccines sourced from international markets (Y/N) - Compliance of drugs/vaccines with storage and usage guidelines - Number of health workers and veterinarians trained in storage and usage of drugs/vaccines (disaggregated by gender)

Type of Projects	Type of Interventions	Potential Indicators
		- Number of animal health workers trained in vaccination (disaggregated by gender).
PROVIDE EMERGENCY SUPPORT FOR LIVESTOCK		
3	Disease outbreak	<ul style="list-style-type: none"> - Percentage of carcasses compliant with disposal guidelines to avoid contamination - Number of animal health workers/ veterinarians trained on disease outbreak guidelines (disaggregated by gender).
3	Livestock destocking due to drought	<ul style="list-style-type: none"> - Percentage of carcasses compliant with disposal guidelines to avoid contamination - Number of animal health workers/ veterinarians trained (animal transport, animal welfare, etc.) (disaggregated by gender).
DEVELOP LIVELIHOOD OF COMMUNITIES		
2	Distribution of livestock for income-generating activities or as safety net (for imported livestock)	<ul style="list-style-type: none"> - Compliance with quarantine guidelines (time, infrastructure, location) for imported animals (Y/N) - Number of animal health workers/veterinarians trained on animal health (strengthening of capacity) (disaggregated by gender) - Number of farmers trained on animal health and welfare (disaggregated by gender).
1,2	Enhancing livestock productivity of smallholder farmers	<ul style="list-style-type: none"> - Number of farmers trained on animal health and welfare (disaggregated by gender) - Number of animal health workers/veterinarians trained on animal health and welfare (strengthening of capacity) (disaggregated by gender).

ANNEX 5: Addressing Gender Through Livestock Projects

Livestock—including large and small ruminants, poultry, rabbits, pigs, fish, bees, and other species—is an asset that women in developing countries often can own and control more easily than other assets such as land, property, or financial resources. The benefits of livestock ownership can include the income earned from animals and animal products, draft power for farm operations and transportation, and the improvements in nutrition and health that result from consuming animal products. As livestock value chains develop, they can also provide wage employment.

Gender issues commonly arise in the livestock sector in many developing countries that can prevent or provide opportunities for livestock projects to benefit women and youth as well as men. Such constraints can prevent women and men from fully reaping the benefits of livestock ownership, including limited skills in animal care and marketing, as well as limited access to knowledge, inputs, improved breeds, feeds, veterinary and financial services, livestock markets and market information, land, and water. Some of these constraints affect women more than men. Other constraints are often particular to women and young people alike, including responsibility for unpaid work on the farm and within the household (limiting time for other activities), lower levels of education, limited access to information and transportation, limited control over productive resources, and social norms that inhibit interactions outside the immediate family or village and dictate what is expected of women in livestock activities. For example, predominant norms related to livestock ownership, and often the species that can be owned, can limit women's options for engagement in the livestock sector.

How Livestock Projects Can Contribute Concretely to Gender Equality

Livestock projects can contribute to gender equality. Integrating gender-responsive activities, approaches, and actions in livestock projects will enhance their impact for women as well as men. Gender-responsive livestock projects can promote gender equality and empower women in many ways—for example, by building skills to improve their livelihoods, reduce their workload, and pursue new sources of income; by enabling them to accumulate and control assets; and by increasing their participation and voice in collective livestock activities.

The choice of gender-responsive activities, approaches, and actions to include in livestock projects will depend on a good understanding of the context in which the project is intended to operate, derived from a detailed analysis of the gender roles, responsibilities, power relations, and constraints operating at different stages of livestock value chains. While activities and approaches may focus solely on women, ideally, they will also involve men and respond to their particular roles, challenges, and needs.

Examples of gender-responsive activities, approaches, and actions pertinent to several aspects of livestock projects are provided in the tables below, including: livestock production, breeding, disease management and food safety, processing, marketing, and pastoralism. These practical examples offer a guide to gender considerations and corresponding interventions for teams to consider when conceptualizing and designing livestock projects.

