

# Climate and livestock policy coherence analysis in Burkina Faso, Niger, Rwanda, Nepal and Cambodia

Working Paper No. 311

CGIAR Research Program on Climate Change,  
Agriculture and Food Security (CCAFS)

Laurie Ashley



RESEARCH PROGRAM ON  
**Climate Change,  
Agriculture and  
Food Security**



Working Paper

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## **Abstract**

Feeding and nourishing a growing and changing global population in the face of rising numbers of chronically hungry people, slow progress on malnutrition, environmental degradation, systemic inequality, and the dire projections of climate change, demands a transformation in global food systems. Policy change at multiple levels is critical for catalysing an inclusive and sustainable Livestock in Burkina Faso, Niger, Rwanda, Nepal and Cambodia play an important role in food security, livelihoods, income, and, to various levels, GDP. The livestock sector is expected to experience significant growth in lower- and middle-income countries in Asia and sub-Saharan Africa in coming decades in response to growing demand (Enahoro et al. 2019a). Sector growth requires policy guidance to avoid increasing livestock exposure to climate risks and raising sector greenhouse gas (GHG) emissions. Guided by the Policy Coherence for Sustainable Development Framework, this analysis examines 58 climate, agriculture, livestock, development, land, and environment policies across the five countries for strength, coherence, gaps, and conflicts in addressing livestock adaptation and mitigation. The analysis examines policy language although not implementation.

Policies increasingly recognise the need to prepare for climate change impacts, and to a lesser extent, reduce emissions, as evidenced by more policy ambition for livestock adaptation and mitigation in more recent policies across policy areas. While there are clear efforts to integrate livestock climate strategies, policies often fail to articulate climate risks specific to the livestock sector and to link climate risks to adaptation options. Other consistent gaps include recognition of the role of adaptation in sector growth and resilience, comprehensive mitigation strategies, and adequate consideration of adaptation-mitigation co-benefits. Further, policies often lack the targets and monitoring efforts needed to guide and measure policy impact. Building on efforts to integrate livestock and climate, addressing this range of policy gaps will create a more enabling policy environment for livestock climate action that supports sector productivity and climate-resilience while limiting emissions.

### **Keywords**

Policies; livestock; climate change; Burkina Faso; Niger; Rwanda; Nepal; Cambodia

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## Acronyms

ADB	Asian Development Bank
AFOLU	Agriculture, Forestry, and Other Land Use
ASDP	Agriculture Sector Strategic Development Plan (Cambodia)
ASEAN	Association of Southeast Asian Nations
BAU	Business and Usual
BMUB	Federal Ministry for the Environment, Nature Conservation, and Nuclear Safety (Germany)
CAADP	Comprehensive Africa Agriculture Development Programme
CCAP	Cambodia Climate Change Strategic Plan (CCCSP), Climate Change Action Plan (Cambodia)
CCAFS	CGIAR Research Programme on Climate Change, Agriculture, and Food Security
CCAP	Climate Change Action Plan (Cambodia)
CCCSP	Cambodia Climate Change Strategic Plan (Cambodia)
CDKN	Climate and Development Knowledge Network
CDM	Clean Development Mechanism
CNCVC	Technical Commission on Climate Change and Variability (Niger)
CNEDD	National Council for Environment and Sustainable Development (Niger)
COMESA	Common Market for Eastern and Southern Africa
CSA	Climate-Smart Agriculture

CS-GDT	Strategic Framework for Sustainable Land Management, (Niger)
DFID	Department for International Development (United Kingdom)
EAC	East African Community
ECOWAS	Economic Community of West African States
EDPRS II	Second Economic Development and Poverty Reduction Strategy (Rwanda)
ETF	Enhanced Transparency Framework
EU	European Union
FAO	Food and Agriculture Organisation of the United Nations
FONERWA	Fund for Environment and Climate Change (Rwanda)
GCF	Green Climate Fund
GDP	Gross Domestic Product
GEF	Global Environment Facility
GGCRS	Green Growth and Climate Resilience: National Climate Change and Low Carbon Development Strategy (Rwanda)
GGGI	Global Green Growth Institute
GHG	Greenhouse Gas
GIZ	Deutsche Gesellschaft für Internationale Zusammenarbit
GoR	Government of Rwanda
GTZ	Deutsche Gesellschaft für Technische Zusammenarbeit (predecessor to GIZ)
IGAD	Inter-Governmental Authority on Development
IIED	International Institute for Environment and Development

IISD	International Institute for Sustainable Development
ILRI	International Livestock Research Institute
LAPA	Local Adaptation Plans for Action (Nepal)
LDCF	Least Developed Countries Fund
LMP	Livestock Master Plan (Rwanda)
LORP	Law on Pastoralism (Burkina Faso)
MAFF	Ministry of Agriculture, Forests, and Fisheries (Cambodia)
MDGs	Millennium Development Goals
MINAGRI	Ministry of Agriculture and Animal Resources (Rwanda)
MRAH	Ministry of Animal Resources and Fisheries (Burkina Faso)
MEEVCC Faso)	Ministry of the Environment, Green Economy and Climate Change (Burkina
MRV	Monitoring, Reporting, and Verification (in relation to GHG emissions)
NAMA	Nationally Appropriate Mitigation Action
NAP	National Adaptation Plan
NAPA	National Adaptation Programme of Action
NDC	Nationally Determined Contribution
NESAP	National Environmental Strategy and Action Plan (Cambodia)
NSDP	National Strategic Development Plan (Cambodia)
NST1	National Strategy for Transformation (Rwanda)
OECD	Organisation for Economic Co-operation and Development

PAPISE	Action Plan and Investment Program for the Livestock Sub-sector (Burkina Faso)
PAPSA	World Bank Livestock Sector Development Support Project and the Agricultural Productivity and Food Security Project
PDC	Communal Development Plans (Niger)
PDES	Economic and Social Development Plan (Niger)
PNCC	National Climate Change Policy (Niger)
PNDD	National Policy on Sustainable Development (Burkina Faso)
PNEDD	National Program for Environment and Sustainable Development (Niger)
PNDEL	National Policy for Sustainable Livestock Development (Burkina Faso)
PNDES	National Plan for Economic and Social Development (Burkina Faso)
PNSR II	National Programme for the Rural Sector (Burkina Faso)
PPCR	Pilot Program on Climate Resilience
PPPs	Public-Private Partnerships
PRAPS	World Bank Regional Sahel Pastoralism Support Project
PS-PASP	Sector Policy on Agro-Silvo-Pastoral Production (Burkina Faso)
PSTA 4	Strategic Plan for Agriculture Transformation, Phase 4 (Rwanda)
RAF	Agrarian and Land Reorganisation (Burkina Faso)
REDD+	Reduce Emissions from Deforestation and forest Degradation and foster conservation, sustainable management of forests, and enhancement of forest carbon stocks
REMA	Rwanda Environment Management Authority

RS-IV IV (Cambodia)	Rectangular Strategy for Growth, Employment, Equity, and Efficiency Phase
SCADD Faso)	Strategy for Accelerated Growth and Sustainable Development (Burkina
SDCCI	Sustainable Development and Inclusive Growth Strategy, Niger 2035 (Niger)
SDDEL	Strategy for Sustainable Livestock Development (Niger)
SDG	Sustainable Development Goal
SDR	Strategy for Rural Development (Burkina Faso and Niger)
SIDA	Swedish International Development Cooperation Agency
SIDESS	Sustainable Intensification Decision Support System (Rwanda)
SNPA-CVC	National Strategy and Action Plan for Climate Change and Variability (Niger)
SP/CONEDD	Permanent Secretariat of the National Council for the Environment and Sustainable Development (Burkina Faso)
UNDESA	United Nations Department of Economic and Social Affairs
UNESCAP	United Nations

## Introduction

The purpose of this policy coherence analysis is to better understand the extent to which identified policies integrate livestock adaptation and mitigation strategies and the coherence of these strategies among policies. The analysis offers insights into opportunities to engage policymakers and others to further integrate climate change mitigation and adaptation in livestock policies, livestock in climate policies, and encourage climate-resilient, low emission livestock production.

Recognising the importance of policy coherence for sustainable development, Sustainable Development Goal (SDG) 17.14 is to “enhance policy coherence for sustainable development.” This goal emphasises the need to develop synergies and address conflicts and gaps among policies to effectively address cross-cutting challenges such as climate change. Policy coherence can be defined as “systematic support towards the achievement of common objectives within and across individual policies” (Hertog and Stross 2011, cited in Nilsson et al. 2012). Policy coherence analysis identifies how policies across policy areas (e.g., climate and livestock) support or conflict with one another as well as support or conflict with broader national and international goals (e.g., SDGs).

## Background

Livestock in Burkina Faso, Niger, Rwanda, Nepal, and Cambodia play an important role in food security, livelihoods, income, and, to various levels, GDP (Table 1). These countries represent a range of livestock production contexts. In Niger, for example, approximately 87 percent of the population is involved in livestock production in mainly extensive production systems and with production focused primarily on food security. Meanwhile in Rwanda and Cambodia, livestock contributes much less to GDP and the policy focus is on increasingly commercial production, particularly in Rwanda.

**Table 1. Contribution of livestock to national income (GDP) and agricultural GDP in the focus countries. Source: Enahoro et al. 2019a. Data from 2014, retrieved from FAO 2016.**

Country	Contribution of livestock to GDP (%)	Contribution of livestock to ag GDP (%)	Contribution of ag GDP to national GDP (%)
<b>Burkina Faso</b>	4.1	15.0	27.8
<b>Niger</b>	12.3	35.0	35.2
<b>Rwanda</b>	3.4	10.0	34.0
<b>Nepal</b>	8.4	24.0	35.0
<b>Cambodia</b>	3.6	11.3	32.0

In each of the five countries, growing populations and incomes are increasing the demand for livestock products and driving sector growth (Enahoro et al. 2019a). Unguided, this growth could increase the livestock sector's vulnerability to climate risk and its greenhouse gas (GHG) emissions. In contrast, investments in understanding and addressing livestock climate risks, closing livestock yield gaps, and addressing sustainable land management offer a path towards climate adaptation and mitigation and sustainable sector development (Enahoro et al. 2019b).

Climate change impacts to the livestock sector include reduced productivity related to increasing heatwaves, drought, and flooding as well as changes in disease incidence and the quality and availability of water, feed, and grazing resources (Rojas-Downing et al. 2017). A range of context-specific policy options for adaptation can increase climate resilience in the livestock sector. Adaptation options should be closely linked to existing and projected livestock sector climate impacts. These options include:

- improvements in breeding, feed quality and availability, water access, disease control, and shelter;
- shifts in the type of production systems (including diversifying livestock varieties); and
- increased access to climate information, disaster risk reduction efforts, early warning systems, livestock insurance, and other forms of finance.



In addition to specific livestock sector strategies, policies can guide investment in knowledge, institutions, planning processes, research and development, and capacity building with relevance for livestock climate action.

Livestock sector emissions are a significant contributor to overall GHG emissions in each country reviewed (Table 2). Of total livestock emissions globally, enteric fermentation contributes about 63 percent, deposit of manure and urine on pastures about 25 percent, and manure management about 12 percent (Tubiello et al. 2015). Additional livestock sector-related emissions come from land use change for animal feed production, as well as product storage, processing, and transport. Livestock contributions to national GHG emissions are proportionately higher than the global average (14-18 percent) because the countries reviewed have relatively low emissions in other sectors (e.g., energy, industry, and waste). Important policy options to limit sector emissions include:

- increasing productivity per unit through feed, health, manure management, and optimisation at age of slaughter strategies;
- limiting, and ultimately sequestering, carbon emissions from grazing and pasture lands (including avoiding deforestation); and
- shifting demand away from higher emitting livestock species (e.g., cattle) toward lower emitting species (e.g., poultry) (Gerber et al. 2013).

Havlik et al. (2014) note that mitigation policies targeting land use change are five to ten times more efficient than policies that solely target livestock.

With animal productivity and sustainable land management strategies key to both livestock adaptation and mitigation, there are great opportunities for adaption and mitigation co-benefits in policy interventions. Strategies that offer potential co-benefits include improved feeding, veterinary care, and breeding; sustainable intensification; agroforestry (for feed and carbon sequestration); grazing management; and diversifying the livestock species mix (Enarharo et al. 2019b; Thornton and Herrero 2014; Campbell et al. 2014; Rojas-Dowing et al. 2017). Ongoing research and investment in animal genetics, health, and feed are required to support strategies for effective sector co-benefits (Enarharo et al. 2019b). Additionally, achieving co-benefits requires maintaining a focus on both adaptation and mitigation

objectives. Certain livestock breeds, for example, may be better adapted to changing climate conditions while others are lower emitting. The challenge is to formulate adaptation and mitigation strategies that do not compromise, and ideally support, one another.

**Table 2. Estimated livestock contribution (from enteric fermentation and manure) to national GHG emissions by country.**

Country	Estimated livestock contribution to national GHG emissions	Source
<b>Burkina Faso</b>	56%	GoBF, 2014
<b>Niger</b>	35%	Niger NDC, 2015
<b>Rwanda</b>	38%	WB and CIAT, 2015
<b>Nepal</b>	38%	USAID, 2019
<b>Cambodia</b>	8.6%	USAID, 2017

### **The role of policy coherence**

As climate change increasingly impacts livestock production, countries need robust strategies to meet national goals for food security and livestock sector growth without substantially raising emissions. National policy plays a critical role in creating an enabling environment for livestock adaptation and mitigation. As numerous policies interact at an operational level, coherence within and across policy areas can increase strategy effectiveness and efficiency while avoiding duplication and conflicting objectives. Policy coherence between adaptation and mitigation policies also supports achieving co-benefits (Ranabhat et al. 2018).

### **Methods**

This analysis employed the Policy Coherence for Sustainable Development (PCSD) framework (OECD 2016) with a focus on the PCSD analytical framework component (Table 3). The PCSD framework was developed as a tool to support the SDG agenda and, in particular, SDG 17.14 to “enhance policy coherence for sustainable development.” The PCSD builds on the previous Policy Coherence for Development framework released by OECD in 2012. The PCSD framework provides guidance and a screening tool for, inter alia, analysing coherence issues and how policy strategies might support or hinder the achievement of SDG goals and targets. The analytical framework component of the PCSD includes a focus on

policy interlinkages among economic, social, and environmental policies and the associated synergies and trade-offs. The policy interlinkage focus is the principal component of this analysis. The PCSD and this analysis also include consideration of actors involved in policy development, enabling and disabling conditions, sources of finance, and transboundary impacts.

**Table 3. PCSD analytical framework component. Source: OECD 2016.**

PCSD analytical framework main elements	Sample guiding questions
<b>Policy interlinkages</b>	How do the planned policy outputs contribute to achieve sustainable development goals?
<b>Actors</b>	What is the role of the private sector, civil society organisations, bilateral and multilateral donors, and other stakeholders?
<b>Enabling and disabling conditions</b>	Have the contextual factors (corruption, barriers to trade, knowledge, etc.) which might influence the policy outcomes been identified?
<b>Sources of finance</b>	Have all the potential sources of finance been identified (public, private, domestic, international) for sustainable development?
<b>Transboundary impacts</b>	Does the policy produce unintended effects, positive or negative, that could affect the well-being of people living in other countries?

The review includes 60 policies including 10 in Burkina Faso, 11 in each Niger and Rwanda, 13 in Nepal and 15 in Cambodia (Table 4). The policy search aimed to identify the most prominent national-level climate, livestock, agriculture, development, environment, and land policies in each country with relevance for livestock adaptation and mitigation. To identify policies for review, the analysis used internet searches, Grantham Research Institute on Climate Change and Environment country profiles, input from country experts, and additional policies referenced within found policies. The analysis groups policies into topic areas. Policies that combine topic areas (e.g., climate and agriculture or climate and environment) are grouped by primary topic covered and/or according to the ministry that led the policy development. Rwanda's National Environment and Climate Change Policy, for example, was developed by the Ministry of Environment to replace the 2003 National Environment Policy and is thus categorised as an environment policy. For policies not originally written in English, the review used official translations when available and otherwise used unofficial policy translations.

The analysis took a content analysis approach (Stemler 2001) to examine policy elements and included a review of selected literature related to the policy context to complement the policy analysis. This review only examines policy language; it does not consider policy implementation. Documents were analysed and coded using an Excel database to identify the policy elements. Each policy was coded for climate change integration, alignment with SDGs and national development goals, recognition of climate risk, and livestock adaptation and mitigation measures. Regarding SDGs, the analysis focused on SDG 2 Zero Hunger and SDG 13 Climate Action with the understanding that livestock are a critical source of food, income, and savings for livestock keepers and highly vulnerable to climate change impacts, as evidenced by livestock losses due drought, heatwaves, floods, and gradual trends in temperature and precipitation. And, yet, while livestock are key to food security and livelihoods, livestock are responsible for a substantial proportion of human-induced GHG emissions in the region.

**Table 4. Policies reviewed**

Policy Area	Burkina Faso	Niger	Rwanda	Nepal	Cambodia
<b>Climate</b>	NAPA, 2007 NAP, 2014 NDC, 2015	NAPA, 2006 National Climate Change Policy, 2013 National Strategy and Action Plan for Climate Change and Variability (SNPACVC), 2014 NDC, 2015	NAPA, 2006 Green Growth and Climate Resilience Strategy (GGCRS), 2011 NDC, 2015	NAPA, 2010 National Climate Resilient Planning, 2011 National Framework on Local Adaptation Plans for Action (LAPA), 2011 NDC, 2016 Climate Change Policy, 2019	NAPA, 2006 Cambodia Climate Change Strategic Plan (CCCSP), 2014-2023 NDC, 2015 Climate Change Action Plan, 2016-2018
<b>Livestock and Agriculture</b>	National Policy for Sustainable Livestock Development (PNDEL), 2010-2025 Rural Development Strategy, (SDR), 2016-2025 National Program for the Rural Sector II (PNSR II), 2016-2020) Sector Policy on Agro-Silvo-Pastoral Production (PS-PASP), 2018-2027	Strategy for Rural Development Action Plan (SDR), 2006, and Investment Plan, 2010 3N Initiative, ongoing Strategy for Sustainable Livestock Development (SDDEL), 2013-2035	National Dairy Strategy, 2013 Livestock Master Plan, 2017 National Agriculture Policy, 2018 Strategic Plan for Agriculture Transformation, Phase 4 (PSTA 4), 2018-2024	National Agriculture Policy, 2004 CCA and DRM in Agriculture Framework, 2011-2020 Agriculture Development Strategy, 2015-2035 Zero Hunger Action Plan, 2016	Agricultural Sector Strategic Development Plan, 2014-2018 Climate Change Action Plan Priorities for Ag, Forestry, and Fisheries (CCPAP), 2014-2018 Strategic Planning Framework for Livestock Development, 2016-2025 Law on Animal Health and Production, 2016
<b>Development</b>	National Economic and Social Development Plan (PNDES), 2016-2020	Sustainable Development and Inclusion Growth Strategy (SDDCI), Vision 2035, 2017 Economic and Social Development Plan (PDES), 2017-2021	Vision 2020 National Strategy for Transformation (NTS1), 2017-2024	SDGs Status and Roadmap, 2016-2030, and SDGs Needs Assessment, Costing, and Financing Strategy, 2017 15 <sup>th</sup> Plan	National Green Growth Roadmap, 2009 National Strategic Plan on Green Growth 2013 – 2030 Rectangular Strategy, Phase 4, 2018-2023
<b>Land</b>	Rural Land Tenure Law, 2009	Rural Code, ongoing	National Land Policy, 2004	National Land Use Policy, 2015	Law on Land, 2001 Land Policy White Paper, 2015
<b>Environment</b>	Code for the Environment, Law No. 6-2013	Strategic Framework for Sustainable Land Management, 2015-2029	National Environment and Climate Change Policy, 2019	National Environment Policy, 2019	National Environment Strategy and Action Plan, 2016–2023 Draft Environment and Natural Resources Code of Cambodia, 2017
<b>Total</b>	10	11	11	13	15

## Policy scoring

Each policy was reviewed and scored for the presence and level of detail of livestock sector climate change adaptation and mitigation strategies and their alignment with SDGs (Table 5). The analysis of each policy area in the following country sections further describes alignment with national development goals. National development goals were not included in this scoring system. The analysis focused on explicit climate change adaptation and climate change mitigation strategies and took into consideration strategies that were not explicitly listed as adaptation or mitigation but that were a) listed in policies with overall adaptation and mitigation objectives and b) contributed to adaptation or mitigation.

When policies contained no reference to climate risk, adaptation or mitigation, they were scored as a zero. While these policies were scored with a zero, their activities are not necessarily contrary to adaptation and mitigation goals and could even align with them. When policies contained no reference to livestock but did include agriculture adaptation and mitigation strategies relevant to the livestock sector, these were scored as a “1” to indicate policy support but lack of detail.

**Table 5. Scoring for policy strength and coherence for livestock sector climate change adaptation and mitigation.**

Level of coherence	Description	Score
<b>High</b>	The policy strongly aligns with SDGs related to livestock sector 1) adaptation or 2) mitigation. Policy devotes specific attention to climate adaptation and/or mitigation in the livestock sector. The policy includes specific activities, measures, and approaches aligned with SDGs.	3
<b>Partial</b>	The policy supports SDGs related to livestock sector 1) adaptation or 2) mitigation but has relatively fewer details and specific activities, measures, and approaches.	2
<b>Limited</b>	The policy supports the SDGs related to livestock sector 1) adaptation or 2) mitigation but lacks details and specific activities, measures, and approaches.	1
<b>None</b>	There is no evidence that the policy supports the SDGs related to livestock sector 1) adaptation or 2) mitigation.	0

## Limitations and further inquiry

The key limitation of this policy analysis is that it reviews policy language but not policy status or implementation. There is a remaining need to determine if and how policies are

being implemented and which policies are driving action versus “sitting on the shelf.” Additionally, implementation of particular strategies could vary, positively or negatively, from policy ambition and requires further inquiry.

In terms of actors involved in policy development, the review includes the country level and external (international development institutions and financial mechanisms) actors referenced in the policies themselves. Some policies do not reference external actors but this does not mean external actors were not involved in policy development. Additional research is needed to understand the particular roles of country and external actors in policy development and implementation. This includes gaining a better understanding of country ownership of policies and their commitment to implementation.

The analysis took the same approach of using references within the policies for identifying policy financing. The level of detail on financing for policy strategies ranged substantially from none at all to detailed budgets with potential financing identified. Further inquiry is needed to learn if and how policies and livestock sector strategies are being financed.

Further inquiry could include interviews with country and sector experts within and outside government as well as review of livestock sector adaptation and mitigation projects and activities through interviews and document review.

## **Overview of findings**

The reviewed policy documents demonstrate that Burkina Faso, Niger, Rwanda, Nepal, and Cambodia are exploring a range of options for livestock sector adaptation, and to a lesser extent mitigation, while targeting sector growth. Policymakers increasingly recognise the need to prepare for climate change impacts as evidenced by better integration of adaptation in more recent policies across policy areas. Policies frequently fail to address, however, important adaptation and mitigation opportunities in the course of pursuing sector growth, productivity, and commercialisation. Not surprisingly, in countries where the livestock sector comprises a greater proportion of GDP or provides employment for substantial portions of the population (i.e. Niger and Burkina Faso), policies tend to give more dedicated attention to sector adaptation.

Across countries, there is often recognition of climate change risks for agriculture among most of the more recent, post-2010, policies. Policy recognition of specific climate risks to the livestock sector, however, is generally limited, both in terms of exacerbating existing threats (e.g., feed and water availability) and new threats (e.g., new types and extent of disease). Niger's policies are the exception with their detailed discussion of climate risks in the livestock sector across policy areas. In other countries, the limited discussion of climate risks to livestock may be linked to the corresponding lack of explicit connection between climate change risks and policy strategies. This review demonstrates the need for better climate change impacts assessment in the livestock sector to inform better linkages between the identified risks and adaptation options.

Additionally, while many policies reviewed cite climate change as mainstreamed or as a cross-cutting theme, policies rarely include detailed or comprehensive livestock adaptation or mitigation strategies. Across countries and policy areas, numerous strategies have adaptation and mitigation qualities, but are not explicitly designed as climate interventions and may thus miss adaptation and mitigation opportunities. Further, there is limited recognition of adaptation and mitigation co-benefits and essentially no recognition of potential conflicts between adaptation and mitigation strategies. Among the explicit livestock adaptation and mitigation measures, there is often insufficient data, targets, or measures to fully guide policy impact. More thoroughly developing climate action targets and interventions for the sector and matching them with monitoring and evaluation systems could facilitate more investment in reducing livestock climate risk and emissions.

In terms of climate policies, Burkina Faso offers the strongest integration of livestock climate change strategies across the country's National Adaptation Programme of Action (NAPA), National Adaptation Plan (NAP), and Nationally Determined Contribution (NDC). Burkina Faso's NAP, for example, presents a vulnerability assessment for the livestock sector and thoroughly integrates livestock in a wide range of adaptation strategies. The country's NDC, in turn, includes commitments for livestock adaptation and mitigation. In contrast, climate policies in Cambodia and Nepal lack detailed integration of the livestock sector in adaptation and mitigation strategies. Additionally, Cambodia's and Nepal's NDCs do not contain livestock-related adaptation or mitigation commitments other than one measure for establishing biogas in Nepal's NDC.



The livestock policies reviewed range from a well-developed Livestock Master Plan in Rwanda to no dedicated livestock policy in Nepal. Countries' approaches to livestock policy and the integration of climate change vary. In the case of Rwanda, the Livestock Master Plan presents a thorough approach to sector development but does not well integrate climate. The Livestock Master Plan is matched, however, with the country's Strategic Plan for Agriculture Transformation, which offers strong guidance for livestock adaptation although not mitigation. In Burkina Faso, Niger, and Cambodia, each has a livestock sector development strategy that integrates adaptation to some extent and references sector mitigation. While Nepal does not have a dedicated livestock policy, livestock strategies that offer some adaptation guidance and reference mitigation are included within the country's Agriculture Development Strategy.

With just a few exceptions, country's agriculture and livestock policies recognise climate risk to the agriculture sector. (The exceptions are Rwanda's National Dairy Strategy, Cambodia's Law on Animal Health and Production, and Nepal's National Agriculture Policy.) Cambodia and Nepal each have dedicated climate change plans for agriculture. Nepal's Climate Change Adaptation and Disaster Risk Management in Agriculture Framework offers the country's strongest integration of climate and livestock although it does not address mitigation. Cambodia's Climate Change Action Plan Priorities for Agriculture, Forestry, and Fisheries is a brief document and more limited in scope but does include the country's only target for livestock sector emissions.

