

ANIMAL HEALTH COMPLETE GUIDANCE FOR GRAZING DRY-PASTORAL SYSTEMS (RUMINANTS)

Pastoral cattle, sheep, goats, and camel systems
in dry tropical and cold climates



This document provides the complete Animal Health Guidance for Dry, Grazing Pastoral (Ruminant) Systems as part of the Investing in Sustainable Livestock (ISL) Guide.



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Table of Contents

| | |
|-----------|--|
| 03 | Introduction to the ISL Guide |
| 04 | Structure of the ISL Guide |
| 05 | Overview of Grazing Dry-Pastoral (Ruminants) |
| | Description of Typical Situation |
| | Common Animal Health Issues |
| 07 | ISL Guidance: Grazing Dry-Pastoral (Ruminants) |
| 09 | Objective 1: Improve the Productivity of Livestock |
| 13 | Objective 2: Improve Market Access and Develop Value Chains |
| 17 | Objective 3: Improve Input and Service Delivery |
| 20 | Objective 4: Climate Change Resilience and Emergency Response |
| 25 | Objective 5: Strengthen Policies, Knowledge and Information |

The online ISL Guide (www.sustainablelivestockguide.org) is an information resource and interactive platform for designing and implementing sustainable livestock development projects. The guide's interactive component provides context-specific guidance, suggested activities, and indicators to help livestock projects contribute to sustainable development outcomes; it also includes references for further investigation.

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Introduction to the ISL Guide

The ISL Guide is grounded in tested theory and evidence organized into 12 principles for sustainability in the livestock sector (the Theory Behind the Guide). These principles serve as a framework for assessing the sustainable performance of livestock production systems as well as opportunities for livestock to contribute to sustainability outcomes (see table below). The principles have relevance for project conceptualization (Principle 1), technical project design (Principles 2 through 6), and the broader socio-cultural, political, and economic context in which the project will be implemented (Principle 7).

The ISL Guide takes into consideration a variety of geographic contexts and tailors its guidance to different project objectives and interventions. So, if you are designing or implementing a project that involves livestock, it has detailed recommendations for you. Since the ISL Guide understands sustainability in a broad sense, it will eventually comprise elements not only relating to the environment and animal health and welfare, but also to equity issues such as gender and inclusion. The World Bank and FAO will expand the guide to integrate these issues in due course.

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|--|---|
| PRINCIPLE 1 | |
| Contribute to a Sustainable Food Future | |
| ENVIRONMENT GUIDE | ANIMAL HEALTH GUIDE |
| PRINCIPLE 2 | PRINCIPLE 2 |
| Enhance Carbon Stocks | Prevent & Control Animal Diseases |
| PRINCIPLE 3 | PRINCIPLE 3 |
| Improve Efficiency at Animal & Herd Levels | Ensure the Welfare of Animals |
| PRINCIPLE 4 | PRINCIPLE 4 |
| Source Feed Sustainability | Healthy Animals for Safer Food |
| PRINCIPLE 5 | PRINCIPLE 5 |
| Couple Livestock to Land | Reduce Risk of Zoonosis |
| PRINCIPLE 6 | PRINCIPLE 6 |
| Minimize Fossil Fuel Use | Prudent & Responsible Use of Antimicrobials |
| PRINCIPLE 7 | |
| Foster an Enabling Environment | |

Structure of the ISL Guide

OBJECTIVE:

Improve the productivity of livestock

INTERVENTIONS:

- Feed resources and balance
- Access to fodder and water
- Animal health and welfare
- Animal genetics

OBJECTIVE:

Improve input and services delivery

INTERVENTIONS:

- Develop public and private extension services
- Improve public and private animal health services
- Strengthen provision of input and services

OBJECTIVE:

Strengthen policies, knowledge, and information

INTERVENTIONS:

- Develop and harmonize livestock policies, plans, regulations, and programs
- Develop livestock information systems.
- Improve capacities at central and local government levels.
- Establish research grants and educational programs
- Establish programs to diversify pastoral livelihoods and promote alternative livelihoods

OBJECTIVE:

Improve market access and develop value chains

INTERVENTIONS:

- Producer organizations and alliances
- Post-farm gate facilities
- Value chain opportunities
- Develop livestock fattening activities

OBJECTIVE:

Climate change resilience and emergency response

INTERVENTIONS:

- Improve manure, nutrients, and waste management
- Ensure resilience of buildings and equipment to extreme weather events
- Develop early warning information systems and feed budgeting
- Establish emergency reserves and distribution systems
- Develop risk management programs and products

The ISL Guide provides technical guidance for improving the sustainability outcomes of livestock projects in the following 6 contexts, which cover the different livestock farming systems found worldwide:

- Grazing Dry - Pastoral (Ruminants)
- Grazing Temperate (Ruminants)
- Grazing Sub-Humid (Ruminants)
- Mixed Crop-Livestock, Dry (Ruminants)
- Mixed Crop-Livestock, Humid (Monogastrics)
- Intensive (Ruminants and Monogastrics)

The guidance provided for each of these contexts is organized according to objectives that are typically

found in livestock investment projects (see Process). Each objective is tied to a series of interventions. Those common objectives are:

- Improve the Productivity of Livestock
- Improve Market Access and Develop Value Chains
- Improve Input and Service Delivery
- Climate Change Resilience and Emergency Response
- Strengthen Policies, Knowledge and Information

For every combination of objective and intervention, the ISL Guide provides context-specific guidance for improving the sustainable outcomes, as well as suggested indicators for project monitoring and evaluation.

Overview of Grazing Dry-Pastoral Systems (Ruminants)

This context covers systems found on communal grasslands where the climate is too dry, hot, or cold to support crops. Animals are mobile and generally low input and low productivity, with herders moving their animals according to the season, resource availability, and market access.

DESCRIPTION OF TYPICAL SITUATION

Pastoral systems are characterized by mobility, grazing of the natural vegetation as the main source of feed, and predominant use of communal lands. Herders move with their animals for feed and water, to access markets, and to avoid diseases. Examples of these systems are found in Sub-Saharan Africa (e.g. the Sahel, Horn of Africa), Central Asia (e.g. Mongolia) and high-altitude lands around the world. Various forms of pastoralism are distinguished: Nomadic pastoralism is defined as pastoralism with constant movement, and transhumance is pastoralism with seasonal movement often between well-defined territories. Pastoralists combining crop production at a homestead with the movement of livestock during part of the year are referred to as agro-pastoralists. Pastoral systems are found on grasslands of all continents. Sizeable grasslands are often found in areas where it is too cold for crop production and herders move with livestock, such as reindeer, camelids, sheep, goat, and cattle in mountainous and arctic regions of Latin America, Europe, and Asia. Most other vast grassland regions are found in tropical semiarid and arid climates, where it is too dry (most regions have < 1000 mm of precipitation annually) and too hot for crop production. So, pastoralist systems can be viewed as land use systems adapted to conditions unfavorable for crop production.

For pastoralists, livestock have multiple functions: They are a store of wealth; a source of food, such as dairy products and meat; a source of draft power; a sign of social status; and a source of marketable commodities, including live animals and manure. Pastoralism is thus considered to be a livelihood strategy as well as a way of life as it completely determines the social and economic organization of the people involved and for many centuries has been an important cultural

heritage of mankind. It is estimated that the world has approximately 120 million pastoralists of which 50 million reside in Africa, with 20 million living in West Africa, which we will present here as an example in more detail. Since a sustainable herd size is approximately three to four cows per person, the livestock population in pastoralist herds is between 60 million and 80 million in West Africa. In West Africa, the transhumance system is the predominant form of pastoralism. The West African pastoralists generally graze their livestock (mainly ruminants and camels) on the savannah grasslands during the rainy season to benefit from the nutritious biomass and to avoid cropped areas which are mostly dedicated to agriculture and mixed crop-livestock systems. During the dry season, the availability and quality of grass in the savannahs become insufficient for livestock feeding, and herders move with their livestock to crop-producing regions to have them feed on the crop residues that remain on the land after harvest. This crop residue grazing has reciprocal benefits for the crop farmer as manure from the animals is deposited directly on the fields. This traditional symbiosis between pastoralists and crop farmers is presently confronting several challenges: reduced availability of grazing land due to the expansion of croplands, reduced access to croplands for dry season grazing because of intensified cropping (e.g. because of dry season cropping on residual water), loss of the value of manure as it is being substituted by synthetic fertilizers in intensified crop production, and reduced access to the corridors along which pastoralists move as a result of policies to curtail pastoralism, cropland expansion, and infrastructure expansion. International borders are also becoming increasingly difficult to cross for herders and their animals. As a result, crop farmers and pastoralists compete for the use of corridors, grazing lands, and croplands; conflict between them is common.