Table 1. Supporting gender equality through livestock projects: Examples of objectives, gender gaps, and corresponding activities

Supporting gender equality	Examples of gender gaps in livestock value chains	Examples of activities to address gender gaps
Improve human endowments	Gaps in knowledge of livestock production and health, food safety, and nutrition	Provide technical education for women, and on-the-job training in gender for all stakeholders involved in livestock value chain.
Create more and better jobs	Gaps in skills and knowledge to attain better jobs	Train and recruit women as veterinarians, para-veterinary professionals, artificial insemination workers, agro-input dealers, dairy workers.
Increase asset ownership and control	Gaps in ownership and control over animals and income derived from them	<p>Provide credit coupled with skills training for women to acquire animals and processing units. Consider affirmative actions to ensure women’s participation and access to credit.</p> <p>Support associated policy and legal frameworks to improve women’s access to credit, with education for credit providers to remove bias.</p>
Increase women’s voice and engage men and boys	Social and cultural barriers that limit women’s engagement and voice	<p>Engage men in understanding gender roles and the benefits of women’s empowerment.</p> <p>Increase women’s control of livestock income.</p> <p>Support change in accepting women as members of farmer groups, and train new members. Consider quotas or other affirmative actions to achieve change.</p> <p>Develop mobile services accessible to women near their houses.</p>

Table 2. Examples of activities to integrate gender in livestock projects

Gender considerations	Illustrative gender-responsive activities, approaches, and actions
<p>Limited access to effective artificial insemination, animal health (vaccines, deworming), and veterinary services due to cultural reasons as well as the lack of mobility, time, animal health advice relevant to specific production needs, and finance to pay for private veterinary services, among other deficiencies. Note that often the final decision in animal health is whether to invest resources—medicines or vaccines—into an animal, and often that decision is not within a woman’s power to make.</p>	<ul style="list-style-type: none"> - Support mobile animal health clinics (including women staff). - Train women’s groups to identify, prevent, and report livestock diseases. - Widely disseminate livestock health knowledge through communication channels that are most popular among women (or that specifically target women), such as radio (information campaigns), TV soap operas, billboards, flyers, leaflets, mobile theater groups, or hotlines (or text-messaging) for livestock health information; disseminate extension messages by mobile phone. - Train women as community animal health workers and community vaccinators (include training in nutrition, hygiene, and food safety). - Use women’s unions/producer groups for strategic disease prevention by training them to recognize and report the incidence of animal diseases and to deal with diseases, including when to call the veterinary services. - Develop mixed or same-sex livestock clubs in schools with incentives for girls to join. - Include livestock skills in the school curriculum (disease prevention, vaccination procedures, housing and feeding, and basic husbandry practices). - Fund participatory epidemiological action research on women’s animal health knowledge, specific roles, and opportunities. - Promote animal health in tertiary education, strengthening the curriculum to include gender issues and gender-sensitive participatory methods in disease diagnosis, treatment, and biocontainment. - Support female students in tertiary education in veterinary and para-veterinary programs (e.g., fund scholarships, postdoctoral studies, mentoring programs, etc.).
<p>Male veterinarians or extension agents encounter difficulties in providing services to women due to cultural reasons or lack of knowledge on how to engage with women in the context of livestock activities. Male service providers may also be limited by the belief that women cannot apply new technologies.</p>	<ul style="list-style-type: none"> - Design gender-sensitivity training for veterinarians and extension officers, focusing on strategies such as: conducting animal production training at a time of day convenient to women (e.g., before and after busy dairy production periods); providing training to both husband and wife; and providing women’s groups with training venues that have daycare, separate bathrooms, and access to clean water. - Train women as community vaccinators (e.g., for Newcastle disease and PPR).
<p>Lack of women veterinarians, para-veterinary professionals, and extension agents in developing countries enrolling in and graduating from universities and vocational schools.</p>	<ul style="list-style-type: none"> - Fund a mentoring program, together with female veterinarians, para-veterinary professionals, and extension agents, targeting girls in high school. - Support communication campaigns targeting women to apply to veterinary school. - Support affirmative action and scholarships for female students applying to veterinary programs. - Improve female dormitories and security on campus. - Set up mini-libraries for female students.