In terms of development policy, Burkina Faso and Niger have the most integration of livestock climate strategies in the countries' respective economic and social development plans. For environment policies, Niger, Rwanda, and Cambodia each offer policies that address both livestock adaptation and mitigation. Land policies across the countries are generally weak on livestock climate strategies, however, Niger's Rural Code and Cambodia's Land Policy White Paper each reference livestock adaptation and mitigation.

While each country demonstrates coherence for certain livestock adaptation and mitigation strategies, Niger offers the most alignment across policies and policy areas. Niger's policies more consistently and carefully state their alignment with other national policies through figures, tables, and text, than policies reviewed for other countries. Niger's post-2015

agriculture and development policies also explicitly align with the SDGs and the country's NDC.

Across the policies reviewed in the five countries, key gaps in livestock climate strategies remain. While there are exceptions, climate policies often include insufficient attention to livestock and livestock and agriculture policies insufficient attention to climate. (Climate policies in Burkina Faso and Niger are the exception in that they provide strong guidance for livestock adaptation.) Development, land, and environment policies similarly have some good examples of livestock climate strategies but generally lack sufficient integration. Addressing this range of policy gaps would create a more enabling policy environment for robust livestock climate action that takes advantage of adaptation and mitigation synergies to support sector productivity while limiting emissions. Key gaps include:

- a lack of detailed assessment of climate change impacts to the livestock sector,
- limited intentional adaptation strategies designed to address these impacts,
- almost no recognition of the key role that adaptation plays in livestock sector growth,
- limited recognition of livestock sector emissions and few robust mitigation strategies,
- limited attention to adaptation and mitigation co-benefits,
- and insufficient strategy targets and monitoring and evaluation efforts needed to guide and measure strategy impact.

Additionally, the policies reviewed include discussion of a range of enabling and disabling conditions relevant for livestock sector adaptation and mitigation. These discussions, however, are mainly framed in the context of overall sector development and only occasionally articulate the connection to climate action.

## **Scoring**

Using the scoring described in the methods section, Table 6 and 7 summarise the average livestock sector adaptation and mitigation scores for policy areas by country. These scores give an overall impression of country and policy area attention to climate change in the livestock sector. (Scores for each policy reviewed are listed in the country findings.) Scores were determined for each policy based on the presence and detail of strategies relevant to climate change adaptation and mitigation in the livestock sector and their alignment with

SDGs. These averages are influenced by the range of policies reviewed in each policy area and should be considered in the broader country policy context. The number may hide the weight of stronger policies developed in recent years.

Across countries and policy areas, policies are stronger on adaptation with more recent policies often filling gaps in earlier policies. Burkina Faso offers the best examples of livestock adaptation ambition in climate, agriculture, and development policy areas with all three of the country's climate policies scoring a "3" in livestock sector adaptation as does the important National Programme for the Rural Sector. Niger is also strong on livestock adaptation with the National Strategy and Action Plan for Climate Change and Variability, scoring a "3" in livestock sector adaptation. In Rwanda, the key agriculture strategy, the Strategic Plan for Agriculture Transformation, 2018-2024, scores a "3" in livestock sector adaptation. In Nepal, the country's Climate Change Adaptation and Disaster Risk Management for Agriculture Framework also scores a "3" for livestock adaptation. In Cambodia, the Climate Change Strategic Plan and Strategic Planning Framework for Livestock Development both score a "2" in livestock sector adaptation. In terms of mitigation, just two of the policies reviewed score over a "1." These are Burkina Faso's NDC, 2015, and Cambodia's Agricultural Sector Strategic Development Plan, 2014-2018 (no update released as of this writing), each with a score of "2."

**Table 6. Comparison of policy area strength and coherence for livestock sector climate change adaptation.**

Policy Area	Adaptation Score (average for policy area)					
	Burkina Faso	Niger	Rwanda	Nepal	Cambodia	Policy Area Average
Climate	3	2.5	2	1.2	1.5	2.04
Livestock & Agriculture	2	1.67	1.5	1.75	1.5	1.68
Development	2	1.5	1.5	1.5	1	1.4
Land & Environment	0.5	2	0.5	1	1.25	1.05
Country Average	1.88	1.92	1.38	1.36	1.31	

**Table 7. Comparison of policy area strength and coherence for livestock sector climate change mitigation.**

Policy Area	Mitigation Score (average for policy area)					
	Burkina Faso	Niger	Rwanda	Nepal	Cambodia	Policy Area Average
Climate	0.67	0.75	0.67	0.8	0.5	0.68
Livestock & Agriculture	0.75	0.67	0.5	0.75	1	0.73
Development	1	0.5	0	1	0.33	0.57
Land & Environment	0	1	0.5	0.5	0.75	0.45
Country Average	0.6	0.73	0.42	0.76	0.65	

## NDC comparison

The review of countries' NDCs shows mixed commitment to adaptation and mitigation in the livestock sector (Table 8). Burkina Faso, Niger, and Rwanda each include a commitment to livestock adaptation with Niger also referencing adaptation through climate-smart agriculture (CSA). Nepal and Cambodia do not include livestock adaptation commitments although Cambodia does reference adaptation through CSA. There is less commitment to mitigation in the livestock sector including just one reference to employing CSA in mitigation efforts (Niger). Burkina Faso has the most detailed livestock mitigation commitments while Niger and Nepal have limited references. As developing country parties to the Paris Agreement, however, the countries reviewed have no obligation for quantitative mitigation for any sector in their NDCs. Table 8 illustrates countries' NDC contributions for adaptation and mitigation for livestock and CSA. The table does not evaluate the level of detail of the commitment, simply its presence.

**Table 8. Comparison of livestock commitments in NDCs across countries.**

Country NDC	Adaptation Commitment		Mitigation Commitment	
	Livestock	CSA	Livestock	CSA
Burkina Faso	yes	no	yes	no
Niger	yes	yes	yes <sup>1</sup>	yes
Rwanda	yes	no	no	no
Nepal	no	no	yes <sup>2</sup>	no
Cambodia	no	yes	no	no

<sup>1</sup> Mitigation actions address grazing land restoration although not livestock directly.

<sup>2</sup> Mitigation actions include biogas commitments but do not reference livestock directly.

# Burkina Faso findings

## Introduction

Burkina Faso is a low-income country with relatively high poverty levels, around 40 percent, and a predominantly semi-arid climate with highly rainfall variability. The livestock sector faces frequent climate shocks including droughts, floods, heat waves, and dust storms. Climate change trends of increasing temperatures, evaporation rates, and heavy rainfall events may exacerbate these threats in coming years (USAID 2017a).

The country has demonstrated a commitment to addressing climate change. The country ratified the UNFCCC in 1993 and the Kyoto Protocol in 2005, released a NAPA in 2007 and a NAP in 2014, submitted their NDC in 2015, and has submitted two National Communications to the UNFCCC, most recently in 2014.

The country's Permanent Secretariat of the National Council for the Environment and Sustainable Development (SP/CONEDD) is the dedicated inter-ministerial body for overseeing climate change initiatives. The secretariat is housed in the Ministry of the Environment, Green Economy and Climate Change (MEEVCC). The Ministry of Animal Resources and Fisheries (MRAH) is responsible for livestock sector policy and provides training and extension services for livestock producers and supports fodder production, feed processing, processing of livestock products, quality improvement, and identification of markets.

## Policy summary

Agriculture and livestock remain important components of the Burkina Faso's economy despite the country's predominant rainfed production and extreme rainfall variability. The country's policies consistently recognise climate risks to agriculture mainly drought, flood, and shifting rainfall patterns and the need for adaptation. The country's key development policy, the National Plan for Economic and Social Development (PNDES), 2016-2020, emphasises agriculture as a key driver for economic growth with a focus on more productive, sustainable and market-oriented production. PNDES highlights climate change risks in the livestock sector, explicitly aligns with the SDG target for strengthening resilience

and adaptative capacity, and aims to reduce GHG emissions. Only one document reviewed, the Rural Land Law, 2009, does not reference climate change.

Of the post-2015 policies reviewed, all state their alignment with the SDGs although specific discussion of SDG goals and targets are limited. Policies also note that regarding agriculture expenditure, the government has exceeded the Maputo Declaration on Agriculture in Africa target of allocating 10 percent of the national budget to agriculture.

Livestock production, from intensive to transhumant systems, is wide-spread and policy strategies to address livestock feed and water needs, particularly during the dry season, are prominent. Nationally, the livestock sector is relatively undeveloped. Policies note a range of disabling conditions for the sector overall including low levels of productivity related to feed, health, and genetics; weak institutional, political, and legal support for the sector; insecure land tenure and farmer-pastoralist conflict; limited processing and market access; and climate change and land degradation among others. In terms of enabling conditions, policies note the growing demand for livestock products nationally and regionally and the sectors' recent growth, in part due to government investments. Policies consistently call for further sector growth through increased production, intensification, and value-added processing.

The country's National Adaptation Plan, 2014, is the key adaptation policy and thoroughly integrates livestock through a wide range of adaptation strategies. The NDC also carefully integrates livestock and offers thorough support for livestock adaptation and support for mitigation. In turn, agriculture, livestock, and development policies each give relatively strong attention to livestock adaptation strategies. Across policies (outside of land and environment) there is coherence around a key set of strategies important for adaptation and resilience (i.e. sustainable land management and animal feed, water, health, and overall productivity). Direct links between these strategies and their value for adaptation, however, are limited and more attention is needed to ensure that policy actions integrate climate information to support adaptation across timescales and climate change scenarios.

The NDC is the only policy to explicitly recognise livestock emissions but provides livestock mitigation measures in the form of biogas, improved animal productivity, and pastureland restoration. The NDC states that during the 2007 reference timeframe, enteric fermentation accounted for 43.4 percent of the country's total emissions and manure another 5.5 percent.

Outside the NDC, sector mitigation strategies are extremely limited. Seven of the 10 policies reviewed include a general call for mitigation, five specifically reference mitigation in the livestock sector, and just three provide a specific livestock mitigation strategy.

## **Burkina Faso climate-livestock policy opportunities for engagement summary**

### **Strongest synergies across policies:**

- Climate policies thoroughly integrate livestock while agriculture and livestock policies consistently recognise and address climate risks to livestock food and water availability. This results in **strong coherence around the most consistently highlighted adaptation strategies**— sustainable land management, improved productivity/intensification, and improved feed, water access, and health.
- There is a strong focus on **land tenure** in the livestock sector with strategies that emphasise a) support intensifying production and b) secure pastoral grazing areas and routes for extensive production systems. Balancing support for these strategies and ensuring one doesn't infringe on the other will likely remain a challenge, but both provide important avenues for adaptation action.

### **Key gaps:**

- Numerous strategies across policy areas are relevant for adaptation, however, there is **limited discussion of specific climate risks and how strategies can address these risks**. This gap leaves open the possibility that strategies neglect adaptation and resilience components to the detriment of mid- and long-term sector growth and resilience.
- **Attention to livestock mitigation is limited** although there is an NDC commitment to livestock mitigation and a few strategies in agriculture policies. Prominent adaptation strategies for sustainable land management and increased productivity have direct relevance to mitigation; however, outside of the NDC, there is almost no recognition of these links which may lead to missed opportunities for adaptation-mitigation co-benefits.
- **No reference to climate smart agriculture** in any of the policies reviewed (although numerous strategies, for example in the PNSR II, reflect a CSA approach).

#### Potential conflicts:

- The NDC specifically calls for maximizing adaptation and mitigation co-benefits in the livestock sector through greater attention and investment. While numerous policy strategies have the potential to achieve co-benefits, **this important call from the NDC is not well-reflected in the subsequent agriculture, livestock, or development policies.**

### Adaptation synergies and gaps

Of the policies reviewed, the NAP and National Programme for the Rural Sector (PNSR II) offer the most comprehensive adaptation strategies and actions. Only the NAP, however, explicitly links each strategy or action to adaptation rather than to broader sector growth and resilience of which climate change is one consideration. Of the livestock and agriculture policies, the Sector Policy on Agro-Silvo-Pastoral Production (PS-PASP) is the most recent document and also offers the most specific strategies and targets for sector development. Like the other agriculture and livestock policies, however, it does not thoroughly integrate climate change across strategies. None of the policies reviewed reference climate smart agriculture.

There is fairly strong coherence across policy areas for a range of strategies (Table 9). Sustainable land and natural resource management strategies are the most common and explicitly addressed in all ten policies. Strategies to increase productivity/intensification, improve feed, and improve livestock water access are also common and addressed in all climate, agriculture, livestock, and development policies. Climate change information services and early warning systems strategies are present in all climate policies and some agriculture, livestock, and development policies. Climate policies, however, tend to offer strategies to enhance climate information services as well as communications while agriculture and livestock policies focus more on communications. The most recent agriculture policy, PS-PASP, 2017-2026, however, directs the meteorological department to provide climate information to guide and secure agro-silvo-pastoral production in the context of climate change.

Strategies to increase value-added production and market access, are present in all agriculture, livestock, and development policies but not in other policy areas. This



discrepancy illustrates the somewhat divergent foci of climate policies (adaptation and resilience) and agriculture and development policies (sector growth).

Land and environment policies do not offer much guidance for the livestock sector although the Rural Land Tenure Law is important for the pastoral mobility key for resilience in transhumant systems (addressed below).

### **Coherence among adaptation actions**

**Sustainable land and natural resource management** strategies focus on supporting pastoralists and agro-pastoralists in good practices for sustainable land management and land restoration. Specific practices identified include assisted natural regeneration, fighting bush fires, applying agroforestry practices in areas of intensified production, and ensuring land tenure security that supports sustainable land management.

The most common strategy for **increased productivity and intensification** is creating dedicated livestock production intensification areas (or zones) with improved management of animal feed, health, and breeding. Strategies to **improve feed** include mowing and storing hay and crop residues, improving feed storage infrastructure, increasing irrigation for fodder production, and increasing overall fodder production. Additionally, some of the sustainable land management strategies are linked directly to improved livestock feed. Strategies to **improve water access** range from inventorying, rehabilitating, and establishing new water access points, to developing pasture water management plans, to improving knowledge of climate change impacts to water resources. The PS-PASP aims to raise the coverage of livestock water needs in the dry season from 61 percent in 2015 to 100 percent in 2026. Strategies to **improve animal health** largely focus on disease control including monitoring and controlling cross-border diseases and diseases along migration routes. Specific strategies include increasing vaccination and deworming, strengthening disease surveillance, and increasing the capacity of the national livestock laboratory to analyse and diagnose diseases.

Policy strategies to **improve climate information services** include technology transfer for hydro-meteorological systems, integrating climate information in development plans and early warning systems, and increasing climate and weather forecast information access and use. Strategies for **early warning systems and disaster risk reduction (DRR)** are fairly general but focus on strengthening early warning systems for pastoral production and food security

including by adopting legislative, regulatory and organisational measures to mitigate the impact of floods. Development policy includes some emphasis on broader disaster risk reduction.

Strategies to increase **value-added production and access to markets** address issues across the value-chain including improving access to inputs, equipment and financing needed for production, processing, and marketing; development and dissemination of production and processing standards; improving cold chains and market infrastructure; and promoting agricultural entrepreneurship. The PS-PASP includes a target to increase agricultural processing by 50 percent by 2020. Other strategies that receive less attention across policies include improved breeding and access to livestock insurance.

### **Pastoral mobility**

In the extensive and transhumant livestock production systems of Burkina Faso, pastoral mobility is an important adaptation strategy. Across the policies reviewed, two distinct strategies related to pastoral mobility emerge; many policies embrace them both. One involves the increased intensification of livestock production systems and the other involves securing extensive grazing areas and livestock migration routes. While each is important for sector growth, some have raised concerns about the impacts of intensification efforts on pastoral mobility and sustainable pasture management, which are critical for resilience (Gonin and Gautier 2015).

Increased intensification is supported across climate, agriculture, and development policy areas. The country's NAPA includes actions to promote sedentarisation and reduce the extent of transhumance. The objective of the National Policy for Sustainable Livestock Development (PNDEL), 2010-2025, Axis 2 is to accelerate the transformation of extensive pastoral production systems towards intensive systems through sedentarisation and securing pastoral activities, spaces, and resources. The axis promotes zones of intensified production by developing improved management capacity and water access. There is concern that the policy favours sedentary farmers over agro-pastoralists and pastoralists and that as the policy is harmonised with national decentralization efforts, pasture territories would be under the control of local authorities biased towards sedentary farmers (Gonin and Gautier 2015).

The other strategy, securing extensive grazing areas, is supported across all policy areas. The Strategy for Rural Development (SDR) and PNSR II, for example, includes substantial actions to identify and secure pastoral areas through mapping, management, and conflict resolution. The NAP also aims to secure pastoralism through better dissemination and use of pastoral resources information and access. The Rural Land Law and PNDES each aim to support rural land tenure security including for pastoralists. Additionally, these policies include strategies to reduce and address conflicts among farmers and pastoralists.

**Table 9. Policy adaptation strategies: Burkina Faso summary.**

Policy	Adaptation strategies indicated, Burkina Faso							
	Improve SLM/ NRM	Increase productivity/ intensification	Improve feed	Improve livestock water access	Improve health	Increase climate information/ communication	Early warning/ DRR	Value-added/access to markets
CLIMATE								
<b>NAPA, 2007</b>	x	x	x	x		x	x	
<b>NAP, 2014</b>	x	x	x	x	x	x	x	
<b>NDC, 2015</b>	x	x	x	x		x	x	
LIVESTOCK & AGRICULTURE								
<b>PNDEL, 2010-2025</b>	x	x	x	x	x	x	x	x
<b>SDR, 2016-2025</b>	x	x	x	x	x			x
<b>PNSR II, 2016-2020</b>	x	x	x	x	x	x		x
<b>PS-PASP, 2017-2026</b>	x	x	x	x	x	x	x	x
DEVELOPMENT								
<b>PNDES, 2016-2020</b>	x	x	x	x	x		x	x
LAND & ENVIRONMENT								
<b>Rural Land Tenure Law, 2009</b>	x	x						
<b>Environment, Code, 2013</b>	x							
	10	9	8	8	6	6	6	5

## Mitigation synergies and gaps

Across the policies reviewed, the NDC is the only one that explicitly references livestock sector emissions noting that enteric fermentation, manure, and land use all contribute to national emissions. The NDC follows up with specific livestock mitigation strategies. Other policies do not reference livestock sector emissions; however, all livestock, agriculture, and development policies make broad calls for mitigation and PNSR II and NAPA offer limited but specific strategies.

### Coherence among mitigation actions

The NDC calls for equipping 75,000 households with functional **biogas** digesters in at least ten regions of Burkina Faso by 2030. In a discussion of mitigation in the energy sector, PNSR II, calls for promoting renewable energy, especially biogas.

The NDC and PNSR II also each reference **REDD+** strategies. While these are not specific to the livestock sector, they may be relevant for livestock management in REDD+ implementation areas.

As evidenced by the review of adaptation strategies (Table 9), **animal production intensification** and **sustainable land management/land restoration** are common policy strategies. Only the NDC links the strategies to mitigation action, however, and given the fairly weak and general calls for mitigation among the policies reviewed, these are not counted as mitigation strategies in the table below. None the less, outside of dedicated mitigation action, there is strong coherence for animal production intensification zones and sustainable land management strategies which could have adaptation and mitigation co-benefits if well-designed. The NAPA, of course, focuses on adaptation but notes that **reducing bush fires** will be significant for mitigation action.

**Table 10. Policy mitigation strategies: Burkina Faso summary.**

Policy	Mitigation strategies indicated, Burkina Faso					
	General call for mitigation	Biogas	REDD+	Animal production intensification	SLM/land restoration	Reducing bush fires
CLIMATE						
<b>NAPA, 2007</b>						x
<b>NAP, 2014</b>	x					
<b>NDC, 2015</b>	x	x	x	x	x	
LIVESTOCK AND AGRICULTURE						
<b>PNDEL, 2010-2025</b>	x					
<b>SDR, 2016-2025</b>	x					
<b>PNSR II, 2016-2020</b>	x	x	x			
<b>PS-PASP, 2017-2026</b>	x	x				
DEVELOPMENT						
<b>PNDES, 2016-2020</b>	x					
LAND & ENVIRONMENT						
<b>Rural Land Tenure Law, 2009</b>						
<b>Environment, Code, 2013</b>						
<b>Total</b>	7	3	2	1	1	1

## Enabling and disabling conditions

This discussion of enabling and disabling conditions for livestock sector development broadly is drawn directly from the policies reviewed. Many of these are relevant for livestock sector adaptation and mitigation although they are often framed in the context of sector growth and productivity rather than climate change.

### Enabling

In Burkina Faso, livestock remain an important export and contributor to GDP, although the significance has diminished in recent years as mining and crop agriculture exports have gained ground. A growing domestic and regional market is increasing the demand for meat and milk while an improving trade environment is increasing opportunities for regional and international trade in livestock products. PNSR II and SDR note a range of enabling conditions created by past policies including:

- Increased coverage of dry season livestock water access from 50 percent in 2011 to 61 percent in 2015 through construction of boreholes, wells, and 23 dams;
- Increased delimitation and restoration of grazing areas and migration routes including the development of 26 pastoral zones covering 775,000 ha which has contributed to reducing natural resource-related conflicts;
- Improved animal productivity through breeding including Azawak and Gir cattle particularly in the Sahel and the peri-urban area of Ouagadougou; and
- Increased vaccination and fodder production and storage.

PNSR II and SDR note that the success of policy interventions (e.g., PNDEL and its action plan) are evidenced by:

- Increased livestock numbers by 20 percent (2003-2014),
- Increased meat production by 49 percent (2003-2014),
- Increased milk production by 48 percent (2010-2014), and
- Increased poultry production by 30 percent (2003-2012).

PNSR II and SDR further note that the country has a numerically large and diverse livestock herd with significant margins for improving livestock productivity and that local livestock

breeds are productive, able to thrive in extensive production systems, and tolerant to certain local diseases.

Various programmes have also supported livestock production including the World Bank Regional Sahel Pastoralism Support Project (PRAPS) which aims to improve access to essential productive assets, services, and markets for pastoralists and agro-pastoralists and strengthen country capacities to respond promptly and effectively to pastoral crises or emergencies. Other World Bank projects, the Livestock Sector Development Support Project and the Agricultural Productivity and Food Security Project (PAPSA), included constructing fattening units for cattle and sheep, establishing corridors for livestock water access, and supporting poultry vaccination and genetic improvement, cattle artificial insemination, and milk collection and processing.

### **Disabling**

While the livestock sector has seen much improvement, policies note a wide range of constraints that remain. The SDR categorizes these constraints by technical (food, health, genetic, competitiveness); institutional, political and legal (structuring and professionalisation of actors, public funding), socio-economic (land insecurity, farmer-herder conflicts, gender inequality, illiteracy among pastoralists), and environmental (climate change and land degradation).

The PNDEL notes that production and productivity are still constrained by issues of livestock feed, health, breeding, water access, and market linkages. Livestock in the Sahelian and northern Sudanese zone face particular feed quantity and quality deficit. Climate change impacts and drying conditions in the north since the 1970s are further driving pasture degradation. The PNDEL elaborated on these conditions noting that:

- despite the large number of water points nationally, those intended for pastorals are insufficient, and
- weak market linkages characterised by irregular supply and low product quality are related to a lack of commercial infrastructure (collection, storage, processing, transportation), low professionalization of actors, low public funding, weak sectoral planning capacity, and weak research and agriculture extension.



PNSR II and PS-PASP note the low growth rate of agricultural GDP from 2011-2015, averaging 1.8 percent a year, well below the PNSR target of 14.7 percent. The animal resources sub-sector achieved just 10 percent of its target over the five years. The PNSR II, PS-PASP, and other policies confirm the constraints noted by the SDR and PNDEL and further reference:

- difficulties of access to finance, inputs, land, and equipment,
- low adoption of new technologies along the value chain,
- weak intensification and productivity of production systems,
- weak market information system,
- low level of domestic consumption of processed products,
- high cost of standardisation of processed products,
- inconsistency between import and export policies, and
- insufficient implementation of the country's rather strong policy and legislative framework for the sector.

## **Transboundary policy impacts**

This section examines policy strategies for their possible unintended effects, positive or negative, on people living in other countries.

### **Regional cooperation**

Burkina Faso has one or more policies in each policy area (other than land and environment) that explicitly align with regional guidance or policy from the Economic Community of West African States (ECOWAS). ECOWAS, as well as WAEMU (West African Economic and Monetary Union), aim to influence and harmonise national policies in the region through various directives. Burkina Faso's alignment with regional and neighbouring country policies across development, livestock, agriculture, and climate policy areas provides a strong basis for regional cooperation. The National Policy for Sustainable Livestock Development (PNDEL), for example, is aligned with the ECOWAS Livestock Action Plan, 2011-2020; the NAP, 2014, is aligned with ECOWAS environment, forestry, and disaster risk prevention policies; and the PNDES is aligned with the ECOWAS Strategic Framework.

### **Transboundary mobility**

Burkina Faso has porous borders with its neighbours and cross border animal movement for grazing is common. PNDEL notes that movement of Burkina Faso's Sahelian livestock towards coastal areas with better pastoral potential may increase as the impacts of climate change and conflict increase in the Sahel. ECOWAS established the International Transhumance Certificate as a mechanism to monitor and manage livestock movements and health. Burkina Faso policy aligns with this ECOWAS mechanism but does not offer particular strategies to support cross border movement. Rather, the PNDEL notes that pastoralists continue to face harassment during cross-border movement. An FAO/ECOWAS (2012) assessment for West Africa demonstrates a wide range of challenges for cross-border livestock movement including discontinuity of transhumance corridors at borders and lack of disease control.

### **Other**

Burkina Faso policies include actions to improve the competitiveness of Burkinabe livestock products in international markets, improve disease control, and increase livestock water access. Each of these has potential for most likely fairly limited transboundary impacts including increased exports, restricted cross-border livestock movements, and reduced transboundary water flow respectively.

## **Policy integration of climate change and livestock**

Climate policies in Burkina Faso well-integrate the livestock sector and include numerous adaptation strategies that are coherent with agriculture, livestock, and development policies. Among agriculture, livestock, and development policies, there is clear recognition of climate risks broadly but limited direct linkages among climate risks and adaptation strategies. Policy attention to mitigation is very limited outside of the NDC. This section examines each policy area (climate, livestock and agriculture, development, and land and environment) for integration of livestock adaptation and mitigation and alignment with the SDGs and national development goals. Policies were scored for extent of integration of livestock adaptation and mitigation (Table 11). Higher scores designate more dedicated and detailed climate-related strategies for the livestock sector. The analysis for each policy area also examines the key actors in policy development, as described in the policy, and sources of finance. Where external actors were identified, these are included in brackets.