COMMON ANIMAL HEALTH ISSUES

Over the course of millennia, (agro-) pastoralists have adapted to natural resource variability and climatic changes, contributing to food security from very marginal lands. Yet, pastoralists' livelihoods continue to remain dependent on living animals, which are subject to

OVERVIEW OF GRAZING DRY-PASTORAL SYSTEMS (RUMINANTS)

potentially catastrophic losses through diseases, stress, lack of accessibility to veterinary services, or resource scarcity. In dry-pastoral regions, livestock populations are especially susceptible to changes in environment. Pastoralists often face tough animal health decisions such as facing losses from migration (i.e. travelling long distances to receive veterinary services) or staying on sub-optimal land, which result in coping strategies that are complex, affecting animal health and welfare in a variety of ways. For example, risk of prolonged droughts can result in the keeping of larger herds, with the hope that a larger herd means more animals surviving, putting pressure on resources due to both size and longer recovery times. Since pastoralists greatly rely on mobility as a critical coping strategy, land access restrictions on top of grassland degradation/soil erosion can lead to losses. Stress resulting from poor animal nutrition, water scarcity, long distance walking, etc., can also lead to otherwise normal microflora becoming pathogenic to animals. Even in disease-free areas, the risks of livestock disease transmission by animal mobility of wildlife remains high, causing transmission of diseases to new places. A recent example is the transmission of peste des petits ruminants of small ruminants to saiga antelope, a critically endangered animal. Furthermore, periods of drought can cause herds to gather around water bodies and watering points, facilitating disease spread. Overall, containing infectious diseases in this context can be extremely challenging. (Principles 2, 3, 7)

The mobility of farmers and their herds has the double potential effect of exposing healthy animals to new viruses upon their arrival, introducing infected animals into disease-free areas putting at risk origin and destination countries, or just contributing to sustain pathogen transmission maintaining endemism. Places of animals gathering can be considered a double-edged sword, as on one hand the animal mixing and contact is a risk factor for disease transmission of diseases amongst animal but also to human. Stress and crowding of animals can lead to unprecedented pressure on already marginalized land, which can then lead to large herds of poorly fed animals concealing subclinical pathogens. This can also lead to microbial resistance pathogen spillover to humans. Greater animal survival rates mean that pastoralists should de-stock to limit these negative impacts. This is particularly important when natural resources are the key limiting factor of herd

sizes. Education for behavioral change and good market linkages with private sector engagement can help maintain a well-managed, effective herd size and thus avoid herd overstocking. (Principle 2, 7)

Ability to cope with disease risk for pastoralist communities is highly dependent on access to veterinary services. For example, an epizootic disease can quickly wipe out an entire herd before veterinary services are able to reach an area. This history of diseases devastating pastoral herds have led to quicker acceptance of modern veterinary medicine in many cases, with vaccinations and drugs allowing pastoralists to increase herd sizes. Disease control, such as well-intentioned, large-scale vaccination campaigns, once completed have often left the normal veterinary infrastructure unable to continue such services, having to allocate limited resources across large landscapes with differing disease threats. Furthermore, access to reliable cold chains in pastoralist settings presents a challenge, particularly for the stability of temperature-sensitive vaccines, as in the case of Rift Valley fever. This can leave pastoralists desperate for medicines and stimulates the evolution of extensive black markets for drugs—many of which are of low quality, expired, or fake. This can also contribute to antimicrobial resistance (AMR). The use of inadequate or failing drugs can then lead to pastoralists skeptical of investing in the use of modern medicines or veterinary services. Access to adequate veterinary services and products, veterinary infrastructure and laboratories, as well as education and training remain critical to improving the sustainable livestock development for pastoralist communities. Due to changing disease threats and conditions across communities, a key challenge to address is locally adaptable veterinary services and health education. Other disease control measures such as movement restrictions, while they can effectively limit spread of contagious disease, create trade-offs between disease control and traditional mobility. Assessing contact patterns across pastoral areas is essential for understanding the spread of infectious diseases which can better allow for both disease control and mobility. A One Health approach for service delivery in this context can be particularly beneficial, with pastoralists living in close proximity to their livestock; the health of livestock is closely linked to the health of people. Innovative solutions can also play a big role in transforming and

OVERVIEW OF GRAZING DRY-PASTORAL SYSTEMS (RUMINANTS)

adapting veterinary services, such as taking advantage of mobile/internet networks where possible. Principles 2, 6, 7)

Pastoralists are usually highly knowledgeable about behavior and physiology of their animals, and often take great control and care over genetic resources and reproduction, often managing rare livestock breeds. There is increasing concern that these genetic resources- traits such as resistance to extreme climates or weather conditions- are disappearing due to introgression.

Thus, veterinary programs on disease control in pastoral systems must take into account consequences of overall animal-production systems (e.g.: social dimension impacts on mobility, reproduction strategies and genetic resources, increasing pressure on natural resources, etc.). (Principle 1)

ISL GUIDANCE: GRAZING DRY-PASTORAL SYSTEMS (RUMINANTS)

The section below includes guidance for improving the animal health outcomes of five broad objectives that livestock development projects commonly seek to achieve. Typical interventions and specific activities are suggested under each objective, as well as guidance and indicators for improving animal health outcomes and monitoring and evaluating progress toward these outcomes. The guidance also references relevant Principles of Investment in Sustainable Livestock (Principles 1 – 7 or “P1” through “P7”) for further reading.

REFERENCES:

Blench, Roger. “Extensive Pastoral Livestock Systems: Issues and Options for the Future.” FAO-Japan Cooperative Project, 1999. <http://dlc.dlib.indiana.edu/dlc/bitstream/handle/10535/5313/Blench.pdf?sequence=1>.

Boone, Randall B., Michael B. Coughenour, Kathleen A. Galvin, and James E. Ellis. “Addressing Management Questions for Ngorongoro Conservation Area, Tanzania, Using the Savanna Modelling System.” *African Journal of Ecology* 40, no. 2 (2002): 138–50. <https://doi.org/10.1046/j.1365-2028.2002.00357.x>.

Chengula, A., R. H. Mdegela, and C. J. Kasanga. “Awareness, Knowledge and Practice of Pastoralists and Agro-Pastoralists towards Livestock Diseases Affecting Domestic Animals in Arusha, Manyara and Morogoro Regions, Tanzania,” 2013. <http://www.suaire.sua.ac.tz:8080/xmlui/handle/123456789/1354>.

Coppolillo, Peter. “A Preliminary Situation Analysis for the Rungwa-Tuaha Landscape, Tanzania.” WWF International, 2004. <http://www.coppolillo.com/uploads/1/1/2/3/11231708/wwf-report-situationanalysis30sep04.pdf>.

Gould, E. A., and S. Higgs. “Impact of Climate Change and Other Factors on Emerging Arbovirus Diseases.” *Transactions of The Royal Society of Tropical Medicine and Hygiene* 103, no. 2 (February 1, 2009): 109–21. <https://doi.org/10.1016/j.trstmh.2008.07.025>.

Gustafson, Christopher R., Elizabeth VanWormer, Rudovick Kazwala, Asha Makweta, Goodluck Paul, Woutrina Smith, and Jonna AK Mazet. “Educating Pastoralists and Extension Officers on Diverse Livestock Diseases in a Changing Environment in Tanzania.” *Pastoralism* 5, no. 1 (January 31, 2015): 1. <https://doi.org/10.1186/s13570-014-0022-5>.