	<ul style="list-style-type: none"> - Provide rural women with links to reproductive health services. - Offer role modeling events to change women’s and men’s mindsets about the profession.
<p>Exposure to zoonotic diseases and foodborne diseases. Women often are more exposed to zoonotic diseases through their livestock activities and handling of raw animal products. They may also have less knowledge about zoonotic diseases than men. Greater daily contact with poultry and ruminants exposes women to higher specific health and safety risks, such as contracting avian influenza or brucellosis, among other diseases. As women have the main responsibility for household meals, training in food hygiene is also a priority.</p>	<ul style="list-style-type: none"> - Design and support implementation of gender-specific food hygiene training programs that address key health and food safety issues related to livestock. - Support development of and access to improved containers for milk and other livestock products. - Train women in food safety risks, especially brucellosis (from unpasteurized cow and goat milk). - Upgrade livestock marketplaces with improved water, stalls, cages, floors, water supply, sewage and wastewater treatment systems, locked storage spaces, etc. - Sensitize women to the risk of aflatoxin and value of improved fodder storage methods that reduce this risk. - Involve women in formulating and implementing strategies for animal health and against AMR. - Support development of learning materials for tertiary education in animal health that include gender issues and gender-sensitive participatory methods in disease diagnosis, treatment, and biocontainment.

ANNEX 6: Animal Welfare

What is animal welfare?

Animal welfare is now widely recognized as a responsibility and an ethical obligation of animal owners and users. Ensuring adequate welfare of animals to the greatest extent practicable should be a target of any animal-related activity.

As per the OIE, animal welfare is the physical and mental state of an animal in relation to the conditions in which it lives and dies. An animal is in a good state of welfare if (as indicated by scientific evidence) if it is healthy, comfortable, well-nourished, safe, able to express innate behaviour, and is not suffering from unpleasant states such as pain, fear, and distress. Good animal welfare requires disease prevention and veterinary treatment, appropriate shelter, management, nutrition, humane handling and humane slaughter. Animal welfare refers to the state of the animal; the treatment that an animal receives is covered by other terms such as animal care, animal husbandry, and humane treatment.

Who is responsible for animal welfare?

Primary responsibility lies with farmers, animals' users and service providers. They are the ones in charge of raising, transporting, handling, using or killing animals. Institutionally, veterinary services are recognized as having a key role to play in preparing and implementing relevant actions linked to animal welfare. The "veterinary domain" referred to in the OIE Code means all activities that are directly or indirectly related to animals, their products and by-products, which help to protect, maintain and improve the health and welfare of humans, including by means of the protection of animal health and welfare, and food safety. Governments should endeavour to ensure implementation of at least internationally recognized standards.

What are the issues globally?

In many instances, poor animal welfare has been witnessed in situations where lack of education or awareness of the benefits of animal welfare lead to neglect or mistreatment of animals. In agriculture, poor welfare in livestock and food producing animals can cause undue suffering, and, beyond their welfare, impact their ability to provide expected services or production.

At government level, animal welfare is not yet systematically embedded in veterinary or other legislation, and enforcement capacities and commitment are still often lacking. Animal welfare also may be seen as a subject of minor importance or unachievable for economic reasons. However, much can still be done to improve animal welfare appreciably, without negative financial impact, and many examples demonstrate the economic rewards of good welfare: well-cared-for animals are productive animals and improving animal welfare enhances production and opens up new trade opportunities for farmers and processors along the food chain. In addition, consumers are increasingly sensitive to animal welfare, which can sometimes become a driver for price and market.

In that respect, a number of nongovernmental organizations are very active in promoting animal welfare worldwide and provide valuable support to governments and other bodies, where need be, to help enforce animal welfare measures.

National legal frameworks covering animal welfare issues are necessary and should be supported by adequate communication and training campaigns to develop a common understanding of animal welfare.

Where does the international community stand?

A common understanding and commitment regarding animal welfare has been evidenced by the adoption by all OIE members of a series of standards on animal welfare, for both terrestrial and aquatic animals. The first international standards on the welfare of animals were published in 2005, addressing, inter alia, the transport of animals by land, sea and air; slaughter of animals for consumption and culling for disease control; working equids; as well as standards on production systems for beef cattle, broiler chickens and dairy cattle. The latter paved the way for the development of additional standards covering other types of production (e.g., laying hens, pigs, etc.).

Apart from these standards, the FAO “Gateway to Farm Animal Welfare” is an online database providing a wide array of documents from various sources on farm animal welfare, including events, publications, examples of legislation, codes of practices, scientific papers, training materials, projects, etc. FAO states that animal welfare is an issue that has ethical, production, and economic consequences for both developing and developed countries.

How can the World Bank contribute to better animal welfare?

The World Bank is involved in an increasing number of projects targeting animals directly or indirectly, in particular production animals, primarily in the frame of the agriculture and rural development sector. As summarised in section 3, the ESF has many entry points for addressing animal welfare and also references the requirement to implement good international industry practices (GIIP), including the IFC Good Practice Note on Improving Animal Welfare in Livestock Operations, when supporting large-scale commercial livestock operations. The IFC updated this note in 2014, and has initiated the development of practical manuals, including an HACCP audit of animal welfare practices.