## External actors in policy development

Half of the policies reviewed list the involvement of external actors or their involvement is described in subsequent policies. There are no references to external involvement for the NDC, PNDEL, PS-PASP, Rural Land Tenure Law, or Environment Code. Among climate policies, the external actors listed are Japan, UNDP, Global Environment Facility (GEF), Global Water Partnership. Among agriculture policies, FAO and unnamed development partners are listed. The development policy also references unnamed development partners.

**Table 11. Burkina Faso policy integration of livestock sector adaptation and mitigation summary (scoring on a scale of 0 to 3).**

Burkina Faso	Livestock Adaptation score	Livestock Mitigation score
Climate Policy		
Climate Average	3	0.67
<b>NAPA, 2007</b>	3	0
<b>NAP, 2014</b>	3	0
<b>NDC, 2015</b>	3	2
Livestock & Agriculture Policy		
Livestock & Agriculture Average	2	0.75
<b>PNDEL, 2010-2025</b>	2	1
<b>SDR, 2016-2025</b>	1	1
<b>PNSR II, 2016-2020</b>	3	1
<b>Agro-Silvo-Pastoral Policy, 2017-2026</b>	2	0
Development Policy		
Development Average	2	1
<b>PNDES, 2016-2020</b>	2	1
Land & Environment Policy		
Land & Environment Average	0.5	0
<b>Rural Land Tenure Law, 2009</b>	0	0
<b>Environment Code, 2013</b>	1	0

## Climate policy

Burkina Faso's **NAPA, 2007**, identifies 12 priority adaptation actions related to water, agriculture, and forestry; four of the projects directly target the livestock sector on issues of pastoral information and early warning, water access, fodder supply and storage, and supporting/adjusting pastoral systems. NAP discusses the difficulty the country had in

implementing NAPA projects, however, three priority adaptation projects were developed and implemented. These projects were directed by the Permanent Secretariat of the National Council for Environment and Sustainable Development (SP/CONEDD) from 2009-2013 with support from the Least Developed Countries Fund (LDCF), Japan, UNDP, and the Danish Ministry of Foreign Affairs. The three inter-related projects focused on capacity building, integrating climate change into policies and programmes, and adaptation for human security.

Burkina Faso's **NAP, 2014**, is based on detailed vulnerability assessments for priority sectors including agriculture, livestock, and water. The plan includes a nationally focused adaptation plan and sector-specific adaptation plans. Building on experiences from the NAPA, the NAP aims to improve integration of adaptation and resilience into medium- and long-term planning and the likelihood of financing for adaptation action. The NAP proposed three livestock sector adaptation projects—a national pastoralism observatory to improve pastoralism related information, communications, and social relationships; livestock climate insurance; and the creation of three livestock production intensification areas to serve as a water and feed hub during dry periods. The NAP provides good detail on adaptation actions, implementation strategies, and a proposed performance assessment plan.

The country's **NDC, 2015**, integrates livestock in its adaptation and mitigation commitments and discusses sector relevant adaptation and mitigation co-benefits. The NDC uses a 2007 baseline for GHG emissions which includes measurement for enteric fermentation (noting it is the country's single largest source of emissions), manure use, and land use change and forestry. NDC actions in the livestock sector include efforts targeting adaptation (i.e. fodder production and storage) and adaptation with mitigation co-benefits (i.e. pastureland restoration, household biogas digesters, and animal production intensification zones). Broader actions such as improving hydro-meteorological information, using climate information in planning, and establishing early warning systems are also relevant for the sector. While the NDC highlights emissions from enteric fermentation, the mitigation strategies presented do not explicitly target these enteric fermentation emissions.

**Table 12. Burkina Faso climate policy summary.**

Burkina Faso Climate Policy	Overall policy goal	Policy objective(s), climate	Policy objective(s), livestock	SDGs and national development goals alignment	Key actors, policy development [external actors]	Finance sources
<b>NAPA, 2007</b>	To identify needs, activities, and urgent and immediate projects that can help communities cope with the adverse effects of climate change	Same as overall	No objectives but four projects with direct relevance to livestock	<p>Livestock Sector Adaptation 3 Mitigation 0</p> <p>Aligned with MDGs, previous national development strategy (Strategic Framework for Poverty Reduction), Strategy for Rural Development, Action Plan for Integrating Water Resources Management</p>	<p>Ministry of Environment SP/CONEDD</p> <p>[UNDP]</p>	No dedicated discussion; references to national budgets and technical and financial partners
<b>NAP, 2014</b>	To manage economic and social development more efficiently by implementing planning mechanisms and measures taking account of resilience and adaptation to climate change between now and 2050	Guide long-term adaptation to: protect growth pillars, ensure sustainable food and nutrition, preserve water resources and improve access to sanitation, protect persons and goods from extreme climate events and natural disasters, protect and improve natural ecosystems, and protect and improve public health	To ensure sustainable food and nutrition security	<p>Livestock Sector Adaptation 3 Mitigation 0</p> <p>Aligned with UNFCCC, ECOWAS and other regional policies, The previous national development strategy (SCADD), Burkina 2025, and National Sustainable Development Policy</p>	<p>Multidisciplinary team of experts</p> <p>[Japan, UNDP, GEF, Global Water Partnership]</p>	National budget, traditional or emerging bilateral and multilateral partners, international foundations, private sector, NGOs and NGO networks, etc.
<b>NDC, 2015</b>	To reduce greenhouse gas emissions and to reduce the vulnerability of natural and human systems to the effect of current or expected climate changes	Same as overall	Includes actions but not objectives	<p>Livestock Sector Adaptation 3 Mitigation 2</p> <p>Aligned with MDGs, UNFCCC, NAP, NAMA framework, National Sustainable Development Policy, Strategic Framework for Investment in Sustainable Land Management</p>	not present	Government (including Environmental Action Fund), bilateral and multilateral donors, private sector (about 50% of financing), GCF, Clean Development Mechanism (CDM)

## **Livestock and agriculture policy**

The **National Policy for Sustainable Livestock Development (PNDEL), 2010-2025**, (*Politique Nationale de Développement Durable de L'élevage*) is the country's policy and overall framework for sustainable livestock development. PNDEL aims to enhance the contribution of the livestock sector to national economic growth and food and nutrition security. The policy recognises climate risks to pasture degradation, animal feed and water availability, and sector productivity. PNDEL includes adaptation as a guiding principle referencing actions to raise climate change awareness, build adaptation capacity, and improve consideration of climate change in plans, programmes, and development projects. The policy does not explicitly integrate adaptation into other policy actions, however, and has just one mention of reducing sector emissions with no specified actions.

PNDEL's actions are organised around four strategic axes: (i) capacity building of sector actors; (ii) tenure security and sustainable management of pastoral resources; (iii) enhanced animal productivity and production; (iv) improved competitiveness and marketing of animal products. The objective of Axis 2 is to accelerate the transformation of extensive pastoral production systems towards intensive systems through sedentarisation and securing pastoral activities, spaces, and resources. This axis promotes zones of intensified production by developing improved management capacity and water access. The Action Plan and Investment Programme for the Livestock Sub-sector (PAPISE), 2010-2015, was the implementation framework for PNDEL, but an updated draft has not been validated as of this writing.

The **Strategy for Rural Development (SDR), 2016-2025**, (*Strategie de Développement Rural*) aims to contribute to food security and nutrition, strong economic growth, and poverty reduction. SDR highlights climate change resilience for the agro-silvo-pastoral sector as a guiding principle but lacks detailed discussion. The limited climate change discussion focuses on crops, irrigation, unspecified adaptation technologies, and sustainable land management. The strategy references developing adaptation and mitigation programmes but does not specify any other adaptation or mitigation actions although many strategies could build livestock resilience. Outside of the climate change discussion, livestock are well-integrated in the strategy. Strategy performance indicators for livestock focus on sector growth and

commercialisation including measures for value-added production, marketing and road infrastructure, and small and medium-sized enterprises (SMEs) as well as an indicator for land restoration. Activities include improving animal productivity, feed, and water access and strengthening legal and regulatory frameworks.

The **National Programme for the Rural Sector II (PNSR II), 2016-2020**, (*Deuxieme Programme National du Secteur Rural*) operationalises the SDR as well as the National Plan for Economic and Social Development (PNDES), and sector policies for agriculture (PS-PASP), environment and water, and research and innovation. As the national framework for rural interventions, the programme is well-aligned with national, regional, and international development and agriculture goals. PNSR II goes further than the SDR is addressing climate change. Axis 3 aims to sustainably “manage forest, wildlife, and pastoral resources in a context of climate change” through actions that focus on developing governance tools and capacity for sustainable development. The sub-programme on green economy and climate change aims to strengthen adaptation and mitigation action including through implementing the NAP and creating model eco-villages. Meanwhile, the sub-programme on sustainable management of pastoral resources focuses on livestock water access, veterinary services, crisis preparedness, and developing and securing pastoral areas, including through legal and regulatory frameworks. The sub-programme on securing pastoral resources includes actions to identify, map, and manage pastoral areas and migration routes. Other sub-programme actions for the livestock sector are aimed at sector growth and resilience. Actions to improve productivity and SLM could address mitigation although sector mitigation is not highlighted.

The **Sector Policy on Agro-Silvo-Pastoral Production (PS-PASP), 2017-2026**, (*Politique Sectorielle-Production Agro-Sylvo-Pastorale*) has three strategic axes: food and nutrition security and resilience of vulnerable populations; competitiveness and access to markets; and sustainable management of natural resources. It is operationalised by the current and forthcoming PNSR (above) and operational action plans for each sub-sector. The policy recognises climate risks and the third axis aims to create the conditions for achieving sustainable modes of production and consumption in the context of climate change. Additionally, the policy states that the Meteorological Directorate should provide information and guidance for sector production in the context of climate change and highlights the need for a national accredited entity to access climate finance. The policy

integrates livestock well across strategies, however, there is no reference to livestock emissions or livestock mitigation strategies.

While not reviewed here, Burkina Faso's Law on Pastoralism (LORP), 2002, designates several types of pastoral areas (including migration routes) and guarantees rights of access to water and crop residues. The law supports sustainable pasture management and development.



**Table 13. Burkina Faso livestock and agriculture policy summary.**

Burkina Faso Livestock & Agriculture Policy	Overall policy goal	Policy objective(s), climate	Policy objective(s), livestock	SDGs and national development goals alignment	Key actors, policy development [external actors]	Finance sources
<b>National Policy for Sustainable Livestock Development (PNDEL), 2010-2025</b>	To strengthen the contribution of livestock to the growth of the national economy and hence to the food and nutrition security, and the improvement of people's living conditions	(Guiding principle) Take into account the principles of adaptation to climate change	(i) Capacity building of sector actors; (ii) tenure security and sustainable management of pastoral resources; (iii) enhanced animal productivity and production; (iv) improved competitiveness and marketing of animal products	Livestock Sector Adaptation 2 Mitigation 1  Aligned with MDGs, ECOWAS Agriculture Policy, and previous development policy (Strategic Framework for Poverty Reduction)	Ministry of Animal Resources and Fisheries (MRAH)  [none specified]	State (national budget, investment funds, etc.), technical and financial partners, private sector, and beneficiaries themselves
<b>Strategie de Developpement Rural, (SDR), 2016-2025</b>	To contribute in a sustainable manner to food security and nutrition, strong economic growth, and poverty reduction	-To significantly reverse the trend of environmental degradation and the adverse effects of climate change; -To strengthen the resilience of vulnerable populations to food insecurity and nutrition and the adverse effects of climate change and shocks	-To sustainably increase the production and productivity of agro-silvo-pastoral, fish and wildlife sectors; -To improve the competitiveness of agro-silvo-pastoral, fish and wildlife sectors to ensure sustainable income for rural households	Livestock Sector Adaptation 1 Mitigation 1  Aligned with SDGs, Malabo Declaration/CAADP, WAEMU Agriculture Policy, ECOWAS Agricultural Policy, Burkina 2025, and previous development policy (SCADD)	Not specified  [unnamed technical and financial partners]	State government, local authorities, and territorial governments; development partners, private sector, civil society, NGOs, professional organisations, and beneficiaries

<b>Programme National du Secteur Rural II (PNSR II, 2016-2020)</b>	To ensure food and nutrition security through the sustainable development of productive, resilient, more market-oriented agro-silvo-pastoral, fisheries and wildlife sectors	(Axis 3) To sustainably manage forest, wildlife and pastoral resources in a context of climate change and promoting the green economy	(i) Reduce the number of people vulnerable to food and nutrition insecurity; (ii) increasing rural sector contribution to the national economy; (iii) reduce rural poverty; (iv) change of modes of production and consumption towards sustainable development	<p>Livestock Sector Adaptation 3 Mitigation 1</p> <p>Aligned with SDGs, ECOWAS Agriculture Policy, Malabo Declaration/CAADP+10, African Regional Nutrition Strategy, SDR, PNDES, Burkina 2025</p>	<p>PNSR II National Technical Formulation Team</p> <p>[FAO]</p>	~CFAF 3,620 billion (2016-2020) representing 23.5% of PNDES budget; state, development partners, private sector, and PPPs
<b>Policy on Agro-Silvo-Pastoral Production (PS-PASP), 2017-2026</b>	To develop a productive agro-silvo-pastoral production sector that provides food security, is more market-oriented, and creates decent jobs based on sustainable production and consumption patterns.	Axis 3, Sustainable natural resources management, aims to create the conditions for achieving sustainable modes of production and consumption in a context of climate change	To create a secure and supportive environment for sustainable livestock production	<p>Livestock Sector Adaptation 2 Mitigation 0</p> <p>Aligned with SDGs, ECOWAS agricultural policy, African Union Agenda 2063, Malabo Declaration/CAADP+10, and PNDES</p>	<p>Ministry of Agriculture; Ministry of Animal Resources and Fisheries; Ministry of Environment, Green Economy, and Climate Change; Ministry of Water and Sanitation</p> <p>[none specified]</p>	State, development partners, local authorities, and private sector

## Development policy

The **National Economic and Social Development Plan (PNDES), 2016-2020**, (*Plan National de Développement Économique et Social*) is Burkina Faso's overall economic and social development strategy and the successor to the 2010-2015 Strategy for Accelerated Growth and Sustainable Development (SCADD). The plan's third strategic objective highlights agriculture as a main lever for economic structural transformation targeting a more productive, sustainable, and market-oriented agro-silvo-pastoral sector. PNDES states that climate change is a key risk to the country's livestock sector and overall development and explicitly aligns with the SDG target for strengthening resilience and adaptative capacity. The policy includes an expected outcome for strengthening adaptation and mitigation capacity and aims to reduce emissions, build capacity for climate resilience, promote sustainable patterns of consumption and production, and improve environmental governance although it provides little detail. Related indicators include policy integration of sustainable development, creation of eco-villages, and quantity of carbon sequestered. Regarding livestock, PNDES highlights intensifying production, increasing feed availability, and improved extension among other activities.

The National Policy on Sustainable Development (PNDD), 2013, aims to define the overall framework for sustainable development in Burkina Faso. The policy does not define specific climate or livestock strategies or actions and is thus not fully reviewed here. The policy does, however, clearly recognise climate change as a critical threat to sustainable development and particularly for agriculture and livestock.

**Table 14. Burkina Faso development policy summary.**

Burkina Faso Development Policy	Overall policy goal	Policy objective(s), climate	Policy objective(s), livestock	SDGs and national development goals alignment	Key actors, policy development [external actors]	Finance sources
<b>Plan national de développement Economique et social (PNDES), 2016-2020</b>	To structurally transform the Burkinabe economy to achieve strong, sustainable, resilient, and inclusive growth; create decent employment for all; and improve social wellbeing	(Expected outcome) Capacities of mitigation and adaptation to harmful effects of climate change are strengthened	To sustainably develop agro-silvo-pastoral, fauna and fishing sector that is more productive, resilient, and market-oriented	Livestock Sector Adaptation 2 Mitigation 1  Aligned with SDGs, African Union Agenda 2063, ECOWAS Strategic Framework, Burkina 2025	Ministry of the Economy, Finance and Development  [unnamed development partners]	15,395.4 billion CFA francs; state budgets (64%), development partners, and private sector

## **Land and environment policy**

The land and environment laws reviewed provide little guidance for livestock adaptation and mitigation. The Rural Land Law does not reference climate change and the Environmental Code does not reference livestock. Each has the potential to contribute to sector resilience, mainly through measures related to sustainable natural resource management.

The Rural Land Law, 2009, (Droit Foncier Rural) guides the rural land tenure regime and was adopted as a component of the country's Agrarian and Land Reorganisation (RAF), in 2012. In a shift from previous policy, the Rural Land Law recognises customary land rights and provides legal mechanisms for formalizing individual and collective use rights. The law further aims to ensure equitable access to rural land; promote investments in the agro-silvo-pastoral sector; reduce poverty in rural areas; promote sustainable natural resource management; and address land conflicts. The law institutes local land charters (participatory processes facilitated by the state) as the institutional mechanism for determining ownership, tenure, and access to land including pasture resources. The law includes pastoralists as a vulnerable group that should be supported by local land charters. Article 61 designates pastures and livestock routes as unavailable for cultivation, however, there is concern that the law does not offer adequate protection for inter-municipality livestock migration routes (Gonin and Gautier 2015). The law does not reference climate change although its objectives related to increasing pastoral productivity and sustainable natural resource management could support sector resilience and mitigation.

The Environmental Code, adopted in 1994 and revised most recently in 2013, (Code de L'Environnement) is the country's framework environmental law. The law states that the government is committed to preserving biodiversity, valuing natural resources, and strengthening the natural resource base and to these ends, aims to take action against the adverse effects of climate change. Specific actions are not well-elaborated although there is discussion of sustainable natural resource management, addressing desertification, and environmental restoration which could have relevance to climate resilience and livestock. The code does not refer to livestock and its discussion of agriculture is mainly as a threat to the natural environment.

**Table 15. Burkina Faso land and environment policy summary.**

Burkina Faso Land & Environment Policy	Overall policy goal	Policy objective(s), climate	Policy objective(s), livestock	SDGs and national development goals alignment	Key actors, policy development [external actors]	Finance sources
<b>Rural Land Tenure Law, 2009</b>	To determine the property and land tenure system applicable to rural lands and the principle of land tenure security of all the rural land stakeholders	not present	To promote investments and increase productivity in the agro-silvo-pastoral sector and reduce poverty in rural areas; promote sustainable natural resource management	Livestock Sector Adaptation 0 Mitigation 0  Aligned with the Constitution	National Assembly	not present
<b>Environment Code, Law No. 6-2013</b>	To protect living beings from harm and risks that hinder or endanger their existence as a result of environmental degradation, and to improve their living conditions	(Article 17) To take action against the adverse effects of climate change in order to preserve biodiversity and natural resources and strengthen the resource base.	To ensure sustainable natural resource management and environmental restoration	Livestock Sector Adaptation 1 Mitigation 0  Aligned with the Constitution	National Assembly	not present

# **Niger findings**

## **Introduction**

Niger is one of the world's hottest and driest countries. High rainfall variability and scarce water resources consistently impact the livestock sector and climate shocks affect household incomes and national economic growth. Climate change trends are leading to increasing temperatures, evaporation rates, and heavy rainfall events and potentially increased rainfall variability that influence drought and flood occurrence (USAID 2017b).

Niger has been actively engaged in climate change initiatives and mainstreaming and shown the political will to address climate change. The country signed and ratified the UNFCCC in 1992 and 1995 respectively, the Kyoto Protocol, 1996 and 2004 respectively, and the Paris Agreement, both in 2016. The country has submitted three national communications to the UNFCCC, most recently in 2016. The country's NDC notes that Niger has been working to address climate variability over the last three decades.

Institutionally, Niger's National Council for Environment and Sustainable Development (CNEDD), established in 1996, and the associated Technical Commission on Climate Change and Variability (CNCVC), established in 1997, are the key coordinating bodies for climate change. The Technical Commission includes five thematic working groups with one dedicated to agriculture and livestock. CNEDD houses the National Programme for Environment and Sustainable Development (PNEDD) composed of six sub-programmes one of which is "climate change and variability." The National Climate Change Policy (PNCC) notes that CNEDD is responsible for (i) ensuring integration of climate change into development policies, strategies, and programmes; (ii) mobilising financial resources for implementing climate change activities; and (iii) ensuring climate governance. Niger's Ministry of Livestock was created in 2011 when the previously Ministry of Agriculture and Livestock was separated into two distinct entities.

## **Policy summary**

Niger has an active and coherent environment with recently elaborated policies and, within policies, consistent detailing of their alignment with other policies. Livestock and climate change are well-integrated across policy areas, although the emphasis is clearly on

adaptation over mitigation. This strong integration is likely motivated by the country's prominent livestock sector and history with climate risk. The country's long-term development strategy, Niger 2035, details the history of drought in the country and discusses instability in the agricultural sector that is increasingly linked to climate risks such as drought, floods, and bushfires. Niger's history with climate variability is demonstrated most clearly by the droughts of the 1970s and 80s and more recently in 2000, 2004, 2009, and 2011 which have led to dramatic livestock losses and subsequent impoverishment, sedentarisation, and migration. The country's policies reflect this experience through clear recognition of climate risk to livestock and strong coherency for adaptation action across the policies reviewed.

The four dedicated climate change policies begin with the NAPA in 2006 and continue through to the NDC in 2015. The government also launched a NAP process in 2014 which is still underway. The NAP process is aligned with the country's prominent agriculture and development policies—the Nigeriens Nourish Nigeriens Initiative (3N Initiative) and the national Economic and Social Development Plan (PDES), 2017-2021. In turn, the 3N Initiative and PDES each cite their alignment with the NDC.

The NDC is implemented through the Strategic Framework for Sustainable Land Management, (CS-GDT), 2015-2029, among other efforts. The CS-GDT is oriented towards adaptation but does include “rate of carbon sequestration” as an indicator. The strategy integrates livestock noting that pastoralists are a key stakeholder in sustainable land management which in turn is imperative for sustainable livestock sector development. Most of the strategy's measures, including for climate, are broadly formulated, which limits the number of livestock specific strategies.

Agriculture and development policies offer clear examples of climate and livestock integration. One of the 3N Initiative's five policy axes focuses on climate resilience. The 3N Initiative has been credited with notable achievements during its initial 2011-2015 phase and is now implementing a second phase. The country's Strategy for Sustainable Livestock Development (SDDEL) includes addressing climate change adaptation and mitigation as one of its four guiding principles and climate as a key risk to its implementation. In terms of development policy, the PDES is the first five-year implementation plan for Niger 2035 (also



known as the Sustainable Development and Inclusive Growth Strategy (SDCCI)) and well-integrates climate and livestock. PDES recognises climate change as a key risk to development and includes adaptation programmes, disaster response plans, and multi-sector programmes to reduce food and nutrition insecurity.

In terms of mitigation, only climate policies specifically recognise livestock emissions although other policies make broad calls for mitigation action. The NDC and National Climate Change Policy (PNCC), 2013, note that agriculture accounts for about 35 percent of national emissions with most agricultural emissions from enteric fermentation (60 percent) and manure management (39 percent).

Policies cite a range of disabling conditions for livestock sector development and resilience. In addition to climate risk (and often linked to it), policies cite constraints related to disease prevalence, lack of reliable access to feed and water, lack of funding and promotion of veterinary research, and a weak institutional and financial environment for the sector. Policies reference enabling conditions related to the prominence of the livestock sector nationally, increasing demand for livestock products particularly in Nigeria, and an improved production environment resulting from the achievements of the first phase of the 3N Initiative and numerous adaptation initiatives supported by bilateral and multilateral entities.

## **Niger climate-livestock policy opportunities for engagement summary**

### **Strongest synergies across policies:**

- There is strong integration of climate change and livestock across policy areas creating important opportunities, particularly for livestock adaptation action. There is clear coherence around improving sustainable land and natural resource management; it is the most commonly cited adaptation and mitigation strategy across the policies reviewed.
- Pastoral mobility is consistently highlighted as critical for sector adaptation and overall resilience with well-developed strategies across policy areas.

#### Key gaps:

- There is **no recognition of livestock sector emissions outside of climate policies**. While across policy areas there are broad calls for mitigation, the lack of more detailed mitigation strategies could lead to missed opportunities for adaptation and mitigation co-benefits.
- The NDC is the only policy to reference climate smart agriculture.

#### Potential conflicts:

- The careful alignment of successive policies in Niger means that policies are rarely in conflict. The more apparent conflict is when **a lack of implementation leads to failure in meeting objectives**. This appears to be at least partially the case with support for pastoral mobility which continues to suffer from the encroachment of crop cultivation despite the robust policy environment supporting pastoralists.

### Adaptation synergies and gaps

There is remarkable alignment in Niger across policy areas for livestock adaptation action. The more broadly targeted policies include somewhat fewer livestock adaptation measures, however, all policies cite the country's climate change vulnerability and the need for adaptation. Climate, agriculture, and livestock policies include fairly detailed livestock adaptation measures as does the country's five-year development plan, PDES, and Strategic Framework for Sustainable Land Management (CS-GDT).

The cited adaptation activities are mainly focused on protecting livestock production from the impacts of drought, drying, and the associated land degradation. Measures to improve sustainable land management, livestock feed and water access, early warning systems and DRR, and climate information are particularly linked to addressing this risk. In addition, with most production occurring in extensive systems, policies devote significant attention to protecting pastoral mobility (discussed below) as an adaptation strategy and for overall sector productivity and resilience.

There is fairly strong coherence for specific livestock adaptation strategies across policy areas although some areas give more emphasis to particular strategies. Climate change

policies, for example, tend to focus more on climate information and communication than other policy areas, however, this strategy is also referenced by the Rural Development Strategy (SDR) and Strategic Framework for Sustainable Land Management (CS-GDT). Livestock policies tend to focus a bit more on improving agriculture extension, however, this strategy is reinforced in climate and development policy areas.

In Niger, with livestock production so linked to climate conditions, policy strategies for sector growth and adaptation are particularly aligned. Policies prioritise measures for sector resilience and while value-added production, market opportunities, and commercialisation are highlighted, sector growth strategies are well balanced with those for resilience.

### **Extensive livestock production/pastoral mobility**

Across policy areas, there is strong recognition of the role of pastoral mobility for livestock sector resilience in Niger. There is also consistent recognition that cultivation encroachment into pastoral areas and corridors impacts sector resilience and leads to farmer-pastoralist conflict. Niger's Rural Code, including the 2010 Ordinance on Pastoralism, explicitly protects the country's pastoral areas from cultivation. Additionally, the Rural Code states that pastoralists cannot be denied access to surface water resources. The Rural Code, however, has not been effectively enforced in much of the country leading to diminishing pastoral areas and increasing conflicts (Hughes 2014).

