

ANIMAL HEALTH COMPLETE GUIDANCE FOR MIXED CROP-LIVESTOCK, DRY (RUMINANTS)

Subsistence-oriented smallholder mixed crop-livestock systems in dry to temperate tropical climates



This document provides the complete Animal Health Guidance for Mixed Crop-Livestock, Dry (Ruminants) Systems as part of the Investing in Sustainable Livestock (ISL) Guide.



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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.

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 Mixed Crop-Livestock, Dry (Ruminants)

This context covers mixed crop-livestock systems found in regions with seasonal rainfall, generally subsistence-oriented, and low productivity. Livestock play an important role by providing a range of goods and services such as food, manure for crop production, draft power, and capital assets.

DESCRIPTION OF TYPICAL SITUATION

This context describes mixed crop-livestock systems with small (sheep and goats) and/or large (cattle and buffalo) ruminants, as well as horses and donkeys, on smallholder farms that are mostly found in regions with seasonal rainfall, i.e., with dry and rainy seasons. Examples are found in Sub-Saharan Africa (Ethiopia, Kenya), South, Southeast and East Asia, and Latin America (Andean region). The precipitation in the rainy season, in combination with an adequate level of soil fertility, typically supports sufficient food production to sustain the needs of farm households. Because of the relatively favorable conditions, human population and farm density are often relatively high, setting specific constraints for farm development. Farms are small, labor is predominantly provided by household members, land for farm extension is limited, and food crop production for household consumption is traditionally the major farming objective. Farms tend to become smaller over time, by inheritance to the next generation, though a recent study showed that pressure on farmland was slightly decreasing in Tanzania.

Livestock is important on such farms to support crop production through supply manure, providing traction for plowing, tilling and transport, and being a capital stock. The quantity of meat and milk sold is limited, but milk sales, even of small quantities, are important since they provide daily cash income. Though subsistence, i.e., support of the livelihood of the farm household is the traditional objective, these farming systems can be increasingly market-oriented. This often takes place in the vicinity of urban locations, where market-oriented production is often associated with specialization and intensification of farming systems. Where such specialization and intensification take place,

crossbreeding of local breeds with exotic ones may occur, but, in general, crossbreeding is limited.

Globally, in many regions with mixed crop-livestock systems, the market orientation of farming has just started, and this process is constrained by limited access to the market for inputs and outputs which can be caused by remoteness and/or suboptimal infrastructure. However, where conditions are favorable, geographical clusters of smallholder farming have turned almost fully to market-oriented production, driven by market demand, infrastructure development, input and service supply, marketing channels, extension, and education. Such clusters are often found in peri-urban areas but not necessarily. The integration between crops and livestock may become less prominent or even absent in such clusters, and production tends to intensify.

As animal productivity rises and as farm rearing focuses on the delivery of edible products (nonfood production functions of livestock are replaced by alternatives, such as mechanization, banking, and insurances), the number of livestock with nonfood production functions decreases. Some of the principles relevant to smallholder systems will be less important in such market-oriented systems, where the principles applying to the intensive production systems may become more relevant.

COMMON ANIMAL HEALTH ISSUES

Conditions on farms can differ greatly depending on the season of the year. Characteristics such as high disease burden, climate and availability of resources may not be constant all year around. With concentrations of livestock during droughts around water points, in common grazing areas, in market, and along trading routes, makes the likelihood of disease transmission high. This high seasonal variability requires planning, preparedness, and risk evaluation. (Principle 1)

Animals are generally well adapted to the harsh geographical and climatic environment, but their weight gain and milk yield are low. The traditional breeding

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system, in which the best animals are exchanged for breeding purposes, has been negatively affected by the move toward more commercial production systems, in which animals with larger frames, are therefore heavier body weights, are selected for sale for slaughter. On one hand, practices such as artificial insemination limit interaction between animals and thus disease spread. However, the commercialization of breeding systems has also hindered diversity and resulted in greater genetic uniformity, negatively impacting herd resilience to disease. Best practices in genetic improvement, an area of weak public and private investments, would have a positive effect on people's livelihood as well as animal health. (Principle 1, 2 and 3)

The large livestock population in some countries, in conjunction with predicted increases in both temperature and flooding and an established burden of diseases, suggests that climate change may greatly increase the incidences of zoonotic diseases such as leptospirosis. High animal density and greater instances of compromised hygiene can also be tied to excessive use of antimicrobials, contributing to

AMR. This calls for the need for establishing and strengthening proper monitoring and evaluation systems on climate change and health at various levels in the organizations. Additionally, there is a need for establishing and strengthening scientific and local community opportunities for surveillance and risk reduction, especially where smallholder/communal farmers have limited awareness on animal husbandry and management of disease threats. (Principle 5, 7)

In countries where the public sector is not strong enough to take the lead in protecting animal health, the private sector is providing many services such as mass vaccination campaigns. Countries in this condition often suffer from a lack of licensing procedure or its enforcement and therefore there is a deficiency of quality veterinary drugs availability. Large-scale dumping of expired substandard and counterfeit drug is also common, and most livestock owners would prefer to buy the cheapest price from traders instead of veterinarians, registered practitioners, or community-based paraprofessionals. These also result in common AMR risks (Principle 2, 6, 7).

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OBJECTIVE 1: IMPROVE PRODUCTIVITY OF LIVESTOCK

INTERVENTION: Feed resources and balance

ACTIVITIES

- Develop on-farm feed resources.
- Source (ingredients for) concentrate feed.
- Improve feed ration balancing.
- Extend stall-feeding.

GUIDANCE

P2 | P3

Improved feed availability and quality may not only increase animal productivity but also incentivize increases in herd size. These activities should be followed by an evaluation of the potential implications of any expected increase in animal numbers on animal health and welfare, such as overcrowding or lack of veterinary care and supplies.

P2 | P4 | P5

Certain changes in feeding practices, such as moving to stall-feeding systems might affect husbandry practices and contribute to the occurrence/worsening of animal disease and zoonoses. Therefore, it is important that any changes in feeding system are accompanied by adequate training in best practices for husbandry and disease monitoring.

INDICATORS

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

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.

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**

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

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

OBJECTIVE 1: IMPROVE THE PRODUCTIVITY OF LIVESTOCK

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.

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

OBJECTIVE 1: IMPROVE THE PRODUCTIVITY OF LIVESTOCK

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 1

OBJECTIVE 2

OBJECTIVE 3

OBJECTIVE 4

OBJECTIVE 5

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.

P2

Ensure that proper quarantine facilities are built where necessary and according to risk assessments. Ideally,

OBJECTIVE 2: IMPROVE MARKET ACCESS AND DEVELOP VALUE CHAINS

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).

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

OBJECTIVE 2: IMPROVE MARKET ACCESS AND DEVELOP VALUE CHAINS

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.

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.

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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.

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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.

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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.

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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

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OBJECTIVE 4: CLIMATE CHANGE RESILIENCE AND EMERGENCY RESPONSE

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.

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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.

GUIDANCE

P3| P6

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

OBJECTIVE 5: STRENGTHEN POLICIES, KNOWLEDGE, AND INFORMATION

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.

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.

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OBJECTIVE 5: STRENGTHEN POLICIES, KNOWLEDGE, AND INFORMATION

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.

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.

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

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.

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