Specific reference to animal husbandry is made in the ESF when supporting large-scale commercial farming operations. According to ESS6, paragraph 37, “the Borrower involved in the industrial production of crops and animal husbandry will follow GIIP to avoid or minimize adverse risks or impacts. The Borrower involved in large-scale commercial farming, including breeding, rearing, housing, transport, and slaughter, of animals for meat or other animal products (such as milk, eggs, wool) will employ GIIP in animal husbandry techniques, with due consideration for religious and cultural principles.”

World Bank Group operations, except for IFC, rarely support such large-scale commercial farms, and focus more on smallholder producers and small- and medium-size agri-business enterprises, for which availability of practical animal welfare guidelines is still lacking. However, key principles described in the ESF, the IFC Good Practice Note and the OIE Standards should be promoted in the livestock portfolio. Drivers for animal-related activities at the Bank can be, among others, poverty alleviation, food security, trade, competitiveness, value chain development, public health, education. Activities may include development of specific infrastructure; supply of equipment; promotion of good practices; support to institutional reforms, policy and legislation; public/private partnerships; capacity building through trainings; and communication strategies.

Some references to animal welfare in World Bank projects

Animal welfare in World Bank projects involves activities with positive impacts and measures taken to mitigate adverse animal welfare where/if need be. This is achieved through a combination of institutional support (gap analysis regarding animal welfare national standards or guidelines, legislation, training) and

on-farm/on-slaughterhouses activities (promotion of good practices, improvement of animal housing, feeding and health and of slaughtering conditions).

Examples of animal welfare in World Bank projects include:

- Avian Influenza: Global Program for Avian Influenza Control and Human Pandemic Preparedness and response (GPAI Program Document, Report No: 34386, December 2005): p76, *“the assessment would also include review of the policy and regulatory framework and focus on the following areas: Destruction and disposal of affected poultry (it is essential that affected poultry be speedily and humanely slaughtered)”*; p91 *“An effective strategy for a particular country would have to be determined by a number of factors, inter-alia: procedures for humane culling of infected and at-risk poultry.”*
 - o Vietnam (P123783 - additional financing) - *“a site for the destruction and humane culling and disposal of seized smuggled poultry has been established in Lang Son Province, and operational guidelines for the facility have been drafted.”*
 - o Afghanistan (P100935) PAD *“Equipment and materials will be provided for efficient and humane animal destruction... Manuals will be developed in local languages and culling teams will receive proper training in human safety measures, humane killing and...”*
 - o Nigeria (P100122) PAD *“it may be necessary to adjust the policy and regulatory frameworks regarding HPAI to support the establishment of direct chains of command for the following: ... (v) humane destruction and proper disposal of affected poultry...”*
- Zambia – Livestock Development and Animal Health Project (P122123): *“The component will improve capacities of key national public institutions of the livestock sector with the specific objectives of: (i) improving the delivery of advisory and technical services to enhance the adoption of good husbandry practices.”* *“Technical assistance from specialists can be funded to help producers adopt better animal husbandry practices (feeding, health, breeding and habitat).”* *“Sensitizing consumers on livestock and slaughter waste management could lead to improved health, animal welfare, and environmental conditions at farms and slaughter facilities supplying local markets.”*
- Yemen – Rainfed Agriculture and Livestock Project (P089259): *In monitoring key environmental and social indicators, it is stated that indicators should enable [project implementing units] at least to determine the impacts of the project on (i) the general quality and availability of water for human consumption and use for agriculture and livestock, (ii) the natural vegetative cover and biodiversity of rangelands used for livestock grazing and (iii) the overall health and welfare of the human and animal populations in the project areas.*
- Bhutan – Second Phase of the APL on Strengthening Regional Cooperation for Wildlife Protection in Asia (P126193): The PAD mentions *inhumane transport and handling of wild animals; the project would address stabilization and, if possible, increasing of the population and habitats of critically endangered animals in Asia. Better welfare of wildlife would be expected from project activities, although not directly targeting welfare per se.*

ANNEX 7: Antimicrobial Resistance

What is antimicrobial resistance?