The Strategy for Sustainable Livestock Development (SDDEL), 2013-2035, notes that pastoral mobility and water access is seriously threatened by expanding cultivation on numerous transhumance routes, despite government efforts. The strategy aims to further secure internal and cross-border pastoral mobility, a measure that is reinforced by numerous policies including the National Strategy and Action Plan for Climate Change and Variability (SNPA-CVC), SDR, and PDES.

### **Coherence among adaptation actions**

Improved **sustainable land management** is supported across the policies reviewed. Only the National Climate Change Policy (PNCC) does not include specific measures for sustainable land management; the policy does, however, promote a national framework climate action and mainstreaming climate change in development policies that ultimately supports this strategy. Policies call for a range of measures including soil and water conservation practices

and technologies, assisted natural restoration, seeding pastures, improved land use planning, avoiding overgrazing, and land restoration generally.

Strategies to **improve feed** include a focus on fodder quality and production, fodder storage and feed reserves, improving grazing areas through seeding palatable species, and establishing a supply of food supplements. There are specific measures such as identifying and delimiting fodder production sites, improving and introducing new fodder crop species, and establishing livestock feed banks. The Rural Code also establishes the right of pastoralists to graze livestock in crop areas after harvest.

Policies commonly include strategies to establish or **improve early warning systems** and/or **disaster risk reduction**. Policies address drought and flood risk through measures such as improving information for early warning systems; strengthening mechanisms for anticipating, managing, and coordinating responses to crises and disasters; improving communication among pastoralists, decentralised services, and central government; and establishing flood protection plans and infrastructure.

Strategies to **improve livestock health** focus on disease control through vaccination, disease surveillance, and improving veterinary services (including private services) as well as calls for improved feed and water access. Strategies to **improve water access** include improving knowledge, management, and protection of water resources; constructing and rehabilitating pastoral water points; and increasing access to groundwater (boreholes, wells). The 3N Initiative, for example, calls for establishing 4,700 pastoral wells and 350 pastoral pumping stations.

Policy strategies to **improve agriculture extension** include establishing and strengthening coordination of extension work among communities, producer organisations, municipal services, government ministries, and contractors. Cited extension activities focus on promoting skills related to fodder production and storage and monitoring animal health as well as disseminating appropriate technologies. There are also calls to improve the linkages between research and extension.

Strategies to improve adaptation-related **institutions and planning** aim to integrate climate adaptation and DRR in local, regional, and national planning including for Communal

Development Plans (PDC), the municipal level strategic development frameworks. There are also calls to harmonise regional and municipal planning related to climate change, promote pastoral planning for sustainable livestock development, and build planning capacity among rural producers and organisations.

Strategies related to **climate information and communication** focus on both strengthening the meteorological and climate data collection network (including with capacity and equipment for data collection, processing, and analyses) and improving awareness and use of climate information. Specific measures include strengthening climate modelling and forecasting tools and methodologies, facilitating researchers' access to climate information, producing agro-meteorological bulletins, and more broadly developing education and public awareness programmes on climate change.

Other adaptation strategies that are mentioned less frequently and/or less elaborated include improving livestock breeds, improving access to finance and/or insurance, and livelihood diversification. Two climate policies mention supporting and disseminating existing autonomous adaptation measures although these measures are not described.

**Table 16. Policy adaptation strategies: Niger summary.**

Policy	Adaptation strategies indicated, Niger							
	Improve SLM/ NRM	Improve feed	Early warning/ DRR	Improve livestock health	Improve water access	Improve ag extension	Improve institutions/ planning	Improve climate information/ communication
<b>Climate</b>								
<b>NAPA, 2006</b>	x	x	x	x	x	x	x	x
<b>National CC Policy, 2013</b>						x	x	x
<b>Strategy and Action for CC (SNPA-CVC), 2003, 2014</b>	x	x	x	x	x		x	x
<b>NDC, 2015<sup>3</sup></b>	x	x	x					
<b>Livestock &amp; Agriculture</b>								
<b>Livestock Strategy (SDDEL), 2013- 2035</b>	x	x	x	x	x	x	x	
<b>3N Initiative, 2016-2020</b>	x	x	x	x	x	x		
<b>Rural Development Strategy (SDR), 2006, &amp; Invest Plan, 2010</b>	x	x	x	x	x	x		x

<sup>3</sup> The NDC is the only document to reference CSA. It notes that CSA takes into account weather information, early warning, disaster risk management, and index-based insurance.

<b>Development</b>								
<b>Niger 2035 (SDDCI), 2017</b>	x							
<b>PDES, 2017- 2021</b>	x	x	x	x	x	x	x	
<b>Land &amp; Environment</b>								
<b>Rural Code, 2013</b>	x	x	x	x	x			
<b>SLM Strategy (CS-GDT), 2015-2029</b>	x	x	x				x	x
<b>TOTAL</b>	10	9	9	7	7	6	6	5

## Mitigation synergies and gaps

Niger's climate policies, other than the NAPA, each recognise the livestock sector's contribution to GHG emissions. The NDC gives the most thorough accounting noting that most agricultural emissions come from enteric fermentation (60 percent) and manure management (39 percent). None of the non-climate policies reference livestock sector emissions. Most policies, however, mention the broad need for mitigation action across sectors with the exception of the NAPA, SDR, and Niger 2035.

Mitigation actions, in general, are not highly prioritised in the policies reviewed. Niger's NDC, however, not only prioritises mitigation but specifies mitigation action in the agriculture sector (referencing livestock) and prioritises adaptation actions with mitigation co-benefits. It further highlights sustainable land management and land restoration (including for grazing land) as key mitigation activities. Across the policy areas, sustainable land management is the most commonly referenced mitigation action and is highly prioritised nationally for its importance to adaptation and sector productivity.

The NDC is the only policy reviewed that references climate smart agriculture. In general, there is limited attention to adaptation and mitigation co-benefits, although co-benefits are highlighted regarding sustainable land management. Policies do frequently reference the need to improve sector productivity, including through measures for animal feed, water access, and health, which offer further opportunities for adaptation mitigation co-benefits.

### Coherence among mitigation actions

**Sustainable land management**, and the associated carbon sequestration, is the most commonly cited mitigation (and adaptation) action. The NDC aims to scale sustainable land management practices over all agro-ecological areas to sequester carbon and increase household and ecosystem resilience. The 3N Initiative shares this same language. Specific NDC mitigation activities include restoring one million hectares of agricultural, forest and grazing land; assisted natural regeneration of 1.1 million ha; and planting of 750,000 ha with multi-use species, among other activities. The National Strategy and Action Plan for Climate Change and Variability (SNPA-CVC) also references assisted natural regeneration. The Strategic Framework for Sustainable Land Management (CS-GDT) lists the rate of carbon



sequestration as an indicator while other strategies make more general calls for sustainable land management.

Policy mitigation strategies for **promoting and scaling proven measures and technologies** and increasing **research and development and technology transfer** are general calls and not well-detailed in approach or topic area. **Biogas** would be one of these technologies and two policies reference promoting biogas in particular. The SNPA-CVC discusses **increasing the use of concentrated animal feed** to reduce forage intake and lower methane emissions.

Improving feed is another strategy that has strong overlap with policy cited adaptation measures and approaches could achieve co-benefits. While the NDC is the only policy to reference **CSA**, its focus on adaptation and mitigation co-benefits could prompt further consideration among future policies.

Table 17. Policy mitigation strategies: Niger summary.

Policy	Mitigation strategies indicated, Niger					
	SLM/ carbon sequestration	Promote/scale proven measures and technologies	Research & development/ technology transfer	Establish biogas	Improve feed	CSA
<b>Climate</b>						
<b>NAPA, 2006</b>						
<b>National CC Policy, 2013</b>		x	x			
<b>Strategy and Action for CC (SNPA-CVC), 2003, 2014</b>	x			x	x	
<b>NDC, 2015</b>	x		x			x
<b>Livestock &amp; Agriculture</b>						
<b>Livestock Strategy (SDDEL), 2013-2035</b>	x					
<b>3N Initiative, 2016-2020</b>	x	x				
<b>Rural Development Strategy (SDR), 2006, &amp; Invest Plan, 2010</b>						
<b>Development</b>						
<b>Niger 2035 (SDDCI), 2017</b>						
<b>PDES, 2017-2021</b>	x	x		x		
<b>Land &amp; Environment</b>						
<b>Rural Code, 2013</b>	x					
<b>SLM Strategy (CS-GDT), 2015-2029</b>	x					
<b>TOTAL</b>	7	3	2	2	1	1

## Enabling and disabling conditions

This discussion of enabling and disabling conditions for livestock sector development broadly is drawn directly from the policies reviewed. Many of these are relevant for livestock sector adaptation and mitigation although they are often framed in the context of sector growth and productivity rather than climate change.

### Disabling

Across the policies reviewed climate change is consistently recognised as a threat to the country's livestock production and is linked to other constraints such as livestock feed, water access, and health.

The climate change policies clearly discuss climate trends related to flood, drought, storms, and extreme temperatures and link these trends to impacts in the livestock sector. Noted livestock sector impacts include decreased livestock feed and water access, land degradation, and livestock mortality related to flood and drought. Niger 2035 details the history of drought in the country and discusses how the instability of the agricultural sector is increasingly related to climate risks such as drought, floods, and bushfires. The policy further discusses CNEDD's development of climate change scenarios as part of the African Adaptation Programme which found that heat, rainfall variability, and more intense rainfall events could result in lower forage production and reduced availability of livestock surface water points.

The Strategy for Sustainable Livestock Development (SDDEL), identifies four key factors inhibiting sector growth which are reiterated in numerous policies. These are disease prevalence, lack of reliable access to food and water, lack of funding and promotion of veterinary research, and a weak institutional and financial environment for the sector. SDDEL and other policies expand on some of these points:

- **Feed**— The country's grazing resources often face significant deficits related to rainfall variability and soil degradation. Between 2000 and 2015, the forage balance shows nine deficit years (Niger 2035). Lack of grazing resources leads pastoralists to move into protected areas, encroach on areas still under cultivation, cross borders, and destock herds. Almost all feed for large and small ruminants comes from natural pastures and

crop residues. Production of livestock feed is very limited and mainly intended for peri-urban production (fattening, milk, and poultry).

- **Water**— Lack of water in much of the country is exacerbated by silting of water bodies, the colonisation of surface water by invasive plants, and rainfall variability. Just over half of Nigerien villages have access to surface water points with disparities between regions; livestock water access is an essential use of 86 percent of these water points (PNCC).
- **Institutional and financial**— The livestock sector faces insufficient human resources, a weak research and extension system, and financing that is a fraction of what is devoted to crop agriculture despite livestock accounting for around 35 percent of agricultural GDP.

Policies also note constraints related to expanding cultivation that leads to further scarcity of grazing and water resources and the associated farmer-pastoralist conflicts. The National Climate Change Policy (PNCC) and Niger 2035 note that the area under cultivation doubled between 1960 and 1985 and the pace of this trend has continued leading to encroachment on pastoral areas and increased conflict. Niger 2035 notes that based on current trends, the totality of areas available for cultivation (15 million ha) will be cultivated by 2035 leading to further reductions in pasture, fodder, and water available for livestock.

Niger 2035 highlights that limited social services and infrastructure (e.g. transportation, marketing, energy, and information) in rural areas are perhaps the most severe constraints to rural development. In 2015, for example, more than 80 percent of the agricultural population had not completed primary school (Niger 2035). Policies further note constraints related to the country's remote location and challenging agro-climatic conditions, limited marketing of animal products, land degradation, and high population growth.

### **Enabling**

In terms of enabling conditions, the prominence of the sector itself is cited as enabling.

Nearly 87 percent of the active population is engaged in livestock production and livestock is the second-largest export after mineral resources. Niger has an estimated livestock population of 42.8 million head (animal unit equivalent), extensive pastoral areas, and a strong margin for improvement in production (Niger 2035). Policies also note that livestock

are an essential means of household savings and provide important fertilizer for crop agriculture. The potential for increasing demand to drive overall sector performance is also cited as enabling. Policies particularly reference increasing demand in neighbouring Nigeria where Lagos is projected to become one of the worlds' largest cities by 2025.

The PDES notes that 3N Initiative and other policy achievements during the 2012-2015 period, have led to an increase in annual national food production including in milk and meat. Some successes of the initial phase of the 3N Initiative, which has an objective to improve climate resilience, include:

- 218,219 ha of degraded land restored (83 percent of target),
- 88,656 km of firebreaks created,
- numerous integrated service platforms to support farmers and pastoralists established (e.g., training centres, microfinance, radios, vaccination, and wells),
- improved livestock feed nutritional quality and availability including 29 feed warehouses, 355 feed banks, 340 mills, 79 municipal supply centres established, and resources distributed to livestock holders including 105,534 tons of fodder, 105,176 multi-nutrient blocks, and 1,032 kg of fodder seed,
- 8.2 million animals vaccinated
- 120,000 small ruminants distributed amongst vulnerable groups,
- cross-border transhumance corridors developed, and
- amount of pasture areas and livestock water points increased (3N Initiative).

Numerous initiatives are or have supported adaptation in Niger. As described in Niger's NDC and elsewhere, these include:

- PANA Resilience/FEM/ACDI project (USD 7.0 million); activities include promoting the use of meteorological data and seeding degraded grazing areas,
- African Adaptation Programme (P2AA) with UNDP (USD 610,000); activities include an index-based insurance prototype and integrating adaptation in all key sectors and development processes,
- Climate Smart Agriculture Support Project financed by the World Bank (USD 111 million),

- Strategic Programme for Climate Resilience consisting of three projects (PAC-RC, PROMOVARE, and PDIPC) (USD 100 million), and
- Food Security Support Project in the Maradi region (PASADEM) (USD 31.7 million) addressing rural resilience.

## **Transboundary policy impacts**

This section examines policy strategies for their possible unintended effects, positive or negative, on people living in other countries.

### **Transboundary Mobility and Regional Cooperation**

Numerous policies recognise the transboundary nature of livestock movements in Niger. The Rural Code and Strategy for Sustainable Livestock Development (SDDEL), among other policies, aim to improve animal health including by regulating transboundary movements and improving immunisation coverage. Like Burkina Faso, Niger has embraced the ECOWAS International Transhumance Certificate as a mechanism to monitor and manage livestock movements and health, although it can be difficult for pastoralists to obtain. With disease control and transboundary mobility both critical to livestock adaptation, measures ideally balance these pursuits. Policies reviewed emphasise disease control and mobility but do not directly address potential trade-offs.

Niger's SDDEL notes that cross-border pastoral mobility is guided by the 1998 ECOWAS regulation of transhumance between member states and a Memorandum of Understanding (MoU) with Burkina Faso, 2003. The ECOWAS regulation specifies the conditions for the movement of animals between states including health measures. The MoU aims to prevent natural resource-related conflicts linked to pastoral mobility. It establishes a consultative framework on transboundary transhumance including establishing a consultative body composed of relevant actors from both states.

### **Trade**

The SDDEL and PDES, among other policies, aim to support and develop cross-border trade including through the development of a sectoral agricultural trade policy. These policies make mention of Nigeria's growing urban population and the opportunity for Niger to fulfil

the associated demand for animal products. These policies could increase animal products export, particularly to Nigeria, likely with mainly positive impacts given the growing demand.

## **Water**

Niger's Rural Code (section on Water Code, 2010) espouses the precautionary principle to water development, whereby the State defers implementation of measures that are likely to have a cross-border impact even if scientific research has not demonstrated a conclusive link. This approach should limit potential transboundary water impacts. The PDES, however, notes that there is a lack of strategies and appropriate tools for integrated management of cross-border resources including in the Niger Basin, Liptako, and Lake Chad. The National Climate Change Policy (PNCC) notes that Nigeria's dam building on tributaries to the Niger river has led to considerably reduced flow that is impacting Niger's water availability.

## **Policy integration of climate change and livestock**

Policies reviewed for Niger across policy areas well-integrate the livestock sector and include numerous adaptation strategies that are coherent with other policy areas. Among agriculture, livestock, and development policies, there are a range of adaptation strategies and among the more recent policies, a few mitigation strategies. This section examines each policy area (climate, livestock and agriculture, development, and land and environment) for the integration of livestock adaptation and mitigation and alignment with the SDGs and national development goals. Policies were scored for the extent of integration of livestock adaptation and mitigation (Table 18). Higher scores designate more dedicated and detailed climate-related strategies for the livestock sector. The analysis for each policy area also examines the key actors in policy development, as described in the policy, and sources of finance. Where external actors were identified, these are included in brackets.

### **External actors in policy development**

Just four of the 11 policies reviewed list external actors in policy development, although there may have been additional involvement from unlisted external actors. UNDP is the most commonly listed external actor and supported policies in the climate, agriculture, and development policy areas. Other external actors are GEF (climate) and EU (agriculture). There are no references to external involvement for the PNCC, NDC, SDDEL, 3N Initiative, Niger 2035, Rural Code, and Strategic Framework on Sustainable Land Management.

**Table 18. Niger policy integration of livestock sector adaptation and mitigation summary (scoring on a scale of 0 to 3).**

Niger	Livestock Adaptation score	Livestock Mitigation score
<b>Climate Policy</b>		
<b>Climate Average</b>	2.5	0.75
<b>Climate Policy</b>		
<b>NAPA, 2006</b>	3	0
<b>National Climate Change Policy, 2013</b>	2	1
<b>National Strategy and Action Plan for Climate Change and Variability (SNPA-CVC), 2014</b>	3	1
<b>NDC, 2015</b>	2	1
<b>Livestock &amp; Agriculture Policy</b>		
<b>Livestock &amp; Agriculture Average</b>	1.67	0.67
<b>Strategy for Rural Development Action Plan (SDR), 2006, and Investment Plan, 2010</b>	1	0
<b>3N Initiative, 2016-2020</b>	2	1
<b>Strategy for Sustainable Livestock Development (SDDEL), 2013-2035</b>	2	1
<b>Development Policy</b>		
<b>Development Average</b>	1.5	0.5
<b>Niger 2035 (SDDCI), 2017</b>	1	0
<b>PDES, 2017-2021</b>	2	1
<b>Land &amp; Environment Policy</b>		
<b>Land &amp; Environment Average</b>	2	1
<b>Rural Code, 2013</b>	2	1
<b>SLM Strategy (CS-GDT), 2015-2029</b>	2	1

### Climate policy

Niger's **NAPA**, 2006, identifies livestock as a key sector vulnerable to climate change noting that likely impacts include reduced livestock feed, water shortages, and desertification. The NAPA highlights the droughts of the late 1960s through the 1980s which caused losses of up to 50 percent of livestock. Ten of the 14 selected projects include a livestock focus including for fodder production, livestock feed banks, peri-urban livestock production, livestock water access, climate information services, and early warning systems.

Niger's **National Climate Change Policy** (PNCC), 2013, (*Politique Nationale en Matière et Changements Climatiques*) is the country's framework for coordinating adaptation and



mitigation interventions and mainstreaming climate change in development policies. The policy explicitly recognises livestock as a key sector vulnerable to climate change impacts particularly in terms of feed and water availability, animal health, and impacts on pastoral mobility which could lead to loss of livelihoods and increased farmer-herder conflicts. The policy also acknowledges livestock emissions and promotes research and development for relevant mitigation measures. Most policy strategies are broadly targeted across sectors through actions such as improving climate information services, building adaptive capacity, strengthening mitigation actions, research and development for climate action, and mainstreaming climate change into sectoral policies. Implementation of the PNCC is led by the National Council for Environment and Sustainable Development (CNEDD).

The **National Strategy and Action Plan for Climate Change and Variability** (SNPA-CVC), 2014, (*Strategie Nationale et du Plan d'Action en Matière de Changements et Variabilite Climatiques*) provides a detailed action plan for adaptation and mitigation across sectors. The strategy identifies livestock as highly vulnerable to climate change impacts as well as a significant contributor to national GHG emissions. The strategy details climate risks to the livestock sector from pasture degradation to sedentarisation of pastoralists to shifts in herd composition and more. SNPA-CVC proposes specific livestock adaptation measures as well as broader measures targeting climate information services, early warning systems, adaptation research, capacity building, and climate change mainstreaming across sectors. The strategy aims to both support extensive livestock production systems and promote intensive livestock production in smaller areas near urban centres. SNPA-CVC includes a detailed analysis of stakeholders and the policy's alignment with the PNCC, 3N Initiative, and PDES.

Niger's **NDC**, 2015, is based on a vision of climate smart agriculture and access to modern energy services for everyone. The NDC prioritises Agriculture, Forestry, and Other Land Use (AFOLU) for adaptation and mitigation action and explicitly references livestock. The NDC further prioritises adaptation actions with mitigation co-benefits and highlights sustainable land management and land restoration (including for grazing land) as key adaptation and mitigation activities. The NDC has a clear focus on climate smart agriculture which it defines as an approach that emphasises weather information, early warning systems, disaster risk management, and index insurance, although these strategies are not explicitly listed as adaptation or mitigation actions. The NDC highlights the large contribution of enteric

fermentation and manure management on national emissions. The mitigation commitments, however, focus on sustainable land management and grazing land restoration rather than more direct livestock interventions. The NDC notes that it is implemented through the country's Strategic Framework for Sustainable Land Management (CS-GDT), 2015-2029, among other efforts. It further notes that its adaptation options are closely aligned with those described in the PDES and other national climate, development, and environmental policy.

**Table19. Niger climate policy summary.**

Niger Climate Policy	Overall policy goal	Policy objective(s), climate	Policy objective(s), livestock	SDGs and national development goals alignment	Key actors, policy development [external actors]	Finance sources
<b>NAPA, 2006</b>	To contribute to the alleviation of the adverse effects of climate variability and changes on the most vulnerable populations with the prospect of a sustainable development	<ul style="list-style-type: none"> <li>- Build the adaptative capacities of climate vulnerable communities</li> <li>- Develop synergies between strategic frameworks related to adaptation</li> </ul>	(Livestock referenced in 10 of 14 selected projects)	Livestock Sector: Adaptation 3 Mitigation 0  Aligned with UNFCCC, Rural Development Strategy (SDR) and the Poverty Reduction Strategy (PRS)	CNEDD  [GEF, UNDP]	Government, development partners (including GEF and a range of existing projects), contributions for local governments and beneficiaries
<b>National Policy on Climate Change (PNCC), 2013</b>	To contribute to the sustainable development of the country by reducing the negative impacts of climate change	(i) Improve knowledge, promote research and development, produce and disseminate climate change information, (ii) strengthen adaptive capacity and resilience, (iii) strengthen mitigation and promote green jobs, (iv) mainstream climate change into national, regional and local planning, and (v) strengthen actor capacity	(Livestock is a target sector for all climate policy objectives.)	Livestock Sector: Adaptation 2 Mitigation 1  Aligned with UNFCCC, Kyoto Protocol, National Strategy on Climate Change and Variability (SNPA-CVC), national sectoral strategies	not present	National funds including through creating a National Climate Change Fund (FNCC); external funding; Clean Development Mechanism (CDM)

<b>National Strategy and Action Plan for Climate Change and Variability (SNPACVC), 2014</b>	To contribute to the fight against the harmful effects of climate change	To improve adaptation and resilience among vulnerable communities and sectors; improve mitigation action; build the capacity of all actors	(Livestock is a target sector for all climate policy objectives.)	Livestock Sector: Adaptation    3 Mitigation    1  Aligned with UNFCCC, PNCC, 3N initiative, and PDES	CNEDD  [UNDP]	Government, development partners, PPPs
<b>NDC, 2015</b>	To assure food security, combat poverty, and contribute to global GHG emissions reduction ... to assure the resilience of populations and ecosystems	To prioritise adaptation activities and activities with adaptation and mitigation co-benefits	not present	Livestock Sector: Adaptation    2 Mitigation    1  Aligned with Strategic Framework for SLM, PDES, Niger 2035, 3N Initiative, SNPA-CVC, National Policy on Climate Change (PNCC)	not present	USD8.7 billion with government budget covering 13%; remainder dependent on new sources of funding including climate finance, development partners, and private sector investment.

## **Livestock and agriculture policy**

Niger's **Nigériens Nourish Nigériens (3N Initiative)** (*L'Initiative 3N, Les Nigériens Nourrissent les Nigériens*) is the country's framework for sustainable agricultural development and food and nutrition security. The current (and second overall) Action Plan, 2016-2020, reflects lessons learned during the implementation of the initial plan from 2012-2015. The first phase of the 3N Initiative is credited with achieving improved food security and significant gains in national milk and meat production in addition to gains in the crop, fisheries, and forestry sectors. The 2016-2020 action plan, however, aims for "zero hunger" in Niger by 2021 through increased focus on integrated water management, agro-silvo-pastoral value chains, sustainable natural resource management, and reducing vulnerability to food insecurity. 3N recognises climate change as a key risk to its implementation and the third of five axes is to improve the resilience to climate change, crises, and disasters. The initiative aims to scale proven adaptation and mitigation technologies, scale sustainable land management practices with adaptation and mitigation co-benefits, and implement a range of resilience-building strategies. Livestock are well-integrated across the initiative's five axes with particular focus on livestock water access, value chains, and pasture and migration corridor management.

The **Strategy for Sustainable Livestock Development (SDDEL)**, 2013-2035, (*Strategie De Developpement Durable De L'elevage*) fulfils the SDR mandate to create a national livestock development policy and contributes directly to achieving the 3N Initiative and PDES objectives. The strategy is focused on developing Niger's livestock sector such that it contributes to addressing food and nutrition insecurity and improves socio-economic conditions. SDDEL addresses climate change adaptation and mitigation as one of its four guiding principles and includes climate as a key risk to its implementation. The strategy explicitly recognises the role of pastoral mobility in livestock sector adaptation and resilience and notes that extensive production systems have a modest carbon footprint. The strategy is organised around three axes of intervention in the sector—i) animal health; ii) increased, diversified, and value-added production; and iii) an enabling legal and institutional environment. The policy characterises eight livestock production systems ranging from semi-intensive to pure pastoral.

Niger's **Strategy for Rural Development Action Plan (SDR)**, 2006, and its 2010 Investment Plan (*Strategie de Developpement Rural, Plan D'Action*) were developed to operationalise the country's Poverty Reduction Strategy, 2002, (this strategy is now the PDES) in the rural sector. The SDR aims to achieve economic growth and stability through developing the agro-silvo-pastoral sectors and diversifying rural incomes with non-agricultural activities. The three axes are organised around economic growth, risk reduction/food security/natural resource management, and capacity building. The SDR programme areas address pastoral systems, local governance of natural resources, land restoration, and rural infrastructure among others. The investment plan, in particular, gives a detailed description of management for natural disasters and food crises. The SDR does not mainstream climate change but recognises climate risks within some of the programme descriptions. Livestock and pastoral systems are well integrated into the strategy. The Rural Code has been designated as an implementation tool for five of the strategy's 14 programmes.