Martin, V, V Chevalier, P Ceccato, A Anyamba, L De Simone, J Lubroth, S de La Rocque, and J Domenech. “The Impact of Climate Change on the Epidemiology and Control of Rift Valley Fever,” n.d., 14.

OVERVIEW OF GRAZING DRY-PASTORAL SYSTEMS (RUMINANTS)

Mazet, Jonna A. K., Deana L. Clifford, Peter B. Coppolillo, Anil B. Deolalikar, Jon D. Erickson, and Rudovick R. Kazwala. "A 'One Health' Approach to Address Emerging Zoonoses: The HALI Project in Tanzania." *PLOS Medicine* 6, no. 12 (December 15, 2009): e1000190. <https://doi.org/10.1371/journal.pmed.1000190>.

McGahey, Daniel J. "Livestock Mobility and Animal Health Policy in Southern Africa: The Impact of Veterinary Cordon Fences on Pastoralists." *Pastoralism: Research, Policy and Practice* 1, no. 1 (June 24, 2011): 14. <https://doi.org/10.1186/2041-7136-1-14>.

Ostfeld, Richard S. "Climate Change and the Distribution and Intensity of Infectious Diseases." *Ecology* 90, no. 4 (April 2009): 903–5. <https://doi.org/10.1890/08-0659.1>.

Patz, Jonathan A., Thaddeus K. Graczyk, Nina Geller, and Amy Y. Vittor. "Effects of Environmental Change on Emerging Parasitic Diseases." *International Journal for Parasitology, Thematic Issue: Emerging Parasite Zoonoses*, 30, no. 12 (November 1, 2000): 1395–1405. [https://doi.org/10.1016/S0020-7519\(00\)00141-7](https://doi.org/10.1016/S0020-7519(00)00141-7).

Schelling, Esther, Kaspar Wyss, Mahamat Béchir, Daugla Doumagoum Moto, and Jakob Zinsstag. "Synergy between Public Health and Veterinary Services to Deliver Human and Animal Health Interventions in Rural Low Income Settings." *BMJ* 331, no. 7527 (November 24, 2005): 1264–67. <https://doi.org/10.1136/bmj.331.7527.1264>.

Scoones, Ian, Alec Bishi, Neo Mapitse, Rebhone Moerane, Mary-Louise Penrith, Ronny Sibanda, G. R. (Gavin) Thomson, and William Wolmer. "Foot-and-Mouth Disease and Market Access : Challenges for the Beef Industry in Southern Africa," July 2010. <https://repository.up.ac.za/handle/2263/16879>.

Thornton, P. K., J. van de Steeg, A. Notenbaert, and M. Herrero. "The Impacts of Climate Change on Livestock and Livestock Systems in Developing Countries: A Review of What We Know and What We Need to Know." *Agricultural Systems* 101, no. 3 (July 1, 2009): 113–27. <https://doi.org/10.1016/j.agsy.2009.05.002>.

VanderWaal, Kimberly, Marie Gilbertson, Sharon Okanga, Brian F. Allan, and Meggan E. Craft. "Seasonality and Pathogen Transmission in Pastoral Cattle Contact Networks." *Royal Society Open Science* 4, no. 12 (December 6, 2017). <https://doi.org/10.1098/rsos.170808>.

OBJECTIVE 1: IMPROVE THE PRODUCTIVITY OF LIVESTOCK

INTERVENTION: Access to fodder and water

ACTIVITIES

- Develop integrated land management approaches to restore and maintain rangeland and pasture productivity.
- Promote adaptive grazing based on small land units in ranches.
- Build capacity in natural resource management planning at community and local levels.
- Develop water resources and distribution in underexploited rangelands.
- Establish dedicated migration corridors (short- and long-distance), rest areas along corridors, pasture reserves, and dedicated dry season grazing areas.

GUIDANCE

P5

Consider a One Health initiative when developing the integrated management approach (OIE, 2008) (Gall et al., 2018).

P2

Promote good biosecurity practices in relation to access to drinking facilities and, where possible, avoid mixing herds to reduce the risk of disease transmission (OIE-FAO, 2009).

P2

All surveillance strategies for transhumant pastoralism and mixed herds should be risk-based. (FAO, 2006).

INDICATORS

Coordination mechanisms under the One Health approach – Number

This indicator measures the number of coordination mechanisms implemented by governments that explicitly include the concept of One Health and which aim to be intersectoral across public health, human

health and environment. This indicator can also include initiatives from the private sector.

- ➔ Reported annually using project advancement reports.

Livestock production units that have adopted Good Animal Husbandry Practices (GAHP)– Percentage

This indicator measures the percentage of livestock units that have implemented GAHPs. It should be broken down by farm size, species and type of farm, where possible.

- ➔ Reported annually using project advancement reports

Animal diseases control program– Number

This indicator measures the number of programs developed and funded for the control and eradication of pertinent animal diseases. Such programs reflect a shortlist of target diseases at the regional or national level and are based on analysis of risk and country priorities.

- ➔ Reported annually using project advancement reports.

National livestock strategies developed and endorsed– On a scale from 0-2

This indicator measures the creation of a national livestock strategy. Such a strategy includes protocols and standard operating procedures to define national priorities for animal health and welfare that can sustainably increase livestock productivity and achieve diversification, commercialization and competitiveness of the livestock subsector. The indicator reflects whether such a strategy is absent (0) or developed and endorsed at sub-national level (1) or national level (2).

- ➔ Reported annually using project advancement reports

OBJECTIVE 1: IMPROVE THE PRODUCTIVITY OF LIVESTOCK

Data management and information system developed – Yes/No or on a scale from 0-4

This indicator measures the ability to generate or compile, analyze and disseminate data in ways that serve to define health strategies, review results or endorse the status of a country. Establishment of fully functional systems can be reported as “Yes/No”, or scaled in levels, for example, level 0 if no system is in place; level I if data is only collected and compiled; level II if this data is analysed; level III if outputs are disseminated adequately; or level IV if overall quality control is included.

➔ Reported annually using project advancement reports.

INTERVENTION: Animal health and welfare

ACTIVITIES

- Undertake vaccination campaigns.
- Improve disease early detection, prevention and control.
- Avoid spread of antimicrobial resistance (AMR).
- Improve livestock welfare.

GUIDANCE

P2 | P5

Disease programs should include plans for emergency preparedness, prevention, control and eradication, and surveillance, according to risk assessment.

P2 | P4 | P5

Vaccination campaigns should promote adequate selection of the vaccine type, pathogen match and source, and account for chain distribution according to the speciation of the product (e.g. food chain) (OIE, 2020).

P2 | P4 | P5

Disease programs require an appropriate disease and livestock information system that includes traceability.

P2 | P7

When culling animals for disease prevention and control, incentives for notification and compensation should be developed to support disease programs (FAO, 2013; OECD, 2012).

P3 | P6

In order to promote sustainability, farmer awareness programs should accompany these activities. Such programs should cover the animal and public health impacts and economic consequences of the inappropriate use of antimicrobials; the need to record the use of antimicrobials for monitoring purposes; and the benefits of improving livestock health and welfare (World Bank, 2019; World Bank, 2017; WHO 2016; OIE 2020).

INDICATORS

Animal diseases control program— Number

This indicator measures the number of programs developed and funded for the control and eradication of pertinent animal diseases. Such programs reflect a shortlist of target diseases at the regional or national level and are based on analysis of risk and country priorities.

➔ Reported annually using project advancement reports.

Data management and information system developed – Yes/No or on a scale from 0-4

This indicator measures the ability to generate or compile, analyze and disseminate data in ways that serve to define health strategies, review results or endorse the status of a country. Establishment of fully functional systems can be reported as “Yes/No”, or scaled in levels, for example, level 0 if no system is in place; level I if data is only collected and compiled; level II if this data is analysed; level III if outputs are disseminated adequately; or level IV if overall quality control is included.