Antimicrobial resistance (AMR) arises when potentially infectious microorganisms—bacteria, viruses, protozoa and fungi—acquire capacity to resist the antimicrobial agents used to treat human and animal infectious diseases. This occurs through a process of natural selection when antimicrobials are used to prevent or treat infections, even when these drugs are correctly used.

Resistant microorganisms occur in people and animals, but also in contaminated food, water sources and, more broadly, in the environment. Resistant microorganisms can be transmitted through various pathways such as person-to-person contact, person-to-animal contact, the consumption of contaminated foods, and contact with human and agricultural wastes. In addition, resistant microorganisms that do not directly pose a health risk may transmit AMR genes to microorganisms that are more serious human and animal pathogens.

AMR has emerged as a growing public health threat worldwide: it affects humans, animals and the global economy. An estimated 700,000 human deaths per year are currently attributable to drug-resistant microbes. Left unchecked, AMR could lead to a global GDP shortfall of 3.8 percent annually by 2050, reaching US\$3.4 trillion annually by 2030.

Who is responsible for AMR?

AMR is a shared responsibility. The health of people is connected to the health of animals and the environment. Because the development and transmission of antimicrobial resistance involves all three and can have devastating consequences, it is a One Health issue of prime importance. In addition, in a world of increasing global trade, urbanization and travel, resistance can spread rapidly, not respecting national or species borders. Thus, international and cross-sectoral cooperation is the only way forward to successfully combat AMR.

Institutionally, veterinary services have a key role to play in prudent and responsible use of antimicrobials in animals. The OIE Terrestrial and Aquatic Codes provide guidance for antimicrobial stewardship in activities that are directly or indirectly related to animals, their products and by-products, which help to protect, maintain and improve their health and welfare, including food safety. Governments should endeavor to ensure implementation of these internationally recognized standards.

The livestock sector is a critical contributor to the livelihoods of more than 1 billion people; it is also a major user of antimicrobial drugs. Any drug resistance that develops in animals may then also develop in people. Similarly, livestock can be exposed to resistant microorganisms from humans. Hence, the livestock sector is uniquely positioned to support the global effort to tackle AMR. Currently, about 70 percent of antimicrobials are used in the livestock sector, globally.

What are the issues globally?

Healthy livestock are an essential component of sustainable development. Healthy livestock mean increased productivity, reduced risks for public health, and improved food security, nutrition and livelihoods. On average, infectious diseases cause at least 20 percent of all livestock production losses globally. In Africa, it is estimated that 10 percent of adult livestock and 25 percent of young livestock die prematurely, mostly from infectious diseases that could be contained with appropriate health

management, including use of drugs. Not only is it critical for farmers to have access, it is also critical that they have appropriate and high-quality drugs. Reports have emerged that a significant amount of the antimicrobials used in low- and middle-income countries may be substandard or even counterfeit, which can encourage farmers to use more drugs or higher doses because of reduced efficacy, potentially adding to the risk of creating further AMR. More than 50 percent of veterinary medicines marketed in Africa may be counterfeit or sub-standard.

The quantity of antimicrobials used in animals far exceeds that of humans in many countries. Also, with increasing demand for livestock products, the corresponding intensification of livestock production has commonly meant an increasing need for antimicrobial drugs. Considering the growth rate of the sector, this trend in usage of antimicrobials may continue in the future. At the same time, the same drugs that may be overused or misused in some parts of the world are lacking in others – where they could have a major life- and livelihood-saving impact. This creates a dual problem of how to eliminate overuse and misuse of antimicrobials while providing responsible and prudent access to those who desperately need them, especially in low-income countries.

In some production systems, animals are given non-therapeutic, low doses of antimicrobials for growth, a use which adds to the potential for resistance. Several countries have already banned the use of antimicrobials as growth promoters.

Whether considered through the lens of excess or access, the fact remains that the problem is already immense and is growing rapidly. It is critical to reduce the dependence on antimicrobials in animal production to help tackle the growing levels of resistance.

Where does the international community stand?

Some public health and livestock sector studies make apocalyptic projections that, if left unchecked, annual deaths of people due to AMR could rise to 10 million by 2050, greater than the number who die from cancer today, with 90 percent of these deaths occurring in developing countries.

The international community, well aware of this possibility, has initiated actions to raise awareness and propose steps for dealing with AMR. In July 2016, 193 countries signed a UN Resolution calling for a coherent global action to address the issue and recognizing that failure to address AMR will undermine sustainable food production and jeopardize global capacity to deliver the Sustainable Development Goals. The World Bank was a member of the ad hoc Inter-Agency Coordination Group established in March 2017, which provided details on progress made and recommendations on next steps in its report to the UN Secretary-General.