**Table 20. Niger livestock and agriculture policy summary.**

Niger Livestock/Agriculture Policy	Overall policy goal	Policy objective(s), climate	Policy objective(s), livestock	SDGs and national development goals alignment	Key actors, policy development [external actors]	Finance sources
<b>Strategy for Rural Development Action Plan (SDR), 2006, and Investment Plan, 2010</b>	To achieve economic growth and medium and long-term economic stability term through developing agro-silvo-pastoral sectors and diversifying rural household income into non-agricultural activities	not present	Intensify and develop agro-silvo-pastoral productions	<p>Livestock Sector:</p> <p>Adaptation 1 Mitigation 0</p> <p>Aligned with MDGs (esp. poverty and environment), CAADP, ECOWAS Agricultural Policy, Poverty Reduction Strategy (now PDES), Rural Code</p>	<p>SDR Inter-ministerial Steering Committee (key actors: Ministries of Planning; Agriculture; Animal Resources; and Hydraulics, Environment, and Control Against Desertification)</p> <p>[assessment supported by UNDP and EU]</p>	CFAF 1922 billion (2006-2015); establishing thematic funds for various sub-sectors; notes the interest of specific bilateral and multilateral development partners for funding in each programme area
<b>Strategy for Sustainable Livestock Development (SDDEL), 2013-2035</b>	To sustainably develop livestock in order to contribute to improving food security, incomes, and resilience to crises and natural disasters	(Guiding principle) Take climate change (adaptation and mitigation) into account	To ensure the emergence of promising livestock production systems that can promote sustainable economic and ecological management of pastoral resources	<p>Livestock Sector:</p> <p>Adaptation 2 Mitigation 1</p> <p>Aligned with relevant ECOWAS agreements, PDES, 3N Initiative, and Niger 2035</p>	Ministry of Livestock	State, local authorities, development partners, private sector, beneficiaries; carbon credit initiatives

<b>Nigeriens Nourish Nigeriens (3N Initiative), 2016-2020</b>	<ul style="list-style-type: none"> <li>- Contribute to the long-term protection of Niger's populations from hunger and malnutrition and guarantee the conditions for income improvement and full participation in the national economy</li> <li>- Zero hunger in Niger</li> </ul>	<p>To improve the resilience of populations to climate change, crises, and disasters</p>	<p>To grow and diversify agro-silvo-pastoral and fisheries production</p>	<p>Livestock Sector: Adaptation    2 Mitigation    1</p> <p>Aligned with SDGs, CAADP, Agenda 2063, Niger 2035, PDES, Strategic Investment Framework on Sustainable Management of Lands (CSNI/TDM), Sustainable Development Strategy for Livestock, NDC, PNEDD</p>	<p>High Commission of the 3N Initiative (HC3N)</p>	<p>CFAF 1,546 billion; public (state budget, development assistance, etc.); private (bank loans, microfinance, community contributions, civil society, businesses, etc.); new financing (Investment Fund for Food and Nutrition Security (FISAN), PPPs)</p>
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## Development policy

**Niger 2035**, also called the **Sustainable Development and Inclusive Growth Strategy (SDDCI)**, 2017, (*Strategie De Developpement Durable et de Croissance Inclusive, Niger 2035*) fulfils the country's constitutional mandate that state-led economic and social development are guided by a strategic vision. Niger 2035 is intended to provide a framework for all government strategies and actions. The strategy explicitly recognises climate risk to national development and the livestock sector detailing climate trends and impacts. One of the six strategic pillars is "modernisation and revitalisation of the rural world," which includes a focus on modernising and restructuring the livestock sector, sustainable environmental and natural resource management, and massive investments in public goods. The strategy does not discuss emissions or mitigation for any sector. The strategy is implemented through the five-year economic and social development plans (PDES) (see next policy).

The **Economic and Social Development Plan (PDES)**, 2017-2021, (*Plan de Développement Economique et Social*) is the first five-year plan designed to implement Niger 2035 (SDCCI) and the SDGs. It is devoted to economic transformation and poverty eradication and well-integrates climate and livestock. A key objective of the plan is to reduce the poverty rate from 39.8 percent in 2016 to 31.3 percent in 2021. The plan recognises climate change as one of six key risks to development and aims to implement adaptation programmes, disaster response plans, and multi-sector programmes to reduce vulnerability to food and nutrition insecurity. Adaptation is highlighted as one of eleven policy programmes and as a component of Axis 5, "sustainable environmental management," which aims to create conditions that foster economic, social and cultural development. Livestock is highlighted in sub-programmes under the food security and sustainable agricultural development programme (Axis 3). The plan supports intensive livestock production in peri-urban areas including fattening, milk production, and poultry and extensive livestock production through protecting pastoral areas from cultivation. PDES also acknowledges the country's conflict over natural resources and includes a focus on sustainable land management and the prevention and management of rural land resource conflicts.

**Table 21. Niger development policy summary.**

Niger Development Policy	Overall policy goal	Policy objective(s), climate	Policy objective(s), livestock	SDGs and national development goals alignment	Key actors, policy development [external actors]	Finance sources
<b>Sustainable Development and Inclusion Growth Strategy (SDDCI), Niger 2035, 2017</b>	Build a well-governed and peaceful country and an emerging economy based on a fair sharing of the fruits of progress	not present	To restructure and modernise livestock rearing systems	Livestock Sector: Adaptation 1 Mitigation 0  Aligned with the constitution	Ministry of Planning	not present
<b>Economic and Social Development Plan (PDES), 2017-2021</b>	To contribute to building a peaceful, well-governed country with an emerging and sustainable economy, and a society based on the values of fairness and equity, sharing the fruits of progress	-To build resilience and capacity for mitigation and Adaptation -To promote a green economy	-Food security and sustainable agricultural development -Improving productivity and increasing the value-added of agro-silvo-pastoral and fisheries production - Restoration of livestock farming systems	Livestock Sector: Adaptation 2 Mitigation 1  Aligned with SDGs, Paris Agreement, African Union Agenda 2063, ECOWAS Vision 2020, Niger 2035, 3N Initiative, NDC	not present  [UNDP]	CFAF 13,735 billion (highest priority budget is CFAF 4,333 billion); government, development partners, private sector

## Land and environment policy

Niger's **Rural Code** (*Code Rural*) is a collection of texts beginning with the 1992 adoption of the guiding principles and followed by a series of sectoral laws, ordinances, and decrees each relating to aspects of the rural environment including land, environment, and agriculture. It is a designated tool for implementing the Rural Development Strategy, 2006, including the programmes related to pastoral development and local governance of natural resources. The Rural Code includes the 2010 Ordinance on Pastoralism, the 1998 Law on Management of the Environment, and the 2004 Livestock Framework Law among the many texts.

A critical part of the Rural Code is the 1961 Act that defines the northern limit for cultivation beyond which pastoralists have a collective use over all pastoral lands and cultivation is forbidden (exception for subsistence nomads). The Ordinance on Pastoralism, adopted in 2010, has been called a “major legal breakthrough” for pastoralists (Jamart, 2011). Key aspects of the ordinance include:

- pastoral mobility is recognised as a fundamental right guaranteed by the state and recognised as a sustainable and rational use of pastoral resources,
- there is no granting of private concessions in the pastoral zone (the zone beyond the north crop limit defined by the 1961 Act in the Rural Code) if it hinders pastoral mobility,
- all pastoral lands (the pastoral zone and corridors of passage and pasture areas in the crop zone) are classified in the public domain of the State protecting them from cultivation,
- in the event of a serious pasture crisis, pastoralists have the right to graze their herds in ranches and classified forests,
- the opening of rainfed fields in the crop zone to pastoral use after harvest (end of the rainy season), and
- an end to the previous ban on pastoral use of ranches and forest reserves during crises when pastureland is scarce.

The Rural Code also states that water is a State resource available for all and pastoralists cannot be denied access to a water point.

Relevant to climate change, the 1998 Law on Management of the Environment includes principles of anticipating and preventing environmental damage and employing the precautionary principle in adopting measures to prevent environmental harm. The law states that the ministry in charge of the environment will lead efforts to ensure the application of international conventions on the protection of the atmosphere and the “fight against global warming.” While there is no additional detail on climate change adaptation or mitigation, the Rural Code as a whole supports livestock sector resilience. The Ordinance on Pastoralism does make one reference to climate change stating that it is a factor in the future determination of any changes to the northern limit for cultivation.

The broad aim of Niger’s **Strategic Framework for Sustainable Land Management (CS-GDT)**, 2015-2029, (*Cadre Strategique de la Gestion Durable des Terres*) is to improve sustainable land management to address food insecurity, climate resilience, and economic performance. The strategic framework is one of the implementing tools for Niger’s NDC, NAPA, and 3N Initiative and recognises climate change as a key driver of land degradation. The strategy is oriented towards adaptation but does include the rate of carbon sequestration as an indicator for the measure to “develop and institutionalise tools for integrating climate change into long-term planning.” While not specific to livestock, the measure and indicator are certainly relevant to the sector. The strategy integrates livestock, noting that pastoralists are a key stakeholder and that sustainable land management is imperative for sustainable sector development. There is just one livestock specific measure, however, dedicated to increasing feed reserves. Most of the strategy’s measures, including for climate, are broad and address multiple sectors. Climate-related measures primarily focus on integrating climate change into planning, climate change communication, disaster risk reduction, and research on adaptation options.

**Table 22. Niger land and environment policy summary.**

Niger Land and Environment Policy	Overall policy goal	Policy objective(s), climate	Policy objective(s), livestock	SDGs and national development goals alignment	Key actors, policy development [external actors]	Finance sources
<b>Rural Code, 2013, including Pastoral Ordinance, 2010, Law on Environment, 1998, and Livestock Framework Law, 2004</b>	To establish the legal framework for agricultural, forestry, and pastoral activities in the context of territory and the protection of the environment and human population	To ensure the application of international conventions on the protection of the atmosphere and the “fight against global warming”	To establish mobility as a fundamental right of pastoralists	<p>Livestock Sector: Adaptation 2 Mitigation 1</p> <p>Aligns with international treaties, conventions, agreements, and standards, national development strategy, rural development strategy, and national sectoral policies</p>	National Rural Code Committee and various ministries	not present
<b>Strategic Framework for Sustainable Land Management (CS-GDT), 2015-2029</b>	To prioritise, plan and guide the implementation of current and future SLM investments by the public and private sectors with all actors from local to national level	<p>- Vulnerable rural populations have appropriate techniques and technologies for climate change adaptation and resilience</p> <p>- Climate risk is integrated into planning processes at all levels</p>	To ensure the sustainability of the productive base of agriculture through sustainable management of ecosystems	<p>Livestock Sector: Adaptation 2 Mitigation 1</p> <p>Aligns with MDGs, UNFCCC, NEPAD Environmental Action Plan, CAADP, 3N, Niger 2035, PDES, and NAPA</p>	Ministry of the Environment	Domestic and external funding: aims to diversify national and development partner funding including through amending the state budget system, PPPs, climate finance, adaptation programmes, GEF Small Grants Programme

# Rwanda findings

## Introduction

Rwanda is among the world's fastest growing economies and has bold aspirations for sustaining high rates of economic growth (WB 2019). As a major employer and component of GDP, agriculture is a key part of this agenda. Rising temperatures and rainfall variability are increasingly impacting agriculture, particularly in the country's drier eastern region (USAID 2019).

Rwanda has demonstrated high level leadership and support for climate action including from the president and Ministry of Finance and Economic Planning (Mogelgaard et al. 2018). Rwanda ratified the UNFCCC in 1998 and the Kyoto Protocol in 2003 and it was among the first countries to sign and ratify the Paris Agreement. Rwanda's NDC is built on the country's overarching climate change policy—Green Growth and Climate Resilience: National Climate Change and Low Carbon Development Strategy (GGCRS), 2011. The country has submitted three National Communications to the UNFCCC in 2005, 2012, and 2018. Rwanda's National Environment and Climate Change Policy, 2019, states that 'green' and 'growth' are not separable. While the Constitution of 2003, revised in 2015, does not mention climate change, it asserts through articles 22 and 53 that everyone has a right to a clean environment and a duty to protect, safeguard, and promote the environment.

In 2009, Rwanda established a climate change unit within the Rwanda Environment Management Authority (REMA) to spearhead climate action including mainstreaming climate change in development and sectoral plans. REMA's mandate includes working with ministries and private sector actors to coordinate climate action, however, coordination has been hindered by agencies operating within silo-ed environments (Heermans et al. 2015). REMA, however, led cross-ministerial support to implement a key GGCRS policy action to establish the Fund for Environment and Climate Change (FONERWA) in 2011. FONERWA now funds sector-specific adaptation and mitigation and provides support for implementing cross-sectoral plans and environmental and climate assessments.

## Policy summary

With agriculture as a priority sector for development, the Government of Rwanda (GoR) has led policy and investment efforts to expand the livestock sector, improve productivity, promote sustainable land management, and develop value-added production and markets. And recognising climate change as a threat to agricultural production, numerous national and sector development plans include climate-related objectives. Policy recognition of specific climate risks in the livestock sector and discussion of livestock adaptation and mitigation targets, however, are limited. Many of the policies reviewed cite climate change as mainstreamed or as a cross-cutting theme but rarely include detailed or comprehensive livestock adaptation or mitigation strategies. Mitigation strategies are particularly nascent or absent.

The country's agricultural approach is guided by the National Agriculture Policy, 2018, and its implementation plan, the Strategic Plan for Agriculture Transformation, Phase 4 (PSTA 4), 2018-2024. PSTA 4 provides the country's most holistic approach to livestock adaptation and, as the sector strategic plan for the National Strategy for Transformation (NST1), it is well-positioned to guide interventions. PSTA 4 also has synergies with adaptation strategies across all policy areas. The strategy recognises climate change risks including drought impacts to livestock with particular impacts for the dairy sub-sector, subsistence farmers, and the east and parts of the south of the country. One the PSTA 4 impact areas is "increased resilience and sustainability" which highlights mainstreaming climate smart practices in all activities. The strategy does not, however, well-detail specific livestock adaptation strategies and includes no mitigation strategies. Outside of PSTA 4, other agriculture policies (except the National Dairy Strategy) reference, but do not detail, climate risk. Rwanda's Livestock Master Plan (LMP) offers detailed strategies for sector development but does not integrate climate change.

Climate policies, in turn, do not well-integrate livestock issues with the exception of livestock adaptation in the NAPA and, to a lesser extent, the Green Growth and Climate Resilience Strategy (GGCRS), 2011. Of climate policies, the NDC has the weakest integration of livestock adaptation and mitigation. Across policy areas, however, there is consistent recognition of Rwanda's limited land base and the threat of land degradation to agricultural performance mainly through erosion and landslides resulting from heavy rain events. This motivation to

address land degradation can be directly translated to agriculture and livestock adaptation efforts if climate change information is adequately utilised.

Development policy explicitly emphasises the agriculture sector but does not comprehensively address livestock adaptation and gives no attention to livestock mitigation.<sup>4</sup> The National Strategy for Transformation (NST1), 2017-2024 includes a specific objective of “increasing agriculture and livestock quality, productivity and production” under the economic transformation pillar. The well-known Girinka programme (one cow programme), which provides crossbred cows to poor farmers, continues to be a key programme to support livestock sector growth and poverty reduction. These efforts, combined with increased demand, led to agriculture sector growth averaging 5.3 percent per year from 2000 to 2016 and dramatically increased production of livestock products (i.e. meat, milk, eggs) (PSTA 4 2017). While it does not comprehensively address climate and livestock, NST1 designates PSTA 4 as the agriculture sector strategic plan.

While across sectors the policies reviewed give very little attention to livestock emissions and mitigation, GoR estimates that emissions from enteric fermentation and manure management in CO<sub>2</sub> have increased from 980 to 1,284 and 489 to 673 respectively from 2006 to 2015 (GoR 2018). GoR expects total livestock sector emissions to increase to 3,780 CO<sub>2</sub> equivalent by 2050 under a BAU scenario (GoR 2018). Rwanda’s overall emissions are relatively low, however, with agriculture constituting 45.6 percent of national emissions and 84 percent agricultural emissions coming from the livestock sector (WB and CIAT 2015), a lack of attention to livestock mitigation means neglecting a substantial source of national emissions.

Additional policies with relevance to the livestock sector not reviewed in this analysis include the National Agriculture Extension Strategy, National Food and Nutrition Policy, and National Investment Policy.

<sup>4</sup> Vision 2050 was not released at the time of this analysis and could offer more direction for livestock adaption and mitigation.



## Rwanda climate-livestock policy opportunities for engagement summary

### Strongest synergies across policies:

- Rwanda's **consistent focus on livestock sector growth** in agriculture, livestock, and development policies, emphasises productivity, value-added production, and developing market systems.
- There is strong coherence around the most consistently highlighted adaptation strategies— **water access, sustainable land management, and agriculture intensification/improved productivity**. While livestock mitigation discussions are less elaborated, the mitigation focus on improved feed and higher productivity breeds directly links to these adaptation strategies.
- In the most recent development and agriculture policies, there is a push for **increased private sector engagement** through public-private partnerships (NST1) and by government becoming a market enabler rather than a market actor (PSTA 4). This approach envisions the government focusing more on enabling policy and public goods.

### Key gaps:

- **Livestock mitigation strategies are underrepresented** across policy areas given the sector's relatively high contribution to national emissions. There is no livestock mitigation commitment in the NDC (although livestock emissions reduction is mentioned as a co-benefit of the pest management adaptation strategy).
- While many policies assert that climate change is mainstreamed or a cross-cutting theme, **livestock adaptation and mitigation actions are often poorly detailed** and there is limited discussion of adaptation and mitigation co-benefits. Numerous strategies have the potential to achieve livestock adaptation and mitigation objectives (e.g., feed and breeding interventions) but do not explicitly integrate climate considerations.
- **Efforts to integrate certain strategies for their value in livestock adaptation and mitigation are minimal or absent** including adaptation options such as livestock insurance and targeted agriculture extension and mitigation options such as improved manure management and soil and rangeland management for carbon sequestration.
- Discussion of **adaptation and mitigation in extensive livestock systems is lacking** including insufficient attention to protecting rangelands from encroachment and

degradation and improving feeding and water access in pastoral production. The focus on agricultural intensification risks leaving behind those engaged in extensive production.

#### **Potential conflicts:**

- Rwanda's focus on increasing private sector engagement in agriculture is key to sector growth and has strong potential to advance livestock adaptation strategies. However, there is **limited guidance for private sector engagement related to livestock adaptation** (as well as mitigation) potentially putting more short-term growth-oriented activities in conflict with longer-term sector resilience objectives.
- The discussion of **higher productivity breeds** as a mitigation and sector growth strategy in agriculture and livestock policies does not include mention of traits for climate resilience. If the focus on higher productivity breeds is not combined with attention to animal resilience, productivity and mitigation objectives could conflict with stated climate resilience objectives.

#### **Adaptation synergies and gaps**

As a densely populated country with a large portion of the population dependent on small agricultural landholdings, GoR is focused on increased agriculture production and intensification as well as sustainable land management. Across climate, livestock, agriculture, and development policies, there is consistent discussion of agricultural intensification and strategies that address erosion, landslides, flooding, and land degradation. Agriculture intensification is often cited as an action to support adaptation in addition to promoting sector growth.

In terms of climate policies, “sustainable intensification of agriculture” is the first programme of action in both the GGCRS, 2011, and the NDC, 2015 (under adaptation). In agriculture policy, “resilience and sustainable intensification” is pillar two of the National Agriculture Policy, 2017, and PSTA 4 highlights the need to build resilience to the changing climate through increasing productivity and supporting sustainable and resilient production systems. PSTA 4 also highlights scaling the Sustainable Intensification Decision Support

System (SIDESS) planning tool for livestock to the national level. The National Dairy Strategy, 2013, and Livestock Master Plan (LMP), 2017, do not focus so much on intensification but rather emphasise animal and milk production and productivity. In development policy, Vision 2020, makes reference to agriculture intensification while NST1, 2017-2024, emphasises productivity.

PSTA 4, the implementation plan for the National Agriculture Policy, goes much further than the Agriculture Policy itself in mainstreaming climate change. Of the agriculture and livestock policies, PSTA 4 gives the most attention to climate change impacts and adaptation options and “seeks to ensure that all investments are climate smart.” PSTA 4 also seeks to align with the SDGs, including on climate action. PSTA 4 highlights adaptation actions including weather and climate information and early warning systems, climate smart agriculture, sustainable land management, animal breeding, and animal health.

There is some emphasis on further integrating livestock into agriculture systems (including in the National Land Policy). This effort is most apparent in the country’s Girinka programme that aims to give one cow to every poor family. The PSTA 4 and the National Agriculture Policy reference integrating livestock to improve soil fertility with livestock manure, while reducing the dependency on fertilizer imports. The LMP notes the success of the Girinka programme in transforming the dairy sub-sector.

Outside of PSTA 4, the policies reviewed often lack targeted adaptation strategies, measures, and corresponding monitoring and evaluation efforts. While many strategies have the potential to achieve adaptation outcomes, there is often insufficient attention to evaluating the climate risks to livestock and identifying suitable adaptation strategies. PSTA 4 is the only policy of those reviewed that elaborates CSA options although the National Agriculture Policy includes one reference to CSA. Some policies, including the NDC and GGCRS, reference agroecology techniques.

### **Extensive livestock production/pastoral mobility**

Pastoralists and extensive livestock production receive little attention in any policies reviewed although extensive production systems are present in parts of eastern Rwanda. This lack of attention could be leaving these systems more exposed to climate change impacts and missing mitigation opportunities. Of the references to extensive production, the

National Land Policy, 2004, notes that land planning should “help professional pastoralists to choose the right grazing system so as to facilitate the integration of livestock into the agro-silvo-pastoral system.” The National Agriculture Policy, 2017, notes that “traditional pastoralism is giving way to intensification by means of confined grazing (zero-grazing, cut-and-carry) in most areas of the country.” The PSTA 4 makes almost no reference to extensive production systems other than in a section on animal health where it states that “animal health services need to expand dramatically, especially in remote areas where pastoralists predominate.”

### **Coherence among adaptation actions**

Adaptation strategies for water and sustainable land management are the most commonly referenced across policy areas. These strategies are often discussed broadly for the agriculture sector and occasionally also reference livestock. **Water access** strategies for livestock (particularly in drought-prone areas) include small-scale water development such as irrigation, ponds, check dams, boreholes, rainwater harvesting, and construction communal watering sites as well as sustainable water management. **Sustainable land management** is frequently mentioned across policy areas both through general calls (including for rehabilitating degraded land, integrated watershed management, and soil and water conservation) and more specific strategies such as agroforestry (with the co-benefit of providing livestock feed) and over-sowing grazing lands with improved grasses and legumes.

**Support for agriculture intensification and/or livestock productivity** are present in all policies outside of land and environment starting with the NAPA in 2006. Climate and development policies tend to focus on intensification (the first listed strategy in both the GGCRS and NDC) while agriculture and livestock policies tend to focus on productivity, although the PSTA 4 highlights both terms. Intensification and productivity strategies include addressing animal feed deficits, health, breeding and genetics, and mainstreaming agro-ecological techniques. PSTA 4 also discusses shifting to higher value commodities such as poultry and pork. The LMP provides detailed poultry and pork value chain development roadmaps. Outside of the NAPA and land and environment policies, there is support across policies for diversifying incomes and promoting sector growth through **value-addition and market linkages**. Climate, agriculture, and development policies are closely aligned in calls for adding value through processing, expanding local markets, improving infrastructure to

facilitate market access (including processing and storage facilities and road networks) and fostering entrepreneurship.

There is also relatively strong alignment around adaptation actions that **improve feed** options. Actions include planting fodder grass and legume species under maize (this also serves as a pest management strategy); promoting fodder production on-farm and through land allocation and support to fodder cooperatives and investors; scaling up animal fodder storage and setting up fodder banks; and improving the use of available feed options (e.g. crop residues).

**Climate information and early warning systems** are common in climate policy and present in the National Agriculture Policy, PSTA 4, and the National Environment and Climate Change Policy. References are often not specific to livestock but noted as important for adaption or resilience across sectors. Cited strategies include improved data collection, processing, and interpretation for climate models; improved information for farming early warning; and promoting farmer use of weather and climate information and alerts. As the inclusion of specific adaptation strategies measures is rare across policies, it is notable that PSTA 4 includes an indicator for percentage of farmers receiving weather and climate information products and services.

Strategies to **improve livestock health** are mainly highlighted in agriculture policies but also mentioned in the NAPA and NST1. These strategies are linked to efforts to increase agriculture intensification and productivity. Actions include establishing veterinary facilities, enhancing veterinary coverage through private vets and PPPs, improve disease management, and support farmers in animal health efforts.

Other adaptation strategies mentioned less frequently include research on animal production systems/productivity, nutrition and genetic resources (PSTA 4, NST1), agriculture extension (only PSTA 4 connects extension explicitly to climate information and adaptation), and access to agriculture insurance and financing (National Agriculture Policy, PSTA 4, and NST 1 for finance only). There is some emphasis on livestock breeding and genetics with a focus on increasing productivity but less attention to the resilience characteristics of exotic and local breeds. CSA is only discussed in PSTA 4 and referenced once in the National Agriculture Policy.

**Table 23. Policy adaptation strategies: Rwanda summary.**

Policy documents (by focus)	Adaptation strategies indicated, Rwanda							
	CC is main-streamed or cross-cutting <sup>5</sup>	Water access	SLM/ Improve NRM	Support ag intensification/ livestock productivity	Support value-added/market linkages/ livelihood diversification	Improve feed	Improve climate information and early warning systems	Improve livestock health
<b>Climate</b>								
<b>NAPA, 2006</b>	Y	x	x	x			x	x
<b>GGCRS, 2011</b>	Y	x	x	x	x	x	x	
<b>NDC, 2015</b>	Y	x	x	x	x	x	x	
<b>Livestock/Ag</b>								
<b>Dairy Strat., 2013</b>	N	x		x	x	x		x
<b>Ag Policy, 2017</b>	Y	x	x	x	x	x	x	x
<b>LMP, 2017</b>	N	x	x	x	x	x		x
<b>PSTA 4, 2018-2024</b>	Y	x	x	x	x	x	x	x
<b>Development</b>								
<b>Vision 2020, 2012</b>	Y	x	x	x	x			
<b>NST1, 2017-2024</b>	Y	x	x	x	x	x		x
<b>Land/Environment</b>								
<b>Land Policy, 2004</b>	N	x	x					
<b>Env. and CC Policy, 2019</b>	Y	x	x				x	
<b>TOTAL</b>		11	10	9	8	7	6	6

<sup>5</sup> In policies where climate change is not mainstreamed or identified as a cross-cutting issue, activities that are likely to support adaptation and align with other policies are indicated.