➔ Reported annually using project advancement reports

OBJECTIVE 1: IMPROVE THE PRODUCTIVITY OF LIVESTOCK

Contingency fund for livestock emergencies created and operational – Yes/No

This indicator measures the creation of a contingency fund for livestock emergencies related to drought, disease, and other hazards. Establishing such a fund requires well-documented contingency action plans for specific, high-priority, emergency diseases, together with a series of generic plans for activities or programs common to these plans (e.g. setting up national and local animal disease control centers). These also need to have resource and financial plans and appropriate legislative backing for all actions. In addition, contingency plans need to be considered and agreed upon in advance by all major stakeholders, including the political and bureaucratic arms of government and the private sector, particularly livestock farmer organizations. Plans should be refined through simulation exercises and personnel should be trained in their individual roles and responsibilities.

→ Reported annually using project advancement reports.

Farmers/extension agents/service providers— Number

This indicator measures the number of farmers/extension agents/service providers along the supply chains that have been made aware of and trained on animal health issues in the livestock sector, for instance, through the inclusion of animal health issues and options in curriculums, extension manuals, capacity development programs, etc. In addition, the indicator should break down the kind of training received, differentiating between “light training”, such as talks and webinars, “structural modules” (e.g. those of a week in duration), and more robust training based on longer, more in-depth courses.

→ Undertaken using dedicated surveys annually; or at the start of the project, at medium term, and during terminal evaluation.

Disease early warning system and emergency preparedness in place— Yes/No

This indicator measures the creation of an early warning system that builds on the added value of combining and coordinating cross-sectorial alert mechanisms between relevant government ministries, including protocols and a chain of command. It refers to the surveillance system and alert and response strategy to

face emerging diseases, including zoonotic diseases, for which a contingency plan should be implemented, widely known across relevant stakeholder, rehearsed, for example, through simulation exercises. This indicator also measures the improved resilience of pastoralists by enabling destocking, redistribution, or other actions to avoid the loss of livestock value in the event of a crisis.

This indicator can be rated according to the level of development and implementation. Level I would indicate that there is a strategy for developing a disease early warning system and an emergency preparedness plan; level II would indicate that the strategy has been implemented; and level III would indicate that the strategy has been trialed.

→ Reported annually using project advancement reports

INTERVENTION: Animal genetics

ACTIVITIES

• Select for improved genetics within the existing herd.

GUIDANCE

P2 | P3 | P1 | P7

Choosing genetic diversity and the adequacy of the breed, race or strains could better prevent and control animal diseases and adaptation of the animals to the environment, weather and to optimize water and feed consumption.

OBJECTIVE 1: IMPROVE THE PRODUCTIVITY OF LIVESTOCK

INDICATORS

Farmers/extension agents/service providers— Number

This indicator measures the number of farmers/extension agents/service providers along the supply chains that have been made aware of and trained on animal health issues in the livestock sector, for instance, through the inclusion of animal health issues and options in curriculums, extension manuals, capacity development programs, etc. In addition, the indicator should break down the kind of training received, differentiating between “light training”, such as talks and webinars, “structural modules” (e.g. those of a week in duration), and more robust training based on longer, more in-depth courses.

- ➔ Undertaken using dedicated surveys annually; or at the start of the project, at medium term, and during terminal evaluation.

Livestock production units that have adopted an Animal Welfare management plan – Number/proportion

This indicator measures the number of livestock units, slaughterhouses, dairies and other processing units; animal gathering points; and markets that have received project support and developed and implemented animal welfare management plans. As a minimum, plans should address the Five Freedoms: freedom from hunger and thirst; freedom from discomfort; freedom from pain, injury, or disease; freedom to express normal behavior; and freedom from fear and distress. This indicator should be broken down by farm size, species and type of farm, where possible.

- ➔ Reported annually using project advancement reports.

Data management and information system developed – Yes/No or on a scale from 0-4

This indicator measures the ability to generate or compile, analyze and disseminate data in ways that serve to define health strategies, review results or endorse the status of a country. Establishment of fully functional systems can be reported as “Yes/No”, or scaled in levels, for example, level 0 if no system is in place; level I if data is only collected and compiled; level II if this data is analysed; level III if outputs are disseminated adequately; or level IV if overall quality control is included.

- ➔ Reported annually using project advancement reports.

OBJECTIVE 2: IMPROVE MARKET ACCESS AND DEVELOP VALUE CHAINS

INTERVENTION: Producer organizations and alliances

ACTIVITIES

- Establish and/or build the capacity of new/existing producer organizations.
- Provide financing for subprojects under productive alliances.

GUIDANCE

P3 | P4 | P6

The opportunity should be taken to raise awareness amongst producer organizations about issues related to livestock systems, including food safety, animal welfare, and antimicrobial resistance (FAO, 2016; FAO, 2020).

P2 | P7

Training on developing management plans for animal diseases should be provided to producers and producer organizations.

P3 | P4 | P5 | P7

Include One Health criteria in project selection activities, for example, antimicrobial resistance management between feed producers and farmers (OIE, 2008; Gall et al., 2018; WHO, 2016; OIE, 2020).

INDICATORS

Farmers/extension agents/service providers— Number

This indicator measures the number of farmers/extension agents/service providers along the supply chains that have been made aware of and trained on animal health issues in the livestock sector, for instance, through the inclusion of animal health issues and options in curriculums, extension manuals, capacity development programs, etc. In addition, the indicator should break down the kind of training received,

differentiating between “light training”, such as talks and webinars, “structural modules” (e.g. those of a week in duration), and more robust training based on longer, more in-depth courses.

- ➔ Undertaken using dedicated surveys annually; or at the start of the project, at medium term, and during terminal evaluation

Coordination mechanisms under the One Health approach – Number

This indicator measures the number of coordination mechanisms implemented by governments that explicitly include the concept of One Health and which aim to be intersectoral across public health, human health and environment. This indicator can also include initiatives from the private sector.

- ➔ Reported annually using project advancement reports.

INTERVENTION: Post-farm-gate facilities

ACTIVITIES

- Construct and/or upgrade roads between production, processing, and market areas.
- Improve transport and storage capacity.
- Construct and/or upgrade processing plants, slaughterhouses, dairy processing, and (wet or wholesale) markets.

GUIDANCE

P2

Foster systems for data collection, monitoring and traceability, to enable the implementation of checkpoints.

OBJECTIVE 2: IMPROVE MARKET ACCESS AND DEVELOP VALUE CHAINS

P2

Ensure that proper quarantine facilities are built where necessary and according to risk assessments. Ideally, these should be linked to major country livestock accesses and in livestock gathering facilities (e.g., markets).

P2 | P3

Promote the development and distribution of guidelines for livestock health and welfare during transport (OIE, 2020; FAO, 2001).

P4

Consult with food safety specialists to ensure any processing plant, slaughterhouse construction or market to meet the food safety standards.

P5

Contact should be established with public health and environment agencies to support development of an integrated information system for the One health approach (Gall et al., 2018).

INDICATORS

Data management and information system developed – Yes/No or on a scale from 0-4

This indicator measures the ability to generate or compile, analyze and disseminate data in ways that serve to define health strategies, review results or endorse the status of a country. Establishment of fully functional systems can be reported as “Yes/No”, or scaled in levels, for example, level 0 if no system is in place; level I if data is only collected and compiled; level II if this data is analysed; level III if outputs are disseminated adequately; or level IV if overall quality control is included.

→ Reported annually using project advancement reports

Farmers/extension agents/service providers– Number

This indicator measures the number of farmers/extension agents/service providers along the supply chains that have been made aware of and trained on animal health issues in the livestock sector, for instance, through the inclusion of animal health issues and options in curriculums, extension manuals, capacity development programs, etc. In addition, the indicator should break down the kind of training received,

differentiating between “light training”, such as talks and webinars, “structural modules” (e.g. those of a week in duration), and more robust training based on longer, more in-depth courses.

→ Undertaken using dedicated surveys annually; or at the start of the project, at medium term, and during terminal evaluation.

Coordination mechanisms under the One Health approach – Number

This indicator measures the number of coordination mechanisms implemented by governments that explicitly include the concept of One Health and which aim to be intersectoral across public health, human health and environment. This indicator can also include initiatives from the private sector.

→ Reported annually using project advancement reports

INTERVENTION: Value chain opportunities

ACTIVITIES

- Raise awareness among consumers of products produced under the project.
- Establish livestock market information systems and support livestock trade associations to access import and export markets.