Since 2005, OIE has provided guidance and set international standards for responsible and prudent use of AMs in livestock. In 2010, the WHO, FAO and OIE identified AMR as a top priority of their Tripartite Agreement, along with rabies and avian influenza. Their Global Action Plan on AMR (2016-2020) stresses the importance of multi-dimensional responses, especially in countries with weak or inadequate monitoring systems.

To date, 85 percent of countries are developing, or have developed, National Action Plans (NAPs). Still, only 5 percent of countries have a multisectoral NAP that has been implemented with identified funding sources and monitoring processes in place.

Examples of actions to address AMR in livestock projects

AMR-informed projects can be better designed and monitored by referencing activities that positively impact the global stewardship of antimicrobials and measures to systematically mitigate, adapt and innovate with regard to AMR. A good approach involves a combination of AMR-sensitive and AMR-specific activities, including, e.g., institutional support (gap analysis regarding national standards or guidelines, legislation, and training) and on-farm activities (promotion of good practices, improvement of animal husbandry). The Bank can harness its livestock portfolio to address AMR by reducing the use of antimicrobials in livestock, adapting animal production systems, and supporting innovation that promotes less use of antimicrobials.

Examples of measures include the following:

Mitigate to reduce the use: develop policies and regulations, set targets and monitor antimicrobial use

- Improve monitoring of antimicrobial use and surveillance of emergence of AMR, through strengthening laboratory capacity, developing systems for gathering data on how national livestock sectors access and use antimicrobials, including identification and traceability, measurement of antimicrobial residues in livestock food products.
- Establish national targets for reduction of antimicrobial use in livestock, especially for non-therapeutic usages, and assist countries to present annual reports to the Tripartite AMR country self-assessment survey of the WHO/FAO/OIE on progress.
- Provide an enabling environment by strengthening public and private standards for the registration, manufacture, distribution, sale and use of antimicrobials throughout the supply chain, including implementation and enforcement of standards.

The West Africa – Regional Disease Surveillance Systems Enhancement (REDISSE) program (P154807) is a One Health flagship. It aims at strengthening national and regional cross-sectoral capacity (i.e., public and animal health) for collaborative disease surveillance; thereby addressing systemic weaknesses within the animal health systems that hinder effective surveillance and response, including AMR.

Adapt to reduce the need: identify gaps or problems in current livestock production systems and methods of modifying them to increase resilience to low/no antimicrobial use

- Identify production systems that are heavily reliant on drugs and critical points in animal life cycles where use of antimicrobials is highest, in order to identify entry points for interventions.
- Investigate field conditions to identify possibilities to redesign production systems, and animal husbandry practices, that have less need for antimicrobials, including through upgrading of housing, genetic selection, vaccination strategies, dietary adjustments, improved hygiene procedures and staff training.
- Undertake economic and feasibility studies to identify how to adjust production systems to reduce use of antimicrobials without compromising food supply or animal health and welfare.
- Raise awareness and educate professionals and livestock owners to better understand how antimicrobials function and the potential adverse consequences of inappropriate use as well as possible alternatives to their use.

The Vietnam – Additional Financing to Livestock Competitiveness and Food Safety Project (LIFSAP) (P090723) aims at increasing the production efficiency of household-based livestock producers, reducing the environmental impact of livestock production, processing and marketing, and improving food safety in livestock-product supply chains. LIFSAP will help to improve the overall competitiveness of domestic

livestock production. One key to the project's success is the use of good animal husbandry practices (Viet-GAHPs) tailored to the country environment and value-chain specificity.

Innovate to optimize use: rationalize the use of antimicrobials through rapid uptake in developing countries of scientific and technologic advancement and alternative strategies, and facilitate dissemination of knowledge

- Improve rapid diagnostic methods for infectious diseases in livestock, including susceptibility testing, to target appropriate treatments and determine specifically if antimicrobials are appropriate.
- Develop appropriate vaccines and vaccination strategies with the specific objective of reducing the use of antimicrobials in livestock.
- Strengthen education, training and communication at national and global levels, with particular focus on veterinary education and the role of veterinarians and veterinary para-professional standards in governing the use of antimicrobials in livestock.