## Mitigation synergies and gaps

Mitigation strategies for the livestock sector are limited in the policies reviewed. Only climate and agriculture/livestock policies make any reference to mitigation in the sector. When these policies reference livestock mitigation, it is mainly in policy background and general descriptions and not in specific strategies. The PSTA 4 and LMP have the most detailed mitigation strategies, however, these are not linked to emission reductions targets or measures.

Only GGCRS mentions the livestock sector contribution to national GHG emissions and then only the enteric fermentation contribution (19 percent in 2005). The LMP and PSTA 4 note alignment with national objectives for a low-carbon economy but do not reference the contribution of the livestock sector to national emissions. Rwanda's NDC does not include agriculture or livestock in its mitigation commitments although it does list reduced GHG emissions from enteric fermentation as a co-benefit of pest management techniques that involve improved fodder production.

Many activities across policies have the potential to achieve mitigation outcomes, however, there is limited attention to this potential or to finding synergies among adaptation and mitigation activities. Additionally, while the National Agriculture Policy and PSTA 4 mention CSA, they do not connect CSA strategies to emissions reduction.

In partial alignment with government policy but also referencing strategies not present in the policies reviewed, the country's Third National Communication to the UNFCCC, 2018, states that livestock mitigation options include replacing local cows with improved breeds, reducing dairy livestock numbers while maintaining milk production, promoting biogas and collective farm holdings, and improving manure management through building manure storage facilities and trainings.

### Coherence among mitigation actions

**Improved feed** is the only livestock mitigation strategy that receives policy attention outside of agriculture and livestock policies. GGCRS and NDC both highlight improved fodder regimes and the associated reduction in enteric fermentation as a co-benefit of integrated pest management strategies that involve planting fodder grass and legume species among crops.

PSTA 4 more generally references “quality feed” as an issue that if addressed, could reduce GHG emissions. **Higher productivity breeds** are referenced in three of the four agriculture policies mainly with regards to increasing sector production but also for their potential to reduce emissions. The LMP references introducing higher productivity crossbreds in the dairy sector and the “rapid reduction of local breeds of all species where feasible except goats” to reduce GHG emissions. The National Agriculture Policy and PSTA 4 both state the need for high quality genetic resources with relevant traits for productivity, adaptation, and mitigation. The LMP and PSTA 4 each support **shifting production and consumption** of animal products toward lower-emitting species. The LMP includes detailed chicken and pork value chain roadmaps designed to increase demand and production (as well as similar roadmaps for dairy and red meat). The National Agriculture Policy and PSTA 4 both reference **CSA** but provide little detail on specific CSA strategies. PSTA 4 also mentions **improved animal health** as a strategy for increasing productivity and reducing GHG emissions referencing the need for animal health research and facilities and improved disease control through vaccination, quarantine, and relevant procedures and systems.

**Table 24. Policy mitigation strategies: Rwanda summary.**

Policy	Mitigation strategies indicated, Rwanda				
	Improved feed	Higher productivity breeds	Shift production/consumption toward lower-emitting species	CSA	Improved animal health
<b>Climate</b>					
<b>NAPA, 2006</b>					
<b>GGCRS, 2011</b>	x				
<b>NDC, 2015</b>	x				
<b>Livestock/Ag</b>					
<b>Dairy Strat., 2013</b>					
<b>Ag Policy, 2017</b>		x		x	
<b>LMP, 2017</b>		x	x		
<b>PSTA 4, 2018-2024</b>	x	x	x	x	x
<b>Development</b>					
<b>Vision 2020, 2012</b>					
<b>NST1, 2017-2024</b>					
<b>Land/Environment</b>					
<b>Land Policy, 2004</b>					
<b>Env. and CC Policy, 2019</b>					
<b>TOTAL</b>	3	3	2	2	1



## Enabling and disabling conditions

This discussion of enabling and disabling conditions for livestock sector development broadly is drawn directly from the policies reviewed. Many of these are relevant for livestock sector adaptation and mitigation although they are often framed in the context of sector growth and productivity rather than climate change.

### Disabling

Policies consistently highlight key disabling conditions linked to the country's limited land availability and the associated small agricultural plot sizes. The average plot size is 0.6 ha and about 30 percent of households cultivate less than 0.2 ha (PSTA 4). These small agriculture plots face the additional constraint of often being situated on slopes at risk of erosion, landslides, and land degradation that is exacerbated by heavy rainfall events (although notable progress has been made in reducing degradation through terracing and other measures). Constraints linked to limited land availability and small plot sizes include:

- Livestock feed deficits and relatively low water availability;
- Underemployment in the agriculture sector as farms are too small to provide full employment; and
- Population growth in rural areas risks accelerating fragmentation of already small agricultural plots.

Additionally, farmer's limited access to resources and education poses constraints to climate action and sector growth. Farmers are predominantly subsistence and face a complex set of challenges that suppress yields such as limited access to finance, insurance, technology, irrigation, mechanisation, seeds, fertilizers, and other key inputs. Farmers may also lack agronomic and business skills to optimize agricultural practices and investments particularly related to switching to higher value commodities. Further, imperfect agriculture markets and value chains affect farm profitability and food security, including limited access to processing and market options. And while a higher percentage of women work in agriculture than men, women often have limited decision-making power and less control over agricultural assets, inputs, and capacity building opportunities resulting in lower agricultural productivity.

Acidic soils that cover about three-quarters of agricultural lands, livestock disease prevalence, and limited access to animal health and breeding services are also cited constraints.

### **Enabling**

In recent years, the GoR has prioritised the transformation of the agricultural sector allowing for more investment and leading to growth in livestock production largely from productivity gains. Current policies aim to continue interventions such as promoting sustainable land management and supporting agriculture value chains but shift the government's role toward creating an enabling environment (policy, public services, and infrastructure) for private sector investment rather than making as much direct investment. Other enabling conditions highlighted include:

- high economic growth, urbanization, and rising incomes are creating domestic and regional markets for an expanding array of Rwandan agricultural products including meat, milk, and eggs;
- government investments in education and business opportunities for young entrepreneurs are creating new agriculture businesses and take advantage of new agricultural technologies; and
- agro-ecological conditions are conducive to intensified livestock production.

Directly linked to adaptation and mitigation, FONERWA makes funds available to private, public and NGO entities for adaptation and mitigation projects. Rwanda has also positioned itself to access international climate funds including from:

- GEF for livelihood diversification, investment in rural infrastructure, early warning systems, addressing land degradation and more, and
- GCF and the Adaptation Fund for strengthening climate resilience of rural communities in northern Rwanda.

Additionally, bilateral agriculture support, such as the USAID-funded Rwanda Dairy Competitiveness Programme I and II, has led to increased dairy production through

improving efficiency, market access, product quality, and local demand (Dahl and Hendricks 2018).

## **Transboundary policy impacts**

### **Increasing exports**

Livestock, agriculture, and development policies include a focus on increasing agricultural production for regional export and beyond. Increased exports could fill market gaps in neighboring destination countries but could also suppress local production (due to increased supply) with potential impacts for adaptation and resilience. The National Agriculture Policy includes a policy action to pursue deeper regional and international trade and PSTA 4 designates animal products, particularly dairy and poultry, as a focus area for increasing export. The National Dairy Policy notes that dairy product export may be best targeted toward Burundi and DRC where dairy production and processing are under-developed and the cost of production is high. The associated policy intervention aims to harmonise tax and trade policies with COMESA and regional trade organisations and increase trade in dairy products to Burundi and the DRC. The LMP envisions increasing live animal and meat exports and NST1 aims to facilitate increased trade through key infrastructure and services projects.

### **Disease control**

Regarding livestock disease, the LMP calls for harmonisation of animal health management in the countries within the region noting that cross-border animal movement and transboundary disease is a challenge. Improved regional disease control should ultimately benefit the livestock sector; however, government-imposed restrictions could disrupt livestock movement important for accessing feed and water during dry periods or for informal livestock export key to livelihoods.

### **Water**

In terms of water access, ninety percent of Rwanda's surface water is in the Upper Nile Basin flowing through the Nyabarongo and Akagera rivers, the main tributaries to Lake Victoria which is the source of the White Nile (FAO 2005). The Congo-Nile basin holds ten percent of the country's surface water which flows into Lake Kivu and then Lake Tanganyika (FAO 2005). Substantial irrigation development, unlikely specifically for the livestock sector, or other changes in water use would have transboundary implications in these river systems.

## **Policy integration of climate change and livestock**

While climate impacts are recognised in Rwanda's policies, policy responses through well-developed livestock adaptation and mitigation strategies are often weak, particularly for mitigation. This section examines each policy area (climate, livestock and agriculture, development, and land and environment) for integration of livestock sector climate change adaptation and mitigation and alignment with the SDGs and national development goals. Policies were scored for extent of integration of livestock sector adaptation and mitigation (Table 25). Higher scores designate more dedicated and detailed climate related strategies for the livestock sector. The analysis for each policy area also examines the key actors in policy development, as described in the policy, and sources of finance. Where external actors were identified, these are included in brackets.

### **External actors in policy development**

Most policies reviewed for Rwanda reference the involvement of external actors, however, five policies do not. These are the two development policies (Vision 2020 and NST1), the National Agriculture Policy, NDC, and National Land Policy. Of the policies that name external actors in policy development, climate policies mention the Smith School of Enterprise and Environment at University of Oxford, DFID, CDKN, GEF, and UNEP and agriculture and livestock policies mention FAO, ILRI, and USAID. The National Environment and Climate Change Policy references stakeholder engagement in policy development listing UNDP, Global Green Growth Institute, and unnamed development partners although it does not list particular technical or financial support from an external actor. See policy summary tables below for more detail.

**Table 25. Rwanda policy integration of livestock sector adaptation and mitigation summary (scoring on a scale of 0 to 3).**

Rwanda	Livestock Adaptation score	Livestock Mitigation score
Climate		
Climate Average	2	1
<b>NAPA, 2006</b>	3	0
<b>GGCRS, 2011</b>	2	1
<b>NDC, 2015</b>	1	1
Livestock & Agriculture		
Livestock & Agriculture Average	1.5	0.5
<b>National Dairy Strategy, 2013</b>	0	0
<b>Livestock Master Plan, 2017</b>	1	1
<b>National Agriculture Policy, 2018</b>	2	0
<b>PSTA 4, 2018-2024</b>	3	1
Development		
Development Average	1.5	0
<b>Vision 2020</b>	1	0
<b>NST1</b>	2	0
Land & Environment		
Land & Environment Average	0.5	0.5
<b>National Environment and Climate Change Policy, 2019</b>	1	1
<b>National Land Policy, 2004</b>	0	0

### Climate policy

The **Green Growth and Climate Resilience: National Climate Change and Low Carbon Development Strategy (GGCRS)**, 2011, is Rwanda's overarching climate change policy and guides integration of adaptation and mitigation across sectors. The strategy adopts a long-term vision looking ahead to climate resilience and poverty reduction in 2050. Livestock do not factor prominently in GGCRS but there is a focus on the agriculture sector and the strategy notes that livestock enteric fermentation emissions contributed to 19 percent of national emissions in 2006. The strategy is organised around 14 programmes of action eight of which have could have implications for the livestock sector even when it is not explicitly recognised. Programmes of action include sustainable intensification of smallholder farming, sustainable land use management, disaster risk management and disease prevention, and climate data and projections.

Rwanda's **NDC** is strongly focused on adaptation with less attention to mitigation (there are no specific GHG emissions reduction targets). While agriculture is highlighted in the programmes of action, there is little mention of livestock. The document refers to promoting "agro-ecology," as an adaptation strategy which would include agroforestry, nutrient recycling, and water conservation, but not CSA. Mitigation in agriculture is referenced as a co-benefit of adaptation options but agriculture and livestock are not mentioned under mitigation activities.

Rwanda's **NAPA** (2007) includes an extensive vulnerability assessment and analysis of adaptation options in alignment with national objectives and sustainable development. The NAPA recognises climate change impacts on livestock and identifies agriculture, including livestock, as a vulnerable sector. Of the six priority options, one is dedicated to "promotion of intensive agriculture and animal husbandry" to improve farmer adaptive capacity. Livestock and livestock holders are also referenced in projects for protecting land from flood and erosion, improved irrigation, water conservation and storage, and increasing off-farm incomes.

**Table 26. Rwanda climate policy summary.**

Rwanda Climate Policy	Overall policy goal	Policy objective(s), climate	Policy objective(s), livestock	SDGs and national development goals alignment	Key actors, policy development [external actors]	Finance sources
<b>Green Growth and Climate Resilience Strategy (GGCRS), 2011</b>	For Rwanda to be a developed climate-resilient, low-carbon economy by 2050	Same as overall	To achieve sustainable land use and water resource management that results in food security	Livestock Sector: Adaptation 2 Mitigation 1  Aligned with MDGs and Vision 2020	Ministry of Environment (formerly Ministry of Natural Resources, MINIRENA)  [Smith School of Enterprise and Environment at University of Oxford, DFID, CDKN]	Operationalise the National Fund for Climate and Environment (FONERWA) to access climate finance; government and private investment; Clean Development Mechanism and voluntary carbon markets
<b>NDC, 2015</b>	Rwanda has a developed climate-resilient, low carbon economy, with a strong services sector, low unemployment and low levels of poverty (based on GGCRS and Vision 2050)	Same as overall	- Adaptation: Provide continuous fodder supply to cattle through planting grass and legume under crops  - Mitigation: NDC notes reduced GHG emissions from enteric fermentation as a co-benefit of improved fodder regime	Livestock Sector: Adaptation 1 Mitigation 1  Aligned with GGCRS and Vision 2020	Ministry of Environment (formerly MINIRENA)	International support; MoE/MINIRENA accredited by GCF and Adaptation Fund; sell carbon credits
<b>NAPA, 2006</b>	To determine priority adaptation options	Same as overall; the pre-NAPA study aimed to evaluate climate change vulnerability	-Improve the adaptation capacity of farmers and pastoralists vulnerable to climate change through setting up agro-silvo-pastoral systems adapted to real land vocations	Livestock Sector: Adaptation 2 Mitigation 0  Aligned with Vision 2020, national sectoral policies, UNFCCC and other international conventions	NAPA team (REMA, Ministry of Lands and Environment, Ministry of Finance, Prime Minister's Office)  [GEF, UNEP]	Government, donors, private sector, NGOs, UN agencies

## **Livestock and agriculture policy**

Rwanda's **National Agriculture Policy**, 2017, provides comprehensive strategic guidance to the agricultural sector. The policy recognises increasing frequency and/or severity of climate events as a threat to agricultural productivity. It notes that drought is a particular threat to the livestock sector including the dairy sub-sector, especially in the south and east. The policy includes emphasis on "principles of resilience to adverse factors stemming from changes in climate and markets." The second of four policy objectives is devoted to developing and promoting sustainable agricultural intensification and "a resilient agriculture sector" to counter environmental degradation and climate change.

While the policy mainstreams resilience, in contrast to the stated objectives, many of the individual strategies do not specifically mention climate change, resilience, or adaptation. There is no reference to mitigation. The livestock sector is well-integrated into the policy including an aim to increase livestock productivity through addressing "the feed deficit, animal health, genetics and markets" as well as foci on value-added products and incorporating livestock into crop systems for soil improvement. More broadly, the policy embraces a family-farm-centric model but aims to promote the "agri-food economy" through enhanced farmer cooperation and private sector-led development.

The **Strategic Plan for Agriculture Transformation, Phase 4 (PSTA 4)**, 2018-2024, has a bold aim to transform Rwandan agriculture away from subsistence toward a "value creating sector" while ensuring food and nutrition security. PSTA 4 is the implementation plan of the National Agricultural Policy (NAP) and outlines priority investments. The plan focuses on private investment with a government role mainly to create an enabling market environment and provide public goods such as infrastructure, research, social protection, and emergency response. The plan notes that climate change could have "potentially large impacts" on the country's agriculture sector. The plan's fourth impact area (of four) is "increased resilience and sustainability" which highlights mainstreaming "climate smart practices in all activities." The plan does not include mitigation objectives but references CSA and breeding activities that could reduce livestock sector emissions. Livestock is integrated throughout the plan, however, specific livestock adaptation and mitigation strategies are not well-detailed.



The **Livestock Master Plan (LMP)**, 2017, is a well-elaborated strategy for livestock sector development, however, it does not reference current or projected climate change risks or impacts and has only one passing reference to sector climate resilience. The plan states its interventions were tested in accordance with national development objectives, including climate change mitigation, but contains only cursory attention to livestock mitigation activities. The plan is organised around detailed value-chain development roadmaps (five-year investment plans) for dairy, red meat, chicken, and pork. The plan focuses on demonstrating the poverty reduction and economic growth opportunities in the livestock sector.

The **National Dairy Strategy**, 2013, elaborates detailed strategies to grow the dairy sector through improved milk production and marketing systems, policy environments and institutional frameworks. It includes comprehensive strategic objectives, stakeholder roles, an implementation framework, and a performance and monitoring plan. The strategy does not reference climate change risks or impacts, adaptation, or mitigation.

**Table 27. Rwanda livestock and agriculture policy summary.**

Rwanda Livestock/Agriculture Policy	Overall policy goal	Policy objective(s), climate	Policy objective(s), livestock	SDGs and national development goals alignment	Key actors, policy development [external actors]	Finance sources
<b>National Agriculture Policy, 2017</b>	To ensure food and nutrition security of Rwandans by using modern agribusiness technologies, professionalising farmers in terms of production, commercialization of the outputs and creating a competitive agriculture sector.	Develop and promote a sustainable agricultural intensification and a resilient agriculture sector to counter environmental degradation and climate change in ways that maintain sustainable agricultural growth.	Livestock is integrated across objectives for productivity, value addition, NRM, etc.	<p>Livestock Sector: Adaptation 2 Mitigation 0</p> <p>Aligned with SDGs, EAC 2050, Malabo Declaration, Vision 2020 and Vision 2050</p>	Ministry of Agriculture and Animal Resources (MINAGRI)	To be defined by subsidiary strategies
<b>Strategic Plan for Agriculture Transformation, Phase 4 (PSTA 4), 2018-2024</b>	Transformation of Rwandan agriculture from a subsistence sector to a knowledge-based value creating sector, that contributes to the national economy and ensures food and nutrition security in a sustainable and resilient manner.	Enhance climate smart production by building resilience through on-farm measures and enabling actions to increase productivity.	Livestock is integrated across priority areas; aim of increased emphasis on poultry and pork along with continued interventions in the milk/cow value-chain	<p>Livestock Sector: Adaptation 3 Mitigation 1</p> <p>Aligned with SDGs (esp. 1, 2, 8, 13, and 15), EAC Vision 2050, Paris Agreement Malabo Declaration, CAADP and NDC</p>	<p>Ministry of Agriculture and Animal Resources (MINAGRI)</p> <p>[FAO]</p>	Government, development partners, promote increased private-sector investment

<b>Livestock Master Plan, 2017</b>	Improved productivity and total production in the key livestock value chains for cow dairy, red meat-milk, poultry, and pork.	No adaptation or mitigation related objective; plan references a focus on low emitting livestock species and dairy intensification to reduce GHG emissions	Same as overall	<p>Livestock Sector: Adaptation 1 Mitigation 1</p> <p>Aligned with MDGs, Rwanda Development Vision 2025 to 2050</p>	<p>[ILRI] with input from the Ministry of Agriculture and Animal Resources (MINAGRI) and Rwanda Agriculture Board</p> <p>[initial study funded by FAO]</p>	USD287 million over the 5-year period—47% from public sector and 53% from private sector
<b>National Dairy Strategy, 2013</b>	A competitive dairy sector providing quality dairy products that are affordable, available and accessible to all Rwandans and other consumers in the region.	not present	Improve productivity, increase competitiveness and raise the quality standards of milk at the household level and throughout the value chain.	<p>Livestock Sector: Adaptation 0 Mitigation 0</p> <p>Aligned with MDGs, Vision 2020</p>	<p>Ministry of Agriculture and Animal Resources (MINAGRI)</p> <p>[USAID]</p>	USD24.4 million from within the budgets of MINAGRI and MINICOM and with private sector support for plants and equipment and donors support for school milk programmes and market promotions

## Development policy

Rwanda's **Vision 2020**, adopted in 2000 and revised in 2012, is an ambitious development framework to overcome poverty and division. "Productive high value and market-oriented agriculture" is one of six pillars of Vision 2020 while "natural resources, environment, and climate change" is one of three cross-cutting issues (added in the 2012 revision). In terms of agriculture, the vision is focused on replacing subsistence farming with a fully commercialized agricultural sector by 2020. Targets include reducing the percent of the population engaged in agriculture from 90 to 50 percent and increasing production from 1,612 to 2,600 kcal/day/person. Livestock do not get much attention in this broad strategy but are highlighted for modernisation and improved quality. The Second Economic Development and Poverty Reduction Strategy (EDPRS II), 2013-2018, is the most recent dedicated strategy for implementing Vision 2020. Its key targets relate to strategic infrastructure investment for exports, increased private sector financing to raise exports, urbanization, and a green economy approach to sustainability. At the time of this analysis, Vision 2050 was being drafted but had not yet been released.

Rwanda's **National Strategy for Transformation (NST1)**, 2017-2024, aims to pick up where EDPRS II left off and bridges the last three years of Vision 2020 and the first four years of Vision 2050. NST1 continues to accelerate "transformation and economic growth with the private sector at the helm." "Environment and climate change" is one of seven cross-cutting areas intended to be embedded into sector strategic plans and district development plans. The strategy references promoting resilience to climate shocks through improving and scaling up core and complementary social protection programmes.

One of the seven priority areas is to "modernise and increase productivity of agriculture and livestock," which highlights a range of options that could have adaptation co-benefits although the strategies are not explicitly linked to adaptation or resilience objectives. Mitigation is not referenced.

**Table 28. Rwanda development policy summary.**

Rwanda Development Policy	Overall policy goal	Policy objective(s), climate	Policy objective(s), livestock	SDGs and national development goals alignment	Key actors, policy development [external actors]	Finance sources
<b>Vision 2020, 2012</b>	To transform our country into a middle-income nation in which Rwandans are healthier, educated and generally more prosperous	Put in place strategies to mitigate the impact of climate change by focusing on developing eco-friendly policies and strategies in all sectors of the economy and by promoting green growth	Promote agriculture intensification to increase productivity, promote value addition, modernisation and improved quality of livestock; replace subsistence farming by a fully commercialized agricultural sector by 2020	Livestock Sector: Adaptation 1 Mitigation 0  No identification of alignment with other development goals (other than for education)	Office of the President; Ministry of Finance and Economic Planning	Public and private; concessional and non-concessional financing; PPPs
<b>National Strategy for Transformation (NST1), 2017-2024</b>	Provide the platform and pillars for accelerated transformation on the pathway to the prosperity sought by Vision 2050	Embed cross-cutting areas, including “environment and climate change” into sector strategic plans and district development plans	Modernise and increase productivity of agriculture and livestock	Livestock Sector: Adaptation 2 Mitigation 0  Aligned with SDGs, African Union Agenda 2063, EAC Vision 2050, Paris Agreement	Office of the Prime Minister	Private and public investment financed by domestic savings and capital inflows; massive improvements in education; significant increases in land efficiency and innovative capacity; and boosting production of tradable goods and services

## Land and environment policy

The **National Environment and Climate Change Policy, 2019**, updates the 2003 National Environment Policy and consciously aligns with national, regional, and international development goals. The policy is based on comprehensive analyses and broad stakeholder consultation. The policy includes objectives and statements that support adaptation and mitigation but does not include specific targets or detailed implementation strategies. The policy does not refer to livestock in adaptation options, however, some of the objectives (e.g., early warning systems, climate information, water storage) support livestock adaptation. There are no specific references to agriculture or livestock GHG emissions or mitigation strategies although calls for addressing emissions from industry and in rural settlements could include livestock. The policy calls for strengthening environment and climate change governance including by amending sector laws and policies.

Rwanda's Environment Law, 2005, (not fully reviewed here) mentions that the ministry in charge of environment can govern substances that "may cause climatic changes." There are no other references to climate change or livestock, however, the law does call for a range of soil, water, forest and ecosystem conservation and protection efforts that could have co-benefits for climate change adaptation and mitigation. The law also defines the process for Environmental Impact Assessments (EIA) which could provide an opportunity to require adaptation or mitigation elements in infrastructure and other large-scale projects (Heermans et al. 2015). The **National Land Policy, 2004**, aims to guide productive and sustainable land use in Rwanda. The policy does not reference climate change but, like the Environment Law, emphasises land, soil and water conservation that could have adaptation and mitigation co-benefits. The law discusses the history of pastoralism in Rwanda and calls for supporting "pastoralists to choose the right grazing system so as to facilitate the integration of livestock into the agro-silvo-pastoral system." The policy also outlines options to support agricultural production including through irrigation, agroforestry, and avoiding dividing up agricultural lands. Rwanda's Land Law, 2013, and Land Use Planning Law, 2012, are not fully reviewed here. These laws do not explicitly mention climate change, however, they include strategies to support sustainable land use with potential adaptation and mitigation co-benefits including defining flood boundaries and encouraging erosion control (Heermans et al. 2015).

**Table 29. Rwanda land and environment policy summary.**

Rwanda Land and Environment Policy	Overall policy goal	Policy objective(s), climate	Policy objective(s), livestock	SDGs and national development goals alignment	Key actors, policy development [external actors]	Finance sources
<b>National Environment and Climate Change Policy, 2019</b>	A clean and healthy environment resilient to climate variability and change that supports a high quality of life for society	- Promote a green economy that is resource efficient low-carbon and climate resilient -Promote climate change adaptation, mitigation and response	not present	Livestock Sector: Adaptation 1 Mitigation 1  Aligned with SDGs, Paris Agreement, EAC Vision 2050, AU Agenda 2063, Sendai Framework, Rwanda GGCRS, NST1, NDC, and Vision 2050 aspiration	Ministry of Environment  [stakeholder engagement included UNDP, Global Green Growth Institute, and unnamed development partners]	national and international financial sources; development partners
<b>National Land Policy, 2004</b>	To establish a land tenure system that guarantees tenure security for all Rwandans and give guidance to the necessary land reforms with a view to good management and rational use of national land resources.	None, although objectives include supporting sustainable land management that would have adaptation and mitigation co-benefits	Regarding rural land use and management, strategic options include facilitating “the integration of livestock into the agro-silvo-pastoral system”	Livestock Sector: Adaptation 0 Mitigation 0  Aligned with Vision 2020	Ministry of Environment (formerly Ministry of Lands, Environment, Forests, Water and Mines)	not present

# Nepal findings

## Introduction

Floods, landslides, glacial melt, and rainfall variability are growing climate change impacts in Nepal where these events are estimated to cost 1.5–2 percent of GDP annually (IDS-Nepal et al. 2014). Eighty-three percent of the population lives in rural areas and climate-sensitive agriculture comprises 25-35 percent of GDP.