GUIDANCE

P2 | P4

Foster systems for data collection, monitoring and traceability.

P4 | P5

The opportunity should be taken to raise the awareness of farmers about food safety measures, good farming practices, and biosecurity, to reduce the risk of animal diseases and zoonoses (OIE-FAO, 2009).

OBJECTIVE 2: IMPROVE MARKET ACCESS AND DEVELOP VALUE CHAINS

INDICATORS

Data management and information system developed – Yes/No or on a scale from 0-4

This indicator measures the ability to generate or compile, analyze and disseminate data in ways that serve to define health strategies, review results or endorse the status of a country. Establishment of fully functional systems can be reported as “Yes/No”, or scaled in levels, for example, level 0 if no system is in place; level I if data is only collected and compiled; level II if this data is analysed; level III if outputs are disseminated adequately; or level IV if overall quality control is included.

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➔ Undertaken using dedicated surveys annually; or at the start of the project, at medium term, and during terminal evaluation.

Livestock production units that have adopted Good Animal Husbandry Practices (GAHP)– Percentage

This indicator measures the percentage of livestock units that have implemented GAHPs. It should be broken down by farm size, species and type of farm, where possible.

➔ Reported annually using project advancement reports.

INTERVENTION: Develop livestock fattening activities

ACTIVITIES

- Undertake territorial planning to identify and develop reproductive regions (drier) and fattening regions (wetter).
- Develop transportation networks to transport livestock to and from fattening areas.
- Optimize the offtake rate (the proportion of the herd that is sold or consumed each year).
- Create a market demand for products of fattening activities.

GUIDANCE

P2 | P5

Foster systems for data collection, monitoring and traceability.

P2 | P3

Promote the development and distribution of guidelines for livestock health and welfare during transport (OIE, 2020; FAO, 2001).

INDICATORS

Data management and information system developed – Yes/No or on a scale from 0-4

This indicator measures the ability to generate or compile, analyze and disseminate data in ways that serve to define health strategies, review results or endorse the status of a country. Establishment of fully functional systems can be reported as “Yes/No”, or scaled in levels, for example, level 0 if no system is in place; level I if data is only collected and compiled; level II if this data is analysed; level III if outputs are disseminated adequately; or level IV if overall quality control is included.

➔ Reported annually using project advancement reports.

OBJECTIVE 1

OBJECTIVE 2

OBJECTIVE 3

OBJECTIVE 4

OBJECTIVE 5

OBJECTIVE 2: IMPROVE MARKET ACCESS AND DEVELOP VALUE CHAINS

Farmers/extension agents/service providers— Number

This indicator measures the number of farmers/extension agents/service providers along the supply chains that have been made aware of and trained on animal health issues in the livestock sector, for instance, through the inclusion of animal health issues and options in curriculums, extension manuals, capacity development programs, etc. In addition, the indicator should break down the kind of training received, differentiating between “light training”, such as talks and webinars, “structural modules” (e.g. those of a week in duration), and more robust training based on longer, more in-depth courses.

- ➔ Undertaken using dedicated surveys annually; or at the start of the project, at medium term, and during terminal evaluation.

Livestock production units that have adopted Good Animal Husbandry Practices (GAHP)— Percentage

This indicator measures the percentage of livestock units that have implemented GAHPs. It should be broken down by farm size, species and type of farm, where possible.

- ➔ Reported annually using project advancement reports.

OBJECTIVE 1

OBJECTIVE 2

OBJECTIVE 3

OBJECTIVE 4

OBJECTIVE 5

OBJECTIVE 3: IMPROVE INPUT AND SERVICES DELIVERY

INTERVENTION: Develop public and private extension services

ACTIVITIES

- Provide extension agents with training and capacity building.
- Develop extension manuals and curricula (In coordination and collaboration with university, vocational school and extension stations).

GUIDANCE

P2 | P3

Put emphasis on the training of extension agents to evaluate and advise herders on disease recognition and notification, herd movement, and the Five Freedoms.

INDICATORS

Farmers/extension agents/service providers— Number

This indicator measures the number of farmers/extension agents/service providers along the supply chains that have been made aware of and trained on animal health issues in the livestock sector, for instance, through the inclusion of animal health issues and options in curriculums, extension manuals, capacity development programs, etc. In addition, the indicator should break down the kind of training received, differentiating between “light training”, such as talks and webinars, “structural modules” (e.g. those of a week in duration), and more robust training based on longer, more in-depth courses.

- ➔ Undertaken using dedicated surveys annually; or at the start of the project, at medium term, and during terminal evaluation.

INTERVENTION: Improve public and private animal health services

ACTIVITIES

- Provide veterinarians and livestock health workers with training and capacity building.
- Provide/enhance official veterinary services with data system for collection, monitoring, analysis and risk assessment
- Provide/enhance infrastructure and equipment of veterinary services, including quarantine facilities and port/harbor checking points
- Provide/enhance Laboratory capacity to support VS activities
- Develop simulation exercises for emergency planning and preparedness
- Develop veterinary and livestock health manuals, SOPs and curricula.

GUIDANCE

P2 | P7

Where available, use OIE PVS reports, including those on legislation and gap analysis, to assess the need for training, analytical work, capacity building and infrastructure (OIE, 2020; OIE, 2019).

P6

During training, raise awareness among veterinarians and livestock health workers about antimicrobial resistance and animal welfare, and their links to livestock health.

P2 | P4 | P5 | P7

Where possible, provide the option of an integrated health system with the public sector (the One Health approach) and other relevant government ministries (e.g., communication, environment, etc.), particularly during simulation exercises (OIE, 2008; Gall et al., 2018).

OBJECTIVE 3: IMPROVE INPUT AND SERVICES DELIVERY

P2

Explore the option of integrating private sector databases and information systems with public ones.

P2 | P5 | P6

Establish bridges to integrate private laboratories into the official network by establishing minimum performance standards and a quality control system (such as a proficiency ring laboratory exercise)

INDICATORS

Farmers/extension agents/service providers— Number

This indicator measures the number of farmers/extension agents/service providers along the supply chains that have been made aware of and trained on animal health issues in the livestock sector, for instance, through the inclusion of animal health issues and options in curriculums, extension manuals, capacity development programs, etc. In addition, the indicator should break down the kind of training received, differentiating between “light training”, such as talks and webinars, “structural modules” (e.g. those of a week in duration), and more robust training based on longer, more in-depth courses.

→ Undertaken using dedicated surveys annually; or at the start of the project, at medium term, and during terminal evaluation.

Veterinarians/paraprofessionals trained on animal health issues and options in the livestock sector — Number

This indicator measures the number of veterinarian/paraprofessionals along supply chains that have been made aware of and trained on animal health issues in the livestock sector, for instance, through the inclusion of animal health issues and options in curriculums, extension manuals, and capacity development programs. The indicator should also break down the kinds of training received, differentiating between “light training”, such as talks and webinars, “structural modules” (e.g. those of a week in duration), and more robust training based on longer, in-depth courses.

→ Undertaken using dedicated surveys annually; or at the start of the project, at medium term, and during terminal evaluation.

Coordination mechanisms under the One Health approach — Number

This indicator measures the number of coordination mechanisms implemented by governments that explicitly include the concept of One Health and which aim to be intersectoral across public health, human health and environment. This indicator can also include initiatives from the private sector.

→ Reported annually using project advancement reports.

New regulations adopted— Number of regulations

This indicator measures the number of new regulations adopted or amended to effectively support the activities of relevant fields, such as controlling transboundary and emerging zoonotic and animal diseases; ensuring food safety; and controlling AMR. Tools such as the World Organisation for Animal Health’s Performance of Veterinary Services Pathway (known as the OIE PVS Pathway) can be used to define the baseline and gaps, particularly the Veterinary Legislation Support Programme.

→ Reported annually using project advancement reports.

INTERVENTION: Strengthen provision of input and services

ACTIVITIES

- Provide private service and input providers with training and seed financing.
- Foster the development of new services where gaps exist.

GUIDANCE

P2 | P7

When available, use OIE PVS Reports, including Legislation and GAP Analysis, to assess the need for training and financing (OIE, 2020).