The Western Africa - Regional Sahel Pastoralism Support Project (PRAPS) (P147674) aims at improving access to essential productive assets, services, and markets for pastoralists and agro-pastoralists in selected trans-border areas and along transhumance axes across six Sahel countries; and strengthening country capacities to respond promptly and effectively to pastoral crises or emergencies. It includes a component on vaccination strategy for small ruminants against PPR (Peste des Petits Ruminants), contributing to the control of the disease and better health management, two main pillars of the OIE/FAO global strategy for PPR eradication. It does also include a component on quality of veterinary medicinal products, addressing the issue of sub-standard and counterfeit products in the Sahel region.

References and Resources

References

Béné, C., and Merten, S. 2008. "Women and Fish-for-Sex: Transactional Sex, HIV/AIDS and Gender in African Fisheries." *World Development*. Vol 36:5, pp 875-899.

Camlin, C.S., Kwena, Z.A., and Dworki, S.L. 2013. "Jaboya vs. Jakambi: Status, Negotiation, and HIV Risks Among Female Migrants in the 'Sex for Fish; Economy in Nyanza Province, Kenya.'" *AIDS Educ. Prev.* Vol 25:3, pp 216-231. Accessed at <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3717412/>

EFSA. Lumpy Skin Diseases. <http://www.efsa.europa.eu/en/topics/topic/lumpy-skin-disease>

FAO. 2009. Preparation of African swine fever contingency plans. Penrith, M.L., Guberti, V., Depner, K., and Lubroth, J., eds. FAO Animal Production and Health Manual No. 8. Rome. <http://www.fao.org/3/a-i1196e.pdf>

FAO. 2011. Good Emergency Management Practices: The Essentials. Honhold, N., Douglas, I., Geering, W., Shimshoni, A., and Lubroth, J. FAO Animal Production and Health Manual No. 11. Rome. <http://www.fao.org/ag/againfo/programmes/en/empres/GEMP/index.html> and <http://www.fao.org/DOCREP/004/X2096E/X2096E00.HTM>

FAO. 2013. "Understanding and Integrating Gender Issues into Livestock Projects and Programmes: A Checklist for Practitioners." Rome. <http://www.fao.org/3/a-i3216e.pdf>

Grace et al., 2012. Mapping of poverty and likely zoonoses hotspots
https://cgspace.cgiar.org/bitstream/handle/10568/21161/ZooMap_July2012_final.pdf?sequence=4&isAllowed=y

IFAD (International Fund for Agricultural Development). Undated. "Gender and Livestock: Tools for Design." Livestock Thematic Program Tools for Project Design. Rome. <https://www.ifad.org/documents/10180/b5f16410-cf6d-4e63-89e5-fbd64aaa7cb7>

IFC. 2014. Good Practice Note: Improving Animal Welfare in Livestock Operations
https://www.ifc.org/wps/wcm/connect/topics_ext_content/ifc_external_corporate_site/sustainability-at-ifc/publications/publications_gpn_animalwelfare_2014

IRGC. (2017). An introduction to the IRGC Risk Governance Framework. Revised version. [10.5075/epfl-irgc-233739](https://www.irgc.org/10.5075/epfl-irgc-233739)

Livestock Emergency Guidelines and Standards (LEGS). 2014. 2nd Edition. Accessed at <https://www.livestock-emergency.net/wp-content/uploads/2012/01/LEGS-Handbook-2nd-edition-web-version-1.pdf>

Njuki, J., Poole, J., Johnson, N., Baltenweck, I., Pali, P., Lokman, Z. and Mburu, S. January 2011. "Gender, Livestock and Livelihood Indicators", Nairobi, Kenya: ILRI (International Livestock Research Institute). Accessed at <https://cgspace.cgiar.org/handle/10568/3036>

Njuki, J., E. Waithanji, N. Bagalwa, and J. Kariuki. 2013. “Guidelines on Integrating Gender in Livestock Projects and Programs.” Nairobi: ILRI (International Livestock Research Institute). Accessed at <https://cgspace.cgiar.org/bitstream/handle/10568/33425/GenderInLivestock.pdf>

OIE. Terrestrial Code. <https://www.oie.int/standard-setting/terrestrial-code/>

Passarelli, S., Mekonnen, D., Bryan, E. et al. 2018. “Evaluating the pathways from small-scale irrigation to dietary diversity: evidence from Ethiopia and Tanzania.” *Food Sec.* 10: 981. <https://doi.org/10.1007/s12571-018-0812-5>