Nepal began addressing climate change in earnest in 2009 when it created a high-level Climate Change Council chaired by the Prime Minister and devoted to high-level guidance and support for climate change policy. Guided by four climate policies and the NDC, Nepal has supported a range of adaptation initiatives and climate change impact assessments. The government also launched a National Adaptation Plan process in 2015 which is yet to be complete. Climate change awareness around the country is high and people “from the field to policy level” discuss climate change impacts and adaptation (Uprety 2019). Nepal ratified the UNFCCC in 1994 and has submitted two National Communications, most recently in 2014; a third national communication is in development. The country entered the Paris Agreement in 2016.

Nepal restructured the government in 2018 and today the Climate Change Management Division is housed in the Ministry of Forestry and Environment. The Climate Change Management Division leads the implementation of UNFCCC commitments, advances climate change policy and action, and coordinates with the National Planning Commission and other entities to integrate climate change. The country’s NDC also references a Climate Change Coordination Committee and a Multi-stakeholder Climate Change Initiatives Coordination Committee. The Ministry of Agriculture and Livestock Development aims to make the country self-sufficient in animal products by transforming the sector towards competitive, commercial production.

Following the devastating 2015 earthquake, Nepal’s five-year Post-Disaster Recovery Framework, 2016-2020, has shaped much of the country’s development effort. The framework emphasises climate-resilient recovery and reconstruction and includes a focus on



climate-resilient agriculture, early warning systems for climate risks, and improving extension capacity for climate smart agriculture.

### **Policy summary**

Since Nepal's NAPA in 2010, the country's first climate policy, climate change has been well-integrated across the development, environment, and land policies reviewed. Policies consistently recognise climate impacts to agriculture including glacial melt, floods and landslides (e.g., 2008 and 2017 Terai floods), drought, and rising temperatures. The livestock sector is also recognised across policy areas as it is an integral component of agriculture across the country and predominant in mountainous areas. Livestock adaptation and mitigation actions, however, are rarely well-developed. Climate policies, for example, tend to focus on broader planning and institutional strategies and do not detail many sectoral strategies while agriculture policies recognise climate risk but do not provide many targeted responses.

Despite a lack of well-developed livestock adaptation and mitigation strategies, agriculture and devolution are prominent across policy areas. Nepal's constitution makes "food sovereignty" a fundamental right promoting a national emphasis on agriculture. The constitution also designates provincial and local governments as responsible for numerous development and service delivery responsibilities. The 2011 and 2019 Climate Change Policies mandate that 80 percent of climate change funding be directed to the local level. The country's National Framework on Local Adaptation Plans for Action (LAPA), 2011, has guided local adaptation planning in numerous target areas.

Nepal's Climate Change Policy, 2019, is the country's key guiding climate policy. The NAPA, 2010, and National Framework on Local Adaptation Plans for Action (LAPA), 2011, have also provided important guidance for adaptation initiatives over the last decade. Of the climate policies reviewed, the NAPA provides the most developed livestock adaptation strategies while the Climate Change Policy, 2019, explicitly highlights livestock in one adaptation and one mitigation strategy.

Of all policies reviewed, the Ministry of Agriculture's Climate Change Adaptation and DRM in Agriculture Framework, 2011-2020, best integrates climate and livestock with well-developed adaptation strategies and references to livestock mitigation. Nepal's Agriculture

Development Strategy, 2015-2035, is the country's key agriculture policy and livestock is well-integrated. Nepal does not have a dedicated livestock policy; however, the Agriculture Development Strategy commits to developing one. Of the policies reviewed, only the 2004 National Agriculture Policy does not integrate climate change. In addition to the policies reviewed here, other livestock relevant policies include the Agriculture Business Promotion Policy, 2007, Breeding Policy, 2011, Rangeland Policy, 2012, and Livestock Insurance Policy and Agriculture and Livestock Insurance Regulation, 2013.

Nepal's development is guided in part by multi-year plans. The current plan is the 15th Plan, 2020-2024, and highlights climate change as a cross-cutting issue as well as including adaptation and mitigation as components of agriculture-related strategies. In 2019, Nepal also released a new National Environmental Policy that supports implementation of the 2019 Environment Protection Act. The policy makes only passing reference to climate change but does aim to expand and improve the Climate Smart Village program.

While livestock emissions are a key contributor to national emissions, these emissions and mitigation actions are rarely discussed outside of references to biogas. Biogas development is consistently discussed but in relation to renewable energy options rather than as a livestock mitigation strategy. The NDC states that the country plans to develop a Low Carbon Economic Development Strategy that will include a focus on livestock but this is yet to be completed. The NDC references agricultural emissions but not livestock emissions or mitigation outside of biogas development. More than half of the country's emissions come from agriculture and an estimated 54 percent (17 Mt CO<sub>2</sub>eq) of agriculture emissions are attributable to livestock production (USAID 2019).

## **Nepal climate-livestock policy opportunities for engagement summary**

### **Strongest synergies across policies:**

- Nepal's policies have a consistent emphasis on **local adaptation planning** including plan development and associated capacity building. The 2019 Climate Change Policy continues the precedent of the 2011 policy to devote 80 percent of climate funds to local-level initiatives.
- There is strong support across policies for promoting **adaptation-related research and technology and climate information and communications**. These strategies could

provide strong support for livestock adaptation but there is room to address the sector more explicitly.

- **Biogas** is by far the most prominent mitigation strategy.

#### **Key gaps:**

- There is **no recognition of livestock sector emissions** in the NDC or any other policy reviewed. Additionally, there is no substantive discussion of livestock mitigation. While policies consistently highlight biogas development, this strategy is associated with meeting renewable energy targets and is not discussed as a mitigation opportunity. This gap in recognising and addressing livestock emissions leaves a substantial portion of the country's overall emissions (~37 percent) unaddressed and could lead to missed opportunities for adaptation and mitigation co-benefits.
- **Strategies with possible livestock adaptation and mitigation co-benefits receive limited attention across policy areas** including CSA, feed, productivity and intensification, and breeding. Agriculture policies offer the most developed strategies but lack robust integration of adaptation considerations and offer no discussion of mitigation.

#### **Potential conflicts:**

- The policies reviewed do not appear to conflict with one another. The lack of robust livestock adaptation and mitigation strategies, however, means that **policies are not well-equipped to support the country in reaching SDG 13** as it related to the livestock sector, including the target to strengthen resilience and adaptive capacity.

### **Adaptation synergies and gaps**

The livestock relevant adaptation strategies reviewed are often broadly formulated cross-sectoral interventions or cover the agriculture sector as a whole. While strategies may lack livestock specific detail, there is strong alignment among policies for key interventions including research and technology, climate information and communication, and adaptation planning. In contrast, there is less attention to more livestock specific adaptation strategies such as improved feed, breeding, animal health, and productivity.

Climate policies do not well integrate the livestock sector. The NAPA offers the most detailed livestock sector strategies followed by the Climate Change Policy, although the Climate Change Policy only explicitly references livestock in one adaptation strategy for insurance. The National Climate Resilient Planning document recognises livestock as a climate vulnerable sector but does not offer specific livestock adaptation strategies. The NDC does not well-integrate the livestock sector and the LAPA includes no reference to livestock.

Agriculture policies do a better job of integrating climate change. Of all policies reviewed, the country's Climate Change Adaptation and Disaster Risk Management in Agriculture: Priority Framework for Action offers the most robust commitment to livestock adaptation. The Agriculture Development Strategy and Zero Hunger Action Plan each integrate livestock adaptation with numerous relevant strategies. The National Agriculture Policy does not mention climate and gives little dedicated attention to livestock although its broader strategies are relevant for sector adaptation.

The country's key medium-term development strategy, the 15<sup>th</sup> Plan, and the SDGs Status and Roadmap each integrate adaptation and mitigation measures for agriculture broadly and reference livestock although dedicated livestock measures are limited.

### **Extensive livestock production/pastoral mobility**

Transhumant livestock production is prominent in Nepal's northern mountainous region, an area characterised by grazing land, rainfed crops, and limited road infrastructure or basic services. While the National Land Use Policy, 2015, and Zero Hunger Action Plan, 2016, aim to protect pastureland and access, most of the policies reviewed do not address extensive livestock production. There have been efforts to clarify pastureland ownership and rights and initiate a rangeland inventory and integrated rangeland management, however, these have not been effectively implemented in part due to jurisdictional overlap between the forest and agriculture ministries (Acharya and Baral 2017). Pasture land availability is diminishing due to land degradation and the country's community forestry initiative, which is putting control of pasture and forest land into the hands of mid-mountain communities that often ban grazing (Acharya and Baral 2017).

## **Coherence among adaptation actions**

**Research and development, appropriate technologies, innovative technologies, and technology transfer** for agriculture systems were the most commonly cited strategies across policies. Many of these strategies are fairly general, however, there are specific calls for adaptation technologies to address flood and drought impacts on livestock (NAPA) and calls for research on climate impacts to pastures (NAPA) and climate-resilient livestock breeds (Agriculture Development Strategy). Agriculture policies also emphasise strengthening research and development and research and extension linkages.

Improving **climate information and communications** is another prominent strategy with policies often focusing on both supporting climate information generation and its dissemination. Specific strategies include developing a climate knowledge management platform, expanding and strengthening climate data collection infrastructure and capacity, and awareness raising, including through agriculture extension.

Policies also emphasise **adaptation planning** and the associated institutions from local to national levels. Starting with the NAPA in 2010 and through to the 15<sup>th</sup> Plan released in 2020, policies call for local adaptation plans and adaptation-related stakeholder capacity building and institutional strengthening. Nepal's Local Adaptation Plans for Action (LAPA) Framework, 2011, is designed to build on the NAPA and integrate climate change adaptation and resilience in local and national plans. The Agriculture Development Strategy and Zero Hunger Action Plan cite support for LAPA implementation. The Climate Change Policy further commits to integrating climate risk considerations in agriculture land use planning.

**Sustainable land management and natural resource management** strategies are highlighted in all agriculture policies as well as some climate policies and the development and land policies reviewed. Specific strategies referenced include improved pasture and rangeland management, soil and water conservation, integrated watershed management, Payment for Ecosystem Services, land restoration, and agroforestry.

Strategies to improve **agriculture extension**, particularly prominent in agriculture policies, include linking climate change-related research and extension, integrating adaptation into extension including through farmer field schools, promoting ICTs, and building capacity in

extension services including engaging the private sector and community centres in service delivery.

**Early warning and disaster risk management** strategies generally commit to establishing or improving early warning systems (including the National Information and Early Warning System) that integrate climate change considerations, strengthening a livestock monitoring and forecasting system, developing district-level DRM plans, and building technical capacity. Agriculture policies and others highlight developing, extending, and institutionalising a **livestock insurance programme**. Some policies, especially the National Agriculture Policy and Agriculture Development Strategy, also emphasise farmer access to funds and credit more broadly.

Policy strategies for **livelihood diversification** call for adaptation programming and resilience-building that includes alternative income generation, increased off-farm income and employment opportunities, and integrated production systems. The NAPA, agriculture policies, the SDGs Status and Roadmap, and the 15<sup>th</sup> Plan also commit to improving agriculture product collection and marketing infrastructure and systems.

**Table 30. Policy adaptation strategies: Nepal summary.**

Policy	Adaptation strategies indicated, Nepal							
	Promote research & technology	Improve climate information/ communication	Adaptation planning	Improve SLM/ NRM	Improve ag extension	Early warning / DRM	Livestock insurance	Livelihood diversification
<b>CLIMATE</b>								
<b>NAPA, 2010</b>	x	x	x	x	x	x		x
<b>National Climate Resilient Planning, 2011</b>	x	x	x					
<b>LAPA, 2011</b>	x	x	x					
<b>NDC, 2016</b>	x	x	x					
<b>Climate Change Policy, 2019</b>	x	x	x	x	x	x	x	x
<b>AGRICULTURE AND LIVESTOCK</b>								
<b>National Agriculture Policy, 2004</b>	x			x	x		x	x
<b>CCA &amp; DRM Management in Agriculture, 2011-2020</b>	x	x	x	x	x	x	x	x
<b>Agriculture Development Strategy, 2015-2035</b>	x	x	x	x	x	x	x	

<b>Zero Hunger Action Plan, 2016</b>	x	x	x	x	x	x	x	x
<b>DEVELOPMENT</b>								
<b>SDGs Status and Roadmap, 2016- 2030, &amp; Strategy... 2017</b>	x	x	x	x	x	x	x	x
<b>15<sup>th</sup> Plan, 2020- 2024</b>	x	x	x	x	x	x	x	x
<b>LAND AND ENVIRONMENT</b>								
<b>National Land Use Policy, 2015</b>				x				
<b>National Environment Policy, 2019</b>	x			x				
	12	10	10	10	8	7	7	7



## **Mitigation synergies and gaps**

Mitigation strategies for the livestock sector are extremely limited in the policies reviewed. Across policies, there is no explicit recognition of livestock sector emissions and the NDC and Agriculture Development Strategy are the only policies to discuss agriculture sector emissions as a whole. The NDC is also the only policy to offer a mitigation-related target, which is for increasing the establishment and use of biogas. The 15<sup>th</sup> Plan contains the greatest number of mitigation measures although these measures are mainly targeted for the agriculture sector as a whole. The NAPA and Agriculture Development Strategy each commit to strengthening agriculture extension services through further integration of CSA practices, however, there is no link to mitigation. The country's adaptation focus on sustainable land management has potential for mitigation co-benefits but sustainable land management is not referenced in relation to mitigation.

### **Coherence among mitigation actions**

**Establishing biogas** is the most commonly cited mitigation strategy appearing in more than half of the policies reviewed. Policies strategies are general commitments to promote and increase biogas other than the NDC which commits to "increase the share of biogas up to 10 percent as energy for cooking in rural areas" and establish 130,000 household systems, 1,000 institutional, and 200 community biogas plants through the National Rural and Renewable Energy Programme.

Other strategies emphasise promoting low emission and energy efficient technologies in the agriculture and livestock sectors, ensuring implementation of REDD+ programming, GHG emissions monitoring across sectors, strengthening research on mitigation options including for agriculture, and promoting adaptation-mitigation synergies.

Table 31. Policy mitigation strategies: Nepal summary.

Policy	Mitigation strategies indicated, Nepal					
	Establish biogas	Promote low emission ag technologies	REDD+	Emissions monitoring	Research on agriculture mitigation	Promote mitigation/adaptation synergy
<b>CLIMATE</b>						
NAPA, 2010	x					
National Climate Resilient Planning, 2011						x
LAPA, 2011						
NDC, 2016	x		x			
Climate Change Policy, 2019		x		x		
<b>AGRICULTURE AND LIVESTOCK</b>						
National Agriculture Policy, 2004						
CCA & DRM Management in Agriculture, 2011-2020	x				x	
Agriculture Development Strategy, 2015-2035	x					
Zero Hunger Action Plan, 2016	x					
<b>DEVELOPMENT</b>						
SDGs Status and Roadmap, 2016-2030, & Strategy... 2017	x					
15 <sup>th</sup> Plan, 2020-2024	x		x	x	x	
<b>LAND AND ENVIRONMENT</b>						
National Land Use Policy, 2015						
National Environment Policy, 2019		x				
	7	2	2	2	2	1

## Enabling and disabling conditions

This discussion of enabling and disabling conditions for livestock sector development broadly is drawn directly from the policies reviewed. Many of these are relevant for livestock sector adaptation and mitigation although they are often framed in the context of sector growth and productivity rather than climate change.

### Disabling

Nepal's Climate Change Policy notes that climate change is negatively impacting Nepal's economy and livelihoods. The policy notes that climate change impacts are particularly challenging given a lack of capacity and coordination within the government to mainstream climate change into development policy and address impacts. In particular, the policy cites a lack of financial resources, technology, and knowledge including research on climate change impacts and the potential loss and damage.

Agriculture policies further describe that the majority of Nepal's population is engaged in agriculture, however, productivity remains low and malnutrition high. Most production remains for subsistence use rather than commercial production. Political instability has been a key contributing factor to the lack of institutional capacity, relevant policies and/or policy implementation, legislation to resource and support key agriculture and livestock strategies, and overall public and private investment. In this context, the Agriculture Perspective Plan, 1995-2015, led weak agricultural growth and met with mixed performance. The plan led to achievements in areas such as roads, horticulture, and community forestry but fewer results in cereals, fertilizer, and seed. For livestock, performance was mixed with better performance of dairy and poultry. In terms of livestock policy, the country's Agriculture Development Strategy, 2015-2035, calls for the development of a dedicated national livestock policy but this remains a key gap.

In addition to the political context, low livestock productivity is linked to a range of factors including limited availability and/or quality of:

- livestock-focused extension,
- animal health services,
- genetic improvement services,
- animal feed and shelter,

- improved livestock production technologies,
- animal products processing facilities (e.g., milk, meat, wool),
- insurance and risk transfer mechanisms, and
- reliable weather and climate information.

Additionally, there is still limited identification of climate risk for livestock and prioritisation of adaptation options, particularly at local levels. Urbanization is a further factor in livestock production as expanding urban areas encroach on peri-urban agricultural land.

### **Enabling**

Nepal's NAPA, 2010, and National Framework on Local Adaptation Plans for Action (LAPA), 2011, provide strong guidance for locally-driven adaptation, particularly in rural agricultural contexts. Aligned with these and other climate policies, Nepal is implementing, or has implemented, a range of climate change adaptation and resilience initiatives with multilateral and bilateral support including from the Climate Investment Funds (CIF) and Least Developed Countries Fund. The DFID/UNDP supported Nepal Climate Change Support Programme, 2013-2019, for example, has assisted 100 villages with Local Adaptation Plans for Action (LAPAs) and 26 local governments with climate-resilient development projects. The USAID Hariyo Ban Programme is in its second phase, 2016-2021, and also supports LAPAs as well as disaster risk reduction and small and medium scale agriculture and climate smart enterprises. The CIF Pilot Programme for Climate Resilience (PPCR) supported mainstreaming climate change into development plans and practices and investments in target areas including for watershed management and biogas development. Nepal's climate-smart village program has promoted climate resilience in rural areas and is targeted for expansion in the country's 2019 National Environment Policy.

While the agriculture sector in Nepal remains underdeveloped, there has been progress. The agricultural income per capita has increased and malnutrition has declined since 1995 (ADS 2015). Irrigation and road networks have expanded and livestock, in addition to crops and fisheries, have improved in terms of production or/and productivity (ADS 2015).

Agribusiness and commercial agriculture are growing with the poultry and dairy processing industry showing particular gains. Private sector investment has led to commercial-scale

poultry production through work toward better feed, egg and meat processing, cold storage, and distribution).

Nepal's 15th Plan notes that Nepal is self-sufficient in egg production and nearing self-sufficient milk and meat production. The Plan states that the key reasons for recent growth in livestock product is favorable government policy and increasing interest in livestock among farmers. Since 2018, the agriculture ministry has been named the Ministry for Agricultural and Livestock Development elevating the profile of livestock production.

## **Transboundary policy impacts**

The policies reviewed do not raise many issues related to transboundary impacts.

Agriculture and development policies aim to commercialize the agriculture sector and promote agricultural exports (including implementing food safety standards), however, with a substantial gap in meeting national demand, it is unlikely that new exports will substantially impact production in neighbouring countries. Nepal is situated at the head of the Ganges watershed, however, policies reviewed do not discuss water resources development for livestock production. Nepal has signed the Kosi River Treaty and Mahakali Agreement with India which have led to cooperation between the two countries. All of Nepal's surface water drains into the Ganges in India. The 2011 Climate Change Policy included an aim to address climate change across transboundary areas but this strategy is not included in the 2019 policy.

## **Policy integration of climate change and livestock**

Livestock adaptation and mitigation are not particularly well integrated in the policies reviewed. While there are many broadly formulated strategies with potential relevance for livestock adaptation and mitigation, these strategies are often not well-developed or not specific enough to provide real guidance. In the case of mitigation, there are very few strategies. This section examines each policy area (climate, livestock and agriculture, development, and land and environment) for integration of livestock sector climate change adaptation and mitigation and alignment with the SDGs and national development goals. Policies were scored for extent of integration of livestock sector adaptation and mitigation (Table 32). Higher scores designate more dedicated and detailed climate related strategies for the livestock sector. The analysis for each policy area also examines the key actors in

policy development, as described in the policy, and sources of finance. Where external actors were identified, these are included in brackets.

### External actors in policy development

Six of the ten policies reviewed for Nepal reference the involvement of external actors. Two climate policies, one agriculture policy, and the land use policy do not list external actors. Of the policies that name external actors in policy development, climate policies mention the ADB, Britain Nepal Medical Trust, DFID, Embassy of Denmark, GEF, HTSPE Ltd., IIED, and UNDP. Agriculture policies reference ADB, AusAID, DANIDA, DFID, EU, FAO, IFAD, JICA, SDCUNDP, UNWomen, USAID, WB, WFP, and various unnamed international development partners. The Agriculture Development Strategy, in particular, was developed with the involvement of a number of external actors. The development policy reviewed lists support from UNDP. See policy summary tables below for more detail.

**Table 32. Nepal policy integration of livestock sector adaptation and mitigation summary (scoring on a scale of 0 to 3).**

Nepal	Livestock Adaptation score	Livestock Mitigation score
<b>Climate Policy</b>		
Climate Average	1.2	0.8
NAPA, 2010	2	1
National Climate Resilient Planning, 2011	1	1
LAPA, 2011	1	0
NDC	1	1
Climate Change Policy, 2019	1	1
<b>Livestock &amp; Agriculture Policy</b>		
Livestock & Agriculture Average	1.75	0.75
National Agriculture Policy, 2004	0	0
CCA and DRM in Ag Framework, 2011-2020	3	1
Agriculture Development Strategy, 2015-2035	2	1
Zero Hunger Action Plan, 2016	2	1
<b>Development Policy</b>		
Development Average	1.5	1
SDGs Status and Roadmap, 2016-2030, & Strategy 2017	1	1
15 <sup>th</sup> Plan, 2020-2024	2	1
<b>Land &amp; Environment Policy</b>		
Land & Environment Average	1	0.5
National Land Use Policy, 2015	1	0
National Environment Policy, 2019	1	1

## Climate policy

Nepal's **NAPA**, 2010, identifies immediate and urgent adaptation needs for in the most vulnerable sectors, including agriculture. Two of the nine identified priority projects address agriculture directly while other projects are also relevant for agriculture including those addressing disaster risk reduction, ecosystem management, and sustainable water management. The plan recognises climate risk to the livestock sector and notes that in high altitude pastures, herders report that increasing temperatures have led to declining fodder and forage production that in turn impacts livestock health. A few project activities explicitly target livestock (e.g., improved breeding, pasture management, and adaptation technologies for livestock) and some of the broader agriculture activities are also relevant (e.g., improved extension services, soil and water conservation, and integrated watershed management). Nine projects aligned with the NAPA are being or have been implemented (CIAT, et al., 2017). The NAPA explicitly identifies responsible entities, resources, and monitoring and evaluation for projects.

Nepal's **National Climate Resilient Planning**, 2011, is a tool for assessing climate risk and was developed to complement the country's previous Climate Change Policy, 2011. The planning tool defines a climate-resilient development plan as one that "takes stock of felt as well as anticipated risks, creates synergy between mitigation and adaptation, improves climate knowledge and helps improve the governance of development." The document includes a screening approach for planning processes that examines sector limitations, inter-linkages, and climate risk. The adaptation focus of the document is vulnerability assessment and planning and it highlights the associated needs for climate information, research and development, and technology transfer. The document recognises livestock as a climate vulnerable sector (referencing impacts related to floods, drought, disease, and habitat change) but does not offer specific livestock adaptation strategies. The **National Framework on Local Adaptation Plans for Action (LAPA)**, 2011, presents an approach for bottom-up, inclusive, responsive, and flexible local adaptation planning. The framework is organised around seven steps designed to "ensure integration and implementation of climate adaptation and resilience actions into sectoral plans, programme and project, and ensure people, community and their resources are adaptive to climate change." The framework targets the most climate-vulnerable Village Development Councils and municipalities for

planning activities. The framework focuses on assessment and planning processes rather than sectors but mentions agriculture as a main entry point for the LAPA process. It does not reference livestock. Nepal's **NDC**, 2015, emphasises adaptation and resilience building and reiterates the country's commitment to a localized approach to adaptation referencing the LAPA framework. The NDC is based on a range of relevant national policies, strategies, and programmes including the Climate Change Policy, NAPA, LAPA Framework, Nepal Climate Change Support Programme, Agriculture Development Strategy, and Forestry Sector Strategy. The NDC also references the draft Low Carbon Economic Development Strategy, which as of this writing is still in draft form and appears likely to be reworked in line with Nepal's revised NDC in 2020. The NDC includes biogas commitments and action to enhance the "agricultural sector by adopting climate-friendly technologies and reducing climate change impacts." It does not, however, explicitly recognise livestock sector emissions, nor does it explicitly reference livestock sector adaptation or climate smart agriculture.

Nepal's **Climate Change Policy**, 2019, repeals the previous 2011 policy noting the need to update the policy to align with the country's new federal system (2015 constitution) and international commitments including the NDC and SDGs. The 2019 policy commits to revising the country's LAPA; completing the NAP, Low Carbon Economic Development Strategy, and a long-term climate change strategy; and mainstreaming climate change across government policies and levels. The policy is organised into eight thematic areas, of which agriculture and food security are one, and four cross-cutting areas. The agriculture section commits to adopting a "climate-friendly" agriculture system but is mainly focused on crop agriculture. The policy specifically mentions livestock in just two strategies, one for climate risk insurance and one for low emission technologies. Many policy strategies are cross-sectoral and focus on areas including climate information, land use planning, ecosystem resilience, research and technology, and building capacity for adaptation. Following the precedent of the 2011 Climate Change Policy, the 2019 policy commits to devoting 80 percent of climate funds mobilised to programming at the local level.