P7

Put emphasis on developing markets for sustainable inputs, such as sustainably-sourced feed, organic fertilizers, and organic pesticides.

OBJECTIVE 3: IMPROVE INPUT AND SERVICES DELIVERY

INDICATORS

Farmers/extension agents/service providers— Number

This indicator measures the number of farmers/extension agents/service providers along the supply chains that have been made aware of and trained on animal health issues in the livestock sector, for instance, through the inclusion of animal health issues and options in curriculums, extension manuals, capacity development programs, etc. In addition, the indicator should break down the kind of training received, differentiating between “light training”, such as talks and webinars, “structural modules” (e.g. those of a week in duration), and more robust training based on longer, more in-depth courses.

- ➔ Undertaken using dedicated surveys annually; or at the start of the project, at medium term, and during terminal evaluation.

Livestock production units that have adopted Good Animal Husbandry Practices (GAHP)— Percentage

This indicator measures the percentage of livestock units that have implemented GAHPs. It should be broken down by farm size, species and type of farm, where possible.

- ➔ Reported annually using project advancement reports.

OBJECTIVE 1

OBJECTIVE 2

OBJECTIVE 3

OBJECTIVE 4

OBJECTIVE 5

OBJECTIVE 4: **CLIMATE CHANGE RESILIENCE AND EMERGENCY RESPONSE**

INTERVENTION: **Improve manure, nutrients, and waste management**

ACTIVITIES

- Improve integrated manure management in areas where livestock is concentrated.
- Develop territorial approaches to improving the nutrient balance.

GUIDANCE

P6

Consider effective treatment of wastes to reduce and eliminate residual antimicrobials and pathogens.

INDICATORS

Farmers/extension agents/service providers— Number

This indicator measures the number of farmers/extension agents/service providers along the supply chains that have been made aware of and trained on animal health issues in the livestock sector, for instance, through the inclusion of animal health issues and options in curriculums, extension manuals, capacity development programs, etc. In addition, the indicator should break down the kind of training received, differentiating between “light training”, such as talks and webinars, “structural modules” (e.g. those of a week in duration), and more robust training based on longer, more in-depth courses.

- ➔ Undertaken using dedicated surveys annually; or at the start of the project, at medium term, and during terminal evaluation.

Livestock production units that have adopted an antimicrobial resistance (AMR) management plan — Number/proportion

This indicator measures the number of livestock production units with AMR management plans that have the objective of decreasing antimicrobial use in animals (measured in kilograms per livestock

production unit per year). Management plans should include improving hygiene, and improving wastewater and sludge management in food production, under the One Health approach. National monitoring systems for antimicrobial use can also be used as indicators, in line with antimicrobial surveillance and monitoring capacity .

- ➔ Undertaken using dedicated surveys annually; or at the start of the project, at medium term, and during terminal evaluation,

Coordination mechanisms under the One Health approach — Number

This indicator measures the number of coordination mechanisms implemented by governments that explicitly include the concept of One Health and which aim to be intersectoral across public health, human health and environment. This indicator can also include initiatives from the private sector.

- ➔ Reported annually using project advancement reports.

INTERVENTION: **Develop early warning information systems and feed budgeting**

ACTIVITIES

- Strengthen early warning systems in remote pastoral areas.
- Develop pastoral crisis response plans.
- Develop seasonal assessments to forecast potential crises.

OBJECTIVE 1

OBJECTIVE 2

OBJECTIVE 3

OBJECTIVE 4

OBJECTIVE 5

OBJECTIVE 4: CLIMATE CHANGE RESILIENCE AND EMERGENCY RESPONSE

GUIDANCE

P2 | P7

Harmonize early warning information systems with information systems on livestock, climate, and weather. Harness systems to monitor and evaluate animal disease management in pastoral areas. Harmonizing livestock, climate, weather, and early warning information systems can improve the resilience of pastoralists by enabling destocking, redistribution, or other actions to avoid loss of livestock value in times of crisis.

P7

Include basic animal disease management practices in training and capacity-building programs on pastoral crisis management planning (LEGS, 2009).

INDICATORS

Disease early warning system and emergency preparedness in place— Yes/No

This indicator measures the creation of an early warning system that builds on the added value of combining and coordinating cross-sectorial alert mechanisms between relevant government ministries, including protocols and a chain of command. It refers to the surveillance system and alert and response strategy to face emerging diseases, including zoonotic diseases, for which a contingency plan should be implemented, widely known across relevant stakeholder, rehearsed, for example, through simulation exercises. This indicator also measures the improved resilience of pastoralists by enabling destocking, redistribution, or other actions to avoid the loss of livestock value in the event of a crisis.

This indicator can be rated according to the level of development and implementation. Level I would indicate that there is a strategy for developing a disease early warning system and an emergency preparedness plan; level II would indicate that the strategy has been implemented; and level III would indicate that the strategy has been trialed.

→ Reported annually using project advancement reports.

Contingency fund for livestock emergencies created and operational — Yes/No

This indicator measures the creation of a contingency fund for livestock emergencies related to drought, disease, and other hazards. Establishing such a fund requires well-documented contingency action plans for specific, high-priority, emergency diseases, together with a series of generic plans for activities or programs common to these plans (e.g. setting up national and local animal disease control centers). These also need to have resource and financial plans and appropriate legislative backing for all actions. In addition, contingency plans need to be considered and agreed upon in advance by all major stakeholders, including the political and bureaucratic arms of government and the private sector, particularly livestock farmer organizations. Plans should be refined through simulation exercises and personnel should be trained in their individual roles and responsibilities.

→ Reported annually using project advancement reports.

Farmers/extension agents/service providers— Number

This indicator measures the number of farmers/extension agents/service providers along the supply chains that have been made aware of and trained on animal health issues in the livestock sector, for instance, through the inclusion of animal health issues and options in curriculums, extension manuals, capacity development programs, etc. In addition, the indicator should break down the kind of training received, differentiating between “light training”, such as talks and webinars, “structural modules” (e.g. those of a week in duration), and more robust training based on longer, more in-depth courses.

→ Undertaken using dedicated surveys annually; or at the start of the project, at medium term, and during terminal evaluation.

Livestock production units that have adopted Good Animal Husbandry Practices (GAHP)— Percentage

This indicator measures the percentage of livestock units that have implemented GAHPs. It should be broken down by farm size, species and type of farm, where possible.

→ Reported annually using project advancement reports.

OBJECTIVE 1

OBJECTIVE 2

OBJECTIVE 3

OBJECTIVE 4

OBJECTIVE 5

OBJECTIVE 4:
**CLIMATE CHANGE RESILIENCE
AND EMERGENCY RESPONSE**

INTERVENTION: **Establish emergency reserves and distribution systems**

ACTIVITIES

- Develop strategic feed reserves for use in drought and other climate- and/or weather-related emergencies.
- Develop strategic reserves of vaccines, antibiotics, and other disease prevention and control material for use in livestock health emergencies.
- Develop strategic reserves for sampling material and personal protective equipment to be implemented ad hoc diagnoses or surveys in case of animal health emergencies
- Undertake rapid destocking (and restocking) in anticipation of drought or any other emergency.
- Carry out livestock distribution (restocking) for rapid recovery.

GUIDANCE

P3 | P2

Emergency reserves already contribute to sustainability by avoiding poor animal health and welfare associated with livestock losses.

P2

Rapid destocking with appropriate carcass disposal contributes to sustainability by avoiding the pollution of water sources and drinking water, which can threaten the lives of both people and livestock.

P2

Make provisions for diagnostic sampling material and personal protective equipment.

P2

Make provisions to ensure the correct transport of biologicals (e.g., vaccines and antibiotics) in terms of time and temperature.

P7

Include resources in the contingency fund for assessing and addressing the implications of destocking and restocking initiatives on farmers' livelihoods.

INDICATORS

National livestock strategies developed and endorsed— On a scale from 0-2

This indicator measures the creation of a national livestock strategy. Such a strategy includes protocols and standard operating procedures to define national priorities for animal health and welfare that can sustainably increase livestock productivity and achieve diversification, commercialization and competitiveness of the livestock subsector. The indicator reflects whether such a strategy is absent (0) or developed and endorsed at sub-national level (1) or national level (2).