Rushton J, Bruce M, Bellet C, et al. Initiation of Global Burden of Animal Diseases Programme. *Lancet.* 2018;392(10147):538-540. doi:10.1016/S0140-6736(18)31472-7

World Bank. 2018. One Health Operational Framework. <http://documents.worldbank.org/curated/en/703711517234402168/pdf/123023-REVISED-PUBLIC-World-Bank-One-Health-Framework-2018.pdf>

World Bank, FAO, and IFAD. 2009. “Gender and Livestock.” Module 14, Gender in Agriculture Sourcebook. Washington, DC. <http://siteresources.worldbank.org/INTGENAGRLIVSOUBOOK/Resources/CompleteBook.pdf>

Resources - Existing Guidance for Risk Assessment

Risk Assessment

Guidance on Expert Knowledge Elicitation in Food and Feed Safety Risk Assessment. EFSA, 2014.

Guidance on Risk Assessment for Animal Welfare of the Panel on Animal Health and Welfare (AHAW), EFSA, provides methodological guidance to assess risks for animal welfare, considering the various husbandry systems, management procedures and the different animal welfare issues.

Handbook on Import Risk Analysis for Animals and Animal Products: Introduction and Qualitative Risk Analysis. OIE, 2010.

Terrestrial and Aquatic Animal Health Codes (OIE) provide recommendations and principles for conducting transparent, objective and defensible risk analyses for international trade. The components of risk analysis are hazard identification, risk assessment, risk management and risk communication.

The International Risk Governance Council (IRGC) Framework provides guidance for early identification and handling of risks, involving multiple stakeholders. It recommends an inclusive approach to frame, assess, evaluate, manage and communicate important risk issues that are often marked by complexity, uncertainty and ambiguity. The Framework is generic and adaptable. It can be tailored to various risks.

Regulatory Frameworks

Convention on Biological Diversity is a multilateral environment agreement (hosted under the United Nations Environment Programme) for the conservation of biological diversity, the sustainable use of its components, and the fair and equitable sharing of benefits arising from the use of genetic resources.

Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) is a multilateral environment agreement providing international trade protections to more than 35,000 species of animals and plants to safeguard them from overexploitation.

International Health Regulations (IHR) (WHO) are binding legal instruments requiring member states to report certain disease outbreaks and public health events. Two thirds of infectious diseases in humans have their origin in animals; this makes the IHR framework relevant to this GPN.

Sendai Framework for Disaster Risk Reduction is a 15-year, voluntary, nonbinding agreement for whole-of-society action for substantial reduction of disaster risk and losses in lives, livelihoods, and health, and in the economic, physical, social, cultural, and environmental assets of persons, businesses, communities, and countries.

Terrestrial and Aquatic Animal Health Codes and Manuals (OIE) are standards relating to animal health and zoonoses; they are enforced by the World Trade Organization under the Agreement on the Application of Sanitary and Phytosanitary Measures.

Capacity Assessments

Performance of Veterinary Services (OIE) is a suite of quantitative evaluation tools (PVS pathway) to assess a country's performance, needs and priorities based on the outcome of the independent external evaluation of the country veterinary services.

Joint External Evaluation (JEE of WHO) for the IHR Monitoring and Evaluation Framework is intended to assess country capacity to prevent, detect, and respond to public health threats independently of whether they are naturally occurring, deliberate, or accidental. Several of the 19 core competencies relate to animal health and welfare: zoonoses, food safety, antimicrobial resistance.

Performance of Veterinary Services, OIE, is a tool to establish level of veterinary service performance to identify gaps and weaknesses in the capacity to comply with OIE international standards, form a shared vision with stakeholders (including the private sector), and establish priorities and carry out strategic initiatives.

Planning Tools

Health Security Financing Assessment Tool is a World Bank tool to help countries identify critical constraints and opportunities to strengthen financing systems that accelerate and sustain progress toward effective health security. It can accompany assessments (e.g., JEE, PVS) to track and monitor progress over time.

National Action Plans for Health Security (NAPHS, WHO) are five-year multi-sectoral plans guiding a country's health security activities and investments necessary for accelerating the implementation of the WHO IHR.

One Health Zoonotic Disease Prioritization (CDC) is a tool that allows a country to use a multi-sectoral approach to prioritize endemic and emerging zoonotic diseases of greatest national concern that should be jointly addressed by ministries responsible for human, animal, and environmental health.