➔ Reported annually using project advancement reports.

Disease early warning system and emergency preparedness in place— Yes/No

This indicator measures the creation of an early warning system that builds on the added value of combining and coordinating cross-sectorial alert mechanisms between relevant government ministries, including protocols and a chain of command. It refers to the surveillance system and alert and response strategy to face emerging diseases, including zoonotic diseases, for which a contingency plan should be implemented, widely known across relevant stakeholder, rehearsed, for example, through simulation exercises. This indicator also measures the improved resilience of pastoralists by enabling destocking, redistribution, or other actions to avoid the loss of livestock value in the event of a crisis.

This indicator can be rated according to the level of development and implementation. Level I would indicate that there is a strategy for developing a disease early warning system and an emergency preparedness plan; level II would indicate that the strategy has been implemented; and level III would indicate that the strategy has been trialed.

➔ Reported annually using project advancement reports.

OBJECTIVE 1

OBJECTIVE 2

OBJECTIVE 3

OBJECTIVE 4

OBJECTIVE 5

OBJECTIVE 4: CLIMATE CHANGE RESILIENCE AND EMERGENCY RESPONSE

Contingency fund for livestock emergencies created and operational – Yes/No

This indicator measures the creation of a contingency fund for livestock emergencies related to drought, disease, and other hazards. Establishing such a fund requires well-documented contingency action plans for specific, high-priority, emergency diseases, together with a series of generic plans for activities or programs common to these plans (e.g. setting up national and local animal disease control centers). These also need to have resource and financial plans and appropriate legislative backing for all actions. In addition, contingency plans need to be considered and agreed upon in advance by all major stakeholders, including the political and bureaucratic arms of government and the private sector, particularly livestock farmer organizations. Plans should be refined through simulation exercises and personnel should be trained in their individual roles and responsibilities.

→ Reported annually using project advancement reports.

INTERVENTION: Develop risk management programs and products

ACTIVITIES

- Establish an emergency contingency fund.
- Establish a livestock insurance scheme (to compensate for lost animals).

GUIDANCE

P2

Include the development of protocols and provision of funds for the proper disposal of carcasses to avoid pollution.

P2

Develop workshops to raise awareness about protocols for obtaining compensation, including guidelines for the humane culling of animals (OECD, 2012; FAO, 2013;).

INDICATORS

Livestock production units that have adopted Good Animal Husbandry Practices (GAHP)— Percentage
This indicator measures the percentage of livestock units that have implemented GAHPs. It should be broken down by farm size, species and type of farm, where possible.

→ Reported annually using project advancement reports.

Contingency fund for livestock emergencies created and operational – Yes/No

This indicator measures the creation of a contingency fund for livestock emergencies related to drought, disease, and other hazards. Establishing such a fund requires well-documented contingency action plans for specific, high-priority, emergency diseases, together with a series of generic plans for activities or programs common to these plans (e.g. setting up national and local animal disease control centers). These also need to have resource and financial plans and appropriate legislative backing for all actions. In addition, contingency plans need to be considered and agreed upon in advance by all major stakeholders, including the political and bureaucratic arms of government and the private sector, particularly livestock farmer organizations. Plans should be refined through simulation exercises and personnel should be trained in their individual roles and responsibilities.

→ Reported annually using project advancement reports.

Farmers/extension agents/service providers— Number

This indicator measures the number of farmers/ extension agents/service providers along the supply chains that have been made aware of and trained on animal health issues in the livestock sector, for instance, through the inclusion of animal health issues and options in curriculums, extension manuals, capacity development programs, etc. In addition, the indicator should break down the kind of training received, differentiating between “light training”, such as talks and webinars, “structural modules” (e.g. those of a week in duration), and more robust training based on longer, more in-depth courses.

→ Undertaken using dedicated surveys annually; or at the start of the project, at medium term, and during terminal evaluation.

OBJECTIVE 1

OBJECTIVE 2

OBJECTIVE 3

OBJECTIVE 4

OBJECTIVE 5

OBJECTIVE 4:
**CLIMATE CHANGE RESILIENCE
AND EMERGENCY RESPONSE**

Disease early warning system and emergency preparedness in place— Yes/No

This indicator measures the creation of an early warning system that builds on the added value of combining and coordinating cross-sectorial alert mechanisms between relevant government ministries, including protocols and a chain of command. It refers to the surveillance system and alert and response strategy to face emerging diseases, including zoonotic diseases, for which a contingency plan should be implemented, widely known across relevant stakeholder, rehearsed, for example, through simulation exercises. This indicator also measures the improved resilience of pastoralists by enabling destocking, redistribution, or other actions to avoid the loss of livestock value in the event of a crisis.

This indicator can be rated according to the level of development and implementation. Level I would indicate that there is a strategy for developing a disease early warning system and an emergency preparedness plan; level II would indicate that the strategy has been implemented; and level III would indicate that the strategy has been trialed.

➔ Reported annually using project advancement reports.

OBJECTIVE 1

OBJECTIVE 2

OBJECTIVE 3

OBJECTIVE 4

OBJECTIVE 5

OBJECTIVE 5: STRENGTHEN POLICIES, KNOWLEDGE, AND INFORMATION

INTERVENTION: Develop and harmonize livestock policies, plans, regulations, and programs

ACTIVITIES

- Develop a national livestock master plan.
- Establish regulations for the zoning of livestock grazing and mobility (transhumance) areas.
- Improve equity of grazing and water use rights within pastoralist communities.
- Pilot programs to enable pastoralists to access donor and other multinational financing.

GUIDANCE

P2 | P3 | P4 | P5 | P6

A national livestock master plan should include activities to address animal diseases, animal welfare, food safety, zoonosis and antimicrobial resistance.

P7

Where available, use the OIE PVS reports, including those relating to legislation and gap analysis to assess relevant gaps (OIE, 2019).

INDICATORS

National livestock strategies developed and endorsed— On a scale from 0-2

This indicator measures the creation of a national livestock strategy. Such a strategy includes protocols and standard operating procedures to define national priorities for animal health and welfare that can sustainably increase livestock productivity and achieve diversification, commercialization and competitiveness of the livestock subsector. The indicator reflects whether such a strategy is absent (0) or developed and endorsed at sub-national level (1) or national level (2).

- ➔ Reported annually using project advancement reports.

New regulations adopted— Number of regulations

This indicator measures the number of new regulations adopted or amended to effectively support the activities of relevant fields, such as controlling transboundary and emerging zoonotic and animal diseases; ensuring food safety; and controlling AMR. Tools such as the World Organisation for Animal Health's Performance of Veterinary Services Pathway (known as the OIE PVS Pathway) can be used to define the baseline and gaps, particularly the Veterinary Legislation Support Programme.

- ➔ Reported annually using project advancement reports.

Pastoralists with ongoing, financed projects — Number of projects

This indicator measures the numbers of pilot projects that enable pastoralists to access donor and other multinational financing, as well as other financed projects to improve equity relating to grazing and water-use rights within pastoralist communities.

- ➔ Undertaken using dedicated surveys annually; or at the start of the project, at medium term, and during terminal evaluation.

INTERVENTION: Develop livestock information systems

ACTIVITIES

- Develop animal identification, traceability and performance recording.
- Include livestock data in the agriculture census.

OBJECTIVE 5: STRENGTHEN POLICIES, KNOWLEDGE, AND INFORMATION

GUIDANCE

P3 | P6

Include data on the use of antimicrobials, and animal welfare indicators, in livestock information systems.

P2 | P4

Include data on animal diseases and treatment, including for zoonosis.

P2 | P7

Include training and resources for the collection of data that enable disease risk assessment, including information on the transport of animals.

P7

Make provisions for training on the use of the information system, including epidemiological surveillance and risk assessment.

INDICATORS

Data management and information system developed – Yes/No or on a scale from 0-4

This indicator measures the ability to generate or compile, analyze and disseminate data in ways that serve to define health strategies, review results or endorse the status of a country. Establishment of fully functional systems can be reported as “Yes/No”, or scaled in levels, for example, level 0 if no system is in place; level I if data is only collected and compiled; level II if this data is analysed; level III if outputs are disseminated adequately; or level IV if overall quality control is included.

→ Reported annually using project advancement reports.

Livestock production units that have adopted an Animal Welfare management plan – Number/proportion

This indicator measures the number of livestock units, slaughterhouses, dairies and other processing units; animal gathering points; and markets that have received project support and developed and implemented animal welfare management plans. As a minimum, plans should address the Five Freedoms: freedom from hunger and thirst; freedom from discomfort; freedom from pain, injury, or disease; freedom to express normal behavior;

and freedom from fear and distress. This indicator should be broken down by farm size, species and type of farm, where possible.

→ Reported annually using project advancement reports.

Livestock production units that have adopted an antimicrobial resistance (AMR) management plan – Number/proportion

This indicator measures the number of livestock production units with AMR management plans that have the objective of decreasing antimicrobial use in animals (measured in kilograms per livestock production unit per year). Management plans should include improving hygiene, and improving wastewater and sludge management in food production, under the One Health approach. National monitoring systems for antimicrobial use can also be used as indicators, in line with antimicrobial surveillance and monitoring capacity.

→ Undertaken using dedicated surveys annually; or at the start of the project, at medium term, and during terminal evaluation,

Farmers/extension agents/service providers— Number

This indicator measures the number of farmers/extension agents/service providers along the supply chains that have been made aware of and trained on animal health issues in the livestock sector, for instance, through the inclusion of animal health issues and options in curriculums, extension manuals, capacity development programs, etc. In addition, the indicator should break down the kind of training received, differentiating between “light training”, such as talks and webinars, “structural modules” (e.g. those of a week in duration), and more robust training based on longer, more in-depth courses.

→ Undertaken using dedicated surveys annually; or at the start of the project, at medium term, and during terminal evaluation.

OBJECTIVE 1

OBJECTIVE 2

OBJECTIVE 3

OBJECTIVE 4

OBJECTIVE 5

OBJECTIVE 5:
**STRENGTHEN POLICIES,
KNOWLEDGE, AND INFORMATION**

INTERVENTION:
**Improve capacities at
central and local
government levels**

ACTIVITIES

- Assess and fill capacity gaps in relevant government ministries.
- Develop early warning and decision support systems and tools.

GUIDANCE

P7

Where available, use the OIE PVS reports, including those relating to legislation and gap analysis to assess relevant gaps (OIE, 2019).

P7

In Particular, address technical assistance, capacity building, and financial resources for monitoring, policy, and extension work, with a special focus on disease prevention, preparedness and control.

P7

Provide relevant government ministries (e.g., agriculture, livestock, water, environment, rural development, finance, energy) with capacity building on integrated management (the One Health approach) (Gall et al., 2018).

P7

Develop protocols for emergencies, including lines of communication and focal points in each government ministry.

INDICATORS

Disease early warning system and emergency preparedness in place— Yes/No

This indicator measures the creation of an early warning system that builds on the added value of combining and coordinating cross-sectorial alert mechanisms between relevant government ministries, including protocols and a chain of command. It refers to the surveillance system and alert and response strategy to face emerging diseases, including zoonotic diseases, for which a contingency plan should be implemented, widely known across relevant stakeholder, rehearsed, for example, through simulation exercises. This indicator also measures the improved resilience of pastoralists by enabling destocking, redistribution, or other actions to avoid the loss of livestock value in the event of a crisis.

This indicator can be rated according to the level of development and implementation. Level I would indicate that there is a strategy for developing a disease early warning system and an emergency preparedness plan; level II would indicate that the strategy has been implemented; and level III would indicate that the strategy has been trialed.

- ➔ Reported annually using project advancement reports.

Coordination mechanisms under the One Health approach – Number

This indicator measures the number of coordination mechanisms implemented by governments that explicitly include the concept of One Health and which aim to be intersectoral across public health, human health and environment. This indicator can also include initiatives from the private sector.

- ➔ Reported annually using project advancement reports.

OBJECTIVE 1

OBJECTIVE 2

OBJECTIVE 3

OBJECTIVE 4

OBJECTIVE 5

OBJECTIVE 5:
**STRENGTHEN POLICIES,
KNOWLEDGE, AND INFORMATION**

INTERVENTION:
**Establish research grants
and educational programs**

ACTIVITIES

- Provide financing options for research and education in livestock development issues.

GUIDANCE

P7

Promote the creation of think tanks focused on identifying the domestic needs of knowledge and their priorities.

P7

Include calls for science and policy research proposals, for example, on livestock waste management, nutrient balancing, zoning, feed resources and feed-use efficiency, animal welfare, labor conditions in production and processing units, and climate-smart livestock development.

INDICATORS

Promotion of R&D in livestock development initiatives— Number of initiatives

This indicator measures the number of research initiatives (e.g. grants or projects) involving technical personnel or researchers from the country in areas that are relevant to livestock development and sustainability. Such areas include livestock waste management; nutrient balancing; zoning; local and natural feed resources and feed-use efficiency; animal welfare; labor conditions in production and processing units; climate-smart livestock development; local breeds; and local natural resource feed.

- ➔ Undertaken annually; or at the start of the project, at medium term, and during terminal evaluation.

INTERVENTION:
**Establish programs to
diversify pastoral
livelihoods and promote
alternative livelihoods**

ACTIVITIES

- Provide smaller-scale livestock keepers with options on alternative sources of income through tailored vocational training and subprojects that generate sustainable employment opportunities.
- Provide livestock keepers with options on diversifying livelihoods.

GUIDANCE

P7

Enable smallholders to exit the livestock sector in order to reduce pressure on land and water resources and provide more stable livelihoods that are more resilient to climate change and weather variability.

P7

Livelihood diversification will enable producers to subsist on alternative sources of income during shocks, increasing their resilience to climate change and weather variability.

P1 | P3 | P6

Explore market opportunities for animals reared without the use of antimicrobials (e.g., as organic products), under enhanced welfare conditions (e.g., free range) and in accordance with criteria relating to environmental sustainability.

INDICATORS

Farmers/extension agents/service providers— Number

This indicator measures the number of farmers/extension agents/service providers along the supply chains that have been made aware of and trained on animal health issues in the livestock sector, for instance, through the inclusion of animal health issues and options in curriculums, extension manuals, capacity development programs, etc. In addition, the indicator

OBJECTIVE 1

OBJECTIVE 2

OBJECTIVE 3

OBJECTIVE 4

OBJECTIVE 5

OBJECTIVE 5: STRENGTHEN POLICIES, KNOWLEDGE, AND INFORMATION

should break down the kind of training received, differentiating between “light training”, such as talks and webinars, “structural modules” (e.g. those of a week in duration), and more robust training based on longer, more in-depth courses.

- ➔ Undertaken using dedicated surveys annually; or at the start of the project, at medium term, and during terminal evaluation.

Livestock production units that have adopted an Animal Welfare management plan – Number/proportion

This indicator measures the number of livestock units, slaughterhouses, dairies and other processing units; animal gathering points; and markets that have received project support and developed and implemented animal welfare management plans. As a minimum, plans should address the Five Freedoms: freedom from hunger and thirst; freedom from discomfort; freedom from pain, injury, or disease; freedom to express normal behavior; and freedom from fear and distress. This indicator should be broken down by farm size, species and type of farm, where possible.

- ➔ Reported annually using project advancement reports.

Livestock production units that have adopted an antimicrobial resistance (AMR) management plan – Number/proportion

This indicator measures the number of livestock production units with AMR management plans that have the objective of decreasing antimicrobial use in animals (measured in kilograms per livestock production unit per year). Management plans should include improving hygiene, and improving wastewater and sludge management in food production, under the One Health approach. National monitoring systems for antimicrobial use can also be used as indicators, in line with antimicrobial surveillance and monitoring capacity.

- ➔ Undertaken using dedicated surveys annually; or at the start of the project, at medium term, and during terminal evaluation.

OBJECTIVE 1

OBJECTIVE 2

OBJECTIVE 3

OBJECTIVE 4

OBJECTIVE 5