**Table 33. Nepal climate policy summary.**

Nepal Climate Policy	Overall policy goal	Policy objective(s), climate	Policy objective(s), livestock	SDGs and national development goals alignment	Key actors, policy development [external actors]	Finance sources
<b>NAPA, 2010</b>	<ul style="list-style-type: none"> <li>- Enable Nepal to respond strategically to the challenges and opportunities posed by climate change</li> <li>- Provide a basis for future climate change governance and the development a national adaptation strategy</li> </ul>	<ul style="list-style-type: none"> <li>- Assess and prioritise climate change vulnerabilities and identify adaptation measures</li> <li>- Develop a multi-stakeholder framework for action on climate change</li> </ul>	<ul style="list-style-type: none"> <li>- Promote community-based adaptation through integrated management of agriculture, forest, water, and biodiversity sectors</li> <li>-Build and enhance adaptive capacity of vulnerable communities through improved systems and access to services related agricultural development</li> </ul>	<p>Livestock Sector:</p> <p>Adaptation 2</p> <p>Mitigation 1</p> <p>Aligned with national planning strategies</p>	<p>Ministry of Environment</p> <p>[Embassy of Denmark, DFID, GEF, UNDP]</p>	US\$ 350 million; government and development partners
<b>National Climate Resilient Planning, 2011</b>	To set in motion the preparation of periodic development plans by developing an understanding of climate risks and adopting measures that would make the plans climate-resilient	Same as overall	<p>not present</p> <p>(Recognises livestock as a vulnerable sector)</p>	<p>Livestock Sector:</p> <p>Adaptation 1</p> <p>Mitigation 1</p> <p>Aligned with MDGs and UNFCCC and the Climate Change Policy, 2011, Agriculture policy, 2004, National Action Plan for Disaster Management 1996, and national development plans</p>	<p>National Planning Commission</p> <p>[ADB, UNDP]</p>	Multi-stakeholder partnerships

<b>National Framework on Local Adaptation Plans for Action (LAPA), 2011</b>	To integrate climate adaptation activities into local and national development planning processes and to create a situation for climate-resilient development	To ensure that the process of integrating climate adaptation and resilience into local and national planning is bottom-up, inclusive, responsive and flexible	not present	<p>Livestock Sector: Adaptation 1 Mitigation 0</p> <p>Aligned with UNFCCC and the Climate Change Policy, and NAPA</p>	<p>Ministry of Environment Climate Change Management Division</p> <p>[DFID, HTSPE Ltd., IIED, Britain Nepal Medical Trust]</p>	not present
<b>NDC, 2016</b>	<p>- To pursue efforts to limit temperature rise to well below 2°C</p> <p>- To reduce climate change impacts and implement adaptation actions to protect life and improve livelihoods of climate vulnerable communities and improve ecosystem services</p>	Same as overall	not present	<p>Livestock Sector: Adaptation 1 Mitigation 1</p> <p>Aligned with UNFCCC and the Climate Change Policy, NAPA, LAPA Framework, Agriculture Development Strategy, and Forestry Sector Strategy</p>	Ministry of Population and Environment	Dedicated climate change budget code in fiscal planning and budgeting processes; bilateral and multilateral grant support
<b>Climate Change Policy, 2019</b>	To contribute to the socioeconomic prosperity of the nation by building a climate-resilient society	<p>-Enhance adaptation capacity;</p> <p>-Build ecosystem resilience;</p> <p>-Promote a green economy;</p> <p>-Mainstream or integrate climate change issues into policies, strategies, plans, and programmes at all levels of State and sectoral areas;</p> <p>-Etc.</p>	First policy listed: Food security, nutrition and livelihoods will be improved by adopting climate-friendly agriculture system	<p>Livestock Sector: Adaptation 1 Mitigation 1</p> <p>Aligned with SDGs, UNFCCC, and the country's NDC</p>	not present	Various national and international financial resources such as GCF, GEF, Adaptation Fund, CIF, etc.

## **Livestock and agriculture policy**

Nepal's **National Agriculture Policy**, 2004, aims to support food security and alleviate poverty by shifting the country's agriculture sector towards commercialization while conserving natural resources. The policy differentiates between small and large farmers giving preference to small farmers in terms of access to land and credit. There is no mention of climate and limited mention of livestock, however, the comprehensive policy describes a range of livestock adaptation relevant strategies addressing credit and insurance, agricultural extension, animal health, and improved productivity.

The **Climate Change Adaptation and Disaster Risk Management in Agriculture: Priority Framework for Action**, 2011-2020, aims to strengthen adaptation and disaster risk management capacity, coordination, and action in Nepal's agriculture sector. The comprehensive framework emphasises climate information services, extension, local planning processes, and community-based approaches with specific strategies associated with the responsible entities and monitoring indicators. The livestock sector is well-integrated. Climate mitigation is referenced briefly but only regarding forestry practices and research into mitigation options.

The **Agriculture Development Strategy (ADS)**, 2015-2035, is an expansive and detailed policy that aims to coordinate a wide range of stakeholders and activities to achieve a self-reliant agriculture sector with an increased annual growth rate (from three to five percent). It includes a budget, implementation plans, targets, and a monitoring and evaluation plan. The ADS addresses agricultural production and the broader sector environment including storage and processing, transportation, trade, finance, markets, research, and extension. The strategy states that it incorporates lessons learned from the previous strategy (Agriculture Perspective Plan, 1995-2015) including those related to governance, participation of stakeholders, land issues, decentralised research and extension, and commercialization and competitiveness. The ADS recognises climate risk to agriculture and addresses adaptation (e.g., climate information, early warning, insurance, etc.). The document references carbon emissions but generally lacks mitigation measures although it does promote biogas. The strategy integrates livestock and includes an activity to develop a dedicated livestock policy, which has yet to be accomplished as of this writing.

Nepal's **Zero Hunger Action Plan**, 2016, aims for zero hunger in the country by 2025. The plan includes new and existing agriculture, nutrition, and food policy initiatives organised around four pillars—100% food access, no stunting in children under two, sustainable food systems, 100 percent increase in smallholder productivity and income, and zero food loss/waste. Adaptation is fairly well-addressed in the plan, which highlights the need for climate-resilient agricultural practices, although climate risk is not well-detailed. Livestock are integrated throughout much of the plan. The document does not address climate mitigation but does include an activity to promote biogas.

**Table 34. Nepal livestock and agriculture policy summary.**

Nepal Livestock/Agri culture Policy	Overall policy goal	Policy objective(s), climate	Policy objective(s), livestock	SDGs and national development goals alignment	Key actors, policy development [external actors]	Finance sources
National Agriculture Policy, 2004	To ensure food security and poverty alleviation by achieving a high and sustainable economic growth a commercial and competitive farming system	not present	<ul style="list-style-type: none"><li>- Increase agricultural production and productivity</li><li>- The bases of a commercial and competitive farming system shall be developed and made competitive in the regional and world markets;</li><li>- Natural resources, the environment, and bio-diversity, shall be conserved, promoted and properly utilised</li></ul>	<div>Livestock Sector:</div> <div>Adaptation 0</div> <div>Mitigation 0</div> <div>Aligned with MDGs</div>	Ministry of Agriculture	not present
CCA and DRM in Agriculture Framework, 2011-2020	To manage the impacts of climate change and natural disasters in agriculture	<ul style="list-style-type: none"><li>- Strengthen institutional and technical capacity for adaptation and disaster risk management in agriculture</li><li>- Assess and monitor climate risks and vulnerabilities and enhance early warning systems</li><li>- Improve knowledge management, awareness raising, and education</li><li>- Reduce climate risks and underlying vulnerabilities through technical options in agriculture and livestock sectors</li><li>- Strengthen capacities and procedures for effective disaster risk management and integration of climate change adaptation at all levels</li></ul>	<div>Livestock Sector:</div> <div>Adaptation 3</div> <div>Mitigation 1</div> <div>Aligned with Hyogo Framework of Action and National Agriculture Policy, NAPA, National Strategy for Disaster Risk Management, national development plan</div>	Ministry of Agriculture and Cooperatives	[FAO, UNDP]	not present

<b>Agriculture Development Strategy, 2015-2035</b>	A self-reliant, sustainable, competitive, and inclusive agricultural sector that drives economic growth and contributes to improved livelihoods and food and nutrition security leading to food sovereignty	Improved resilience of farmers to climate change, disasters, price volatility, and other shocks	Across the agriculture sector: Improved governance, higher productivity, profitable commercialization, and increased competitiveness	Livestock Sector: Adaptation    2 Mitigation     1  Aligned with MDGs and National Agriculture Policy	Ministry of Agricultural Development  [ADB, IFAD, EU, FAO, SDC, JICA, DANIDA, WFP, USAID, DFID, WB, AusAID, UNWomen]	\$5.3 billion over 10 years  Government, donors, private sector, communities, and farmers
<b>Zero Hunger Action Plan, 2016</b>	To ensure “rights to food” by improving food and nutrition security of people to achieve a society free of hunger and malnutrition by 2025	- Strengthen sustainable (including climate-resilient) production process for accelerated growth of the agriculture sector		Livestock Sector: Adaptation    2 Mitigation     1  Aligned with SDGs and national Agriculture Development Strategy and Multi-sectoral Nutrition Plan	Ministry of Agriculture and Livestock Development  [Various national and international development partners]	Government, international development organisations and the private sector

## Development policy

Nepal's long-term development vision is guided by the SDGs as described in the **SDGs Status and Roadmap, 2016-2030**, and **SDGs Needs Assessment, Costing, and Financing Strategy, 2017** (MoFE 2018). The roadmap and strategy present a broad prioritisation and implementation approach for meeting the specific SDG targets and achieving middle-income country status by 2030 but do not include detailed strategies or activities. Together the documents highlight clean energy, agriculture, and tourism as three sectors critical for moving the country toward a "job-creating low-carbon economy." The documents make numerous references to climate change and note that despite ongoing efforts, adaptation efforts remain "grossly inadequate" with needs for major adaptation investment in agriculture, health, roads, and hydropower. Adaptation targets include increasing local adaptation plans, climate smart villages, and climate smart agriculture. The documents designate the transport and industry sectors for mitigation priority and make no reference to agricultural emissions or mitigation although biogas is promoted for renewable energy. Livestock are not well-integrated in the documents although they note that references to agriculture include the livestock sector and highlight livestock insurance in particular.

Nepal's key medium-term development policy, the **15th Plan, 2020-2024** is aligned with the SDGs and includes climate change as a cross-cutting issue. The Plan calls for the formulation of a long-term strategic plan for implementing the Paris Agreement and states that climate change will be mainstreamed across entities and levels around the country. The Plan also aims to achieve 550 local adaptation plans, 100 climate smart villages, and 300 climate smart farms. The Plan sets a target for agricultural sector growth of 5.6 percent annually over its five-year implementation emphasizing the professionalization of farming through research, education, and improved market systems. The Plan does not emphasize adaptation and mitigation measures specific to livestock but integrates livestock within related agriculture strategies. The policy offers more attention to mitigation in the agriculture than any other policy reviewed.

**Table 35. Nepal development policy summary.**

Nepal Development Policy	Overall policy goal	Policy objective(s), climate	Policy objective(s), livestock	SDGs and national development goals alignment	Key actors, policy development [external actors]	Finance sources
<b>SDGs Status and Roadmap, 2016-2030, and SDGs Needs Assessment, Costing, and Financing Strategy, 2017</b>	To prepare an SDG implementation strategy	SDG 13: Take urgent action to combat climate change and its impacts	SDG 2: End hunger, achieve food security and improved nutrition, and promote sustainable agriculture	Livestock Sector: Adaptation 1 Mitigation 1  Aligned with SDGs, NAPA, LAPA, and Agriculture Development Strategy	National Planning Commission  [UNDP]	Estimated 49% of GDP investment required annually  Public sector (~55% of all costs), development assistance (double current level), private sector, PPPs, households
<b>15<sup>th</sup> Plan, 2020-2024</b>	To create the base to upgrade the country to a high income country and to transform it to a socialism driven welfare state with a better lifestyle, social justice and prosperous economy.	To contribute to a sustainable society through enhancing climate change adaptive capacity and reducing negative climate change impacts.	To achieve inclusive and sustainable economic growth while also transforming the agricultural sector to be more competitive, climate appropriate, independent and export oriented.	Livestock Sector: Adaptation 2 Mitigation 1  Aligned with SDGs, NDC, NAPA, LAPA, and Climate Change Policy	National Planning Commission	Domestic resources, development assistance



## Land and environment policy

Nepal's **National Land Use Policy**, 2015, an update of the 2013 Land Use Policy, was prompted by the April 2015 earthquake devastation and the need for land use policy to better guide development away from disaster-prone areas. The policy designates agriculture land, explicitly including areas of pastures and livestock production, as one of 11 land use zones. The policy mandates that land use plans be developed at federal, provincial, and local levels that take into account consolidating lands to protect the agricultural zone and reducing climate change impacts. The policy supports the optimal use and protection of agricultural land calling for special protection of pasture areas and discouraging land fragmentation, fallow land, and non-agricultural use of arable land. The policy further aims to identify hazard vulnerable zones, including those impacted by climate change, and restrict land use activities in those areas. The policy also supports sustainable land management practices.

In 2019, Nepal released a new **National Environmental Policy** that supports implementation of the 2019 Environment Protection Act, which repealed the previous 1997 Act. The fairly short policy includes only one mention of climate change (a reference to the development of a separate climate change policy) and two references to the Climate Smart Village program, including a strategy to expand and improve the program. The policy includes numerous references to pollution but there is not a policy objective explicitly targeting climate change or recognition of climate change impacts or adaptation. Animal husbandry is mentioned once within a strategy to encourage environmentally-friendly agriculture and animal husbandry technologies that also increase production. The policy highlights sustainable development and mentions the need to comply with international commitments but does not reference the SDGs directly.

**Table 36. Nepal land and environment policy summary.**

Nepal Land and Environment Policy	Overall policy goal	Policy objective(s), climate	Policy objective(s), livestock	SDGs and national development goals alignment	Key actors, policy development [external actors]	Finance sources
<b>National Land Use Policy, 2015</b>	To manage lands in a sustainable manner by developing a specific land use system through Land Use Plans	To mitigate natural and human created-disastrous hazards	To ensure the use of land and land resources on the basis of land use plans for protection of agricultural land, etc.	Livestock Sector: Adaptation 1 Mitigation 0  No other policies mentioned	Ministry of Land Reform and Management	not present
<b>National Environment Policy, 2019</b>	To ensure right to live in clean and healthy environment by controlling pollution, managing waste and promoting greenery	To mainstream environmental concerns in dimensions of development (does not mention climate directly)	(Policy strategy) Environmentally-friendly agriculture and animal husbandry technologies shall be encouraged in a manner which also increases production	Livestock Sector: Adaptation 1 Mitigation 1  National environmental law and policy and aims to “comply with international commitments”	Ministry of Forest and Environment	Federation, province and local budgets, national environment protection fund, development partners, etc.

# Cambodia findings

## Introduction

In recent decades, Cambodia has developed a rapidly growing economy resulting in lower-middle-income status in 2015. Climate change projections for longer periods of drought, more intense heavy rainfall events, temperature increase, and rising sea levels, however, have implications for the country's overall development and livestock sector (USAID 2019).

The Royal Government of Cambodia is actively engaged in regional and global agreements and governance structures. Cambodia ratified the UNFCCC in 1995, the Kyoto Protocol in 2002, and the Paris Agreement in 2016. The country has submitted two national communications to the UNFCCC, most recently in 2015. Cambodia is a member of the Mekong River Commission which supports equitable development and environmental protection across the region; climate change adaptation is a core management function.

In 2015, in an effort to strengthen climate change and sustainable development governance, the country established the multi-sector National Council for Sustainable Development with a secretariat at the Ministry of Environment. The council is comprised of high-level government representatives, with the Prime Minister as its Honorary Chair and the Minister of Environment as its Chair. The council took over the previous roles and responsibilities of three entities—the National Climate Change Committee, National Council for Green Growth, and National Biodiversity Steering Committee. The council now plays a substantial role in developing and coordinating climate change response in Cambodia including overseeing the Cambodia Climate Change Strategic Plan (CCCSP), Climate Change Action Plan (CCAP), and climate change financing framework.

## Policy summary

In 2013, the Royal Government of Cambodia launched the country's first comprehensive climate change policy, the Cambodia Climate Change Strategic Plan (CCCSP), 2014-2023. The plan provides a framework for climate change response and integration of climate change into national and sectoral development planning. The CCCSP directs line ministries to develop sector climate change action plans and the post-2014 policies reviewed demonstrate the impact of the CCCSP. There remains room for further integration, however,

of climate change into livestock relevant policies and livestock into climate change policies. Climate risks to the agriculture sector are rarely well-detailed and adaptation responses are fairly limited and general. This is even more true for livestock than agriculture overall.

Among climate policies, CCCSP, best integrates livestock adaptation and mitigation. Its associated implementation plan, the Climate Change Action Plan (CCAP), 2016-2018, however, does not well-integrate livestock. The CCAP is stronger on broad strategies which include mainstreaming climate change, developing a national GHG inventory system, and facilitating GHG emissions reduction which each influences the livestock sector. The country's NDC makes no reference to livestock in adaptation or mitigation commitments nor does it reference emissions from the agricultural sector.

Of the policies reviewed, agricultural and livestock policies offer the most thorough integration of climate and livestock. In response to the CCCSP, the Ministry of Agriculture, Forests, and Fisheries developed the Climate Change Action Plan Priorities for Agriculture, Forestry, and Fisheries, 2014-2018. This plan contains the only livestock mitigation target in the policies reviewed. Additionally, the Agriculture Sector Strategic Development Plan (ASDP), 2014-2018, (update yet to be released as of this analysis) and the Strategic Framework for Livestock Development, 2016-2025, mainstream climate change, although individual strategies lack detail or implementation guidance. These policies include a livestock adaptation focus on breeding, feed, and health as well as strategies for research, institutional capacity, and limited mitigation activities. The Law on Animal Health and Production, 2016, contains no reference to climate change.

Also, in line with the CCCSP, the country's National Strategic Development Plan, 2014-2018, mainstreams climate change. (The next National Strategic Development Plan, 2019-2023, is yet to be released as of this analysis.) Development and environment policies, however, devote limited attention to livestock adaptation although they do put forward strategies that could promote overall sector resilience. The country's Draft Environment and Natural Resources Code provides a legal framework and a high-level comprehensive approach to adaptation and mitigation in Cambodia that goes beyond existing laws and policies (MRLG 2019). If adopted, the code has strong potential to greatly raise the profile of climate action in the country broadly although it does not offer much sector specific guidance.

In terms of explicit alignment with the SDGs, this is limited among the policies reviewed. Only the Rectangular Strategy IV, 2018-2023, and National Environmental Strategy and Action Plan (NESAP), 2016-2023, reference the SDGs, although five pre-2015 policies reference the MDGs. Cambodia has developed a national framework for meeting the SDGs and the yet to be released National Strategic Development Plan, 2019-2023, is intended to mainstream Cambodia's SDGs.

While the CCCSP, NAPA, and ASDP offer the best climate change and livestock integration, overall there is a general lack of policy attention to livestock adaptation and mitigation. This is linked to the limited overall discussion of livestock in the policies reviewed. With rice production the driver of the agricultural economy, and livestock contributing little to agricultural GDP,<sup>6</sup> policies tend to focus on crop agriculture. The ASDP highlights that livestock are decreasingly used as draught power (due to mechanisation) leading to a decrease in cattle and buffalo numbers between 2009 and 2013, although pork and poultry production increased during the same timeframe. Smallholders dominate the livestock sector mainly through integrated crop and livestock production, however, foreign investment and commercial farms have come to dominate the dairy and animal feed sub-sectors in recent years as investors accessed land through Cambodia's Economic Land Concessions.

As of this writing, a number of laws and policies significant for livestock sector climate action are in various stages of development and have yet to be finalised. These include the National Strategic Development Plan, 2019-2023, Agriculture Sector Strategic Development Plan, 2019-2023, Agriculture Master Plan, and the next Climate Change Action Plan. These policies may offer further integration of livestock sector adaptation and mitigation.

<sup>6</sup> The Strategic Framework on Livestock Development, 2016-2025, notes that livestock and poultry comprise 11.3 percent of agricultural GDP.

## Cambodia climate-livestock policy opportunities for engagement summary

### Strongest synergies across policies:

- **Improved sustainable land and natural resource management** is the most commonly cited adaptation strategy. While it is only cited by two policies as a mitigation strategy, it presents an opportunity for adaptation and mitigation co-benefits.
- Policies have strong agreement on increasing institutional capacity and planning processes for adaptation at national and sub-national levels. There is room, however, to ensure that livestock adaptation and the relevant agriculture and livestock entities are targeted within these strategies.

### Key gaps:

- Cambodia is in the early stages of considering livestock mitigation and **relevant mitigation strategies are limited**. Addressing animal waste is the most commonly cited strategy, however, the country's Second National Communication demonstrates that enteric fermentation is a much more significant source of livestock emissions. No policies reference enteric fermentation although the ADSP includes a reference to improved feeding as a mitigation strategy.
- The CCCSP includes a principle for capitalizing on synergies between adaptation and mitigation, however, **none of the policies reviewed include strategies for adaptation and mitigation co-benefits**. Three policies reference CSA (NDC, ASDP, and NESAP) but none explicitly discuss the opportunity for adaptation and mitigation synergies.

### Potential conflicts:

- The country's lack of emphasis and detail on livestock mitigation options could lead to increased livestock sector emissions. Across agriculture and development policies there is a focus on sector growth but limited mitigation strategies and none that are well detailed. The lack of general policy focus on mitigation could put some **policies in conflict with the Climate Change Priorities Action Plan for Agriculture, Forestry and Fisheries, 2014-2018, target to reduce livestock emissions** by one percent after 2015.

- While the country's comprehensive climate policy, CCCSP, 2014-2023, integrates livestock adaptation and mitigation (albeit briefly), the CCAP, 2016-2018, which aims to guide implementation of the CCCSP, does not well-integrate livestock. The discrepancy highlights the need for the next CCAP to **more effectively implement the CCCSP through increased integration of livestock adaptation and mitigation.**

## Adaptation synergies and gaps

Cambodia's first comprehensive policy to address climate change, the Cambodia Climate Change Strategic Plan (CCCSP), 2014-2023, was released in 2013, yet remains, along with the NAPA and ASDP, the strongest guidance for livestock adaptation. In contrast, many policies include only very limited integration of livestock adaptation. For policies with limited integration of livestock adaptation, relevant strategies were recorded even when livestock were not explicitly referenced. The NESAP, for example, is strong on adaptation strategies broadly although it has limited livestock integration.

Climate policies tend to focus on strategies for climate information systems, raising climate change awareness, and climate resilient infrastructure, while agriculture and livestock policies focus on strategies for livestock health, feed, and breeding. Livestock health is supported, however, by two of the four climate policies. There is more agreement across policy areas for disaster risk reduction and early warning systems, improving agriculture extension, and increasing institutional capacity across a range of government entities for adaptation planning.

Policies do not reference any particular adaptation successes to date. Rather policies reveal early stage action on adaptation overall as even more recent policies continue to call for additional assessment, capacity, and/or planning to further develop adaptation options.

Climate change is highlighted or referenced as a cross-cutting issue in all policies except the Law on Animal Health and Production, 2016, Strategic Planning Framework for Livestock, 2011-2020, and Law on Land, 2001.

## Coherence among adaptation actions

**Sustainable land and natural resource management** is the most commonly highlighted strategy although policies mainly make broad statements and rarely specify the livestock sector. Specific activities to achieve sustainable land and natural resource management are diverse and not often repeated across strategies. Activities include reducing soil and water conservation, ecosystem restoration, agroforestry, and integrated water resource management and watershed protection. In the Green Growth Roadmap and Strategy, there is a strong focus on organic agriculture while the Rectangular Strategy IV emphasises Payment for Ecosystem Services. NESAP, while it does not emphasise livestock, contains the most thorough treatment of sustainable land and natural resource management.

Increasing institutional capacity and planning for adaptation and disaster risk reduction are also common across policy areas. Strategies for **institutional capacity and planning** include strengthening capacity among national and sub-national entities to carry out vulnerability assessment, climate science, and climate change mainstreaming as well as actually conducting these activities and using the results to appropriately prioritise adaptation actions. There are also calls for improving coordination and participation in climate change-related policy and planning. Strategies for **disaster risk reduction and early warning systems** particularly target flood risk and call for planning and preparation measures as well as increasing institutional capacity and flood prevention infrastructure.

The strategy to **increase climate change awareness** is most prevalent in climate policies, however, it is also referenced across policy areas. Policies cite raising awareness across society including local communities and authorities. The CCCSP includes promoting climate change awareness through government service providers, teachers, journalists, extension services, religious leaders, and community elders and the CCAP calls for creating a climate change knowledge management centre. Four policies (three climate policies and NESAP) also reference improving climate information systems overall (including data collection, analysis, and modelling).

Strategies to improve livestock health, feed, and breeding are present in all agriculture and livestock policies; two climate policies also address livestock health and one addresses feed. Strategies for **improving livestock health** range from general calls to specific activities such



as training professional and village veterinary workers, establishing an animal health information system, creating supportive policy and programme development, and numerous disease control measures (particularly in the dedicated livestock policies). Strategies to **improve feed** include promoting feed supplements and improving and regulating feed quality. Strategies to **improve livestock breeds** include promoting technology development and training on breeding, conserving the genetic resources of indigenous and new breeds, and preserving traditional knowledge on breeding to support developing highly productive breeds.

**Improving agriculture extension** is less common but present across policy areas. Strategies include strengthening extension services for climate sensitive agriculture as well as for promoting livestock breeding, health, marketing, and climate change awareness. Strategies for **adaptation technologies and research** related to livestock are not well aligned across policies but include research on animal health and production, research and development to improve livestock productivity, and identifying and using appropriate technologies including integrating crop and livestock production and piloting innovative adaptation technologies.

Table 37. Policy adaptation strategies: Cambodia summary.

Policy	Adaptation strategies indicated, Cambodia								
	Improve SLM/NRM	Institutions/ planning	Early warning/ DRR	Increase CC awareness	Improve health	Improve extension	Improve feed	Adaptation Technology/ Research	Improve breeds
<b>Climate</b>									
NAPA, 2006	x	x	x	x	x	x	x		
CCCCSP, 2014-2023	x	x	x	x	x	x		x	
NDC, 2015	x	x	x	x				x	
CCAP, 2016-2018	x	x		x					
<b>Livestock/Ag</b>									
ASDP, 2014-2018	x	x	x	x	x	x	x	x	x
CCPAP for Ag, 2014-2018		x			x		x		x
Law on Animal..., 2016					x		x	x	x
SPFLD, 2016-2025	x	x	x		x	x	x	x	x
<b>Development</b>									
Green Growth Roadmap, 2009	x								
Strategic Plan on Green Growth, 2013 – 2030	x		x	x					
RS-IV, 2018-2023	x	x	x			x		x	
<b>Land/Environment</b>									
<b>Law on Land, 2001</b>									
Land Policy, 2015	x		x						
NESAP, 2016–2023	x	x	x	x		x			
Draft ENR Code, 2017	x	x	x	x					
<b>TOTAL</b>	<b>12</b>	<b>10</b>	<b>10</b>	<b>8</b>	<b>6</b>	<b>6</b>	<b>5</b>	<b>6</b>	<b>4</b>

## Mitigation synergies and gaps

There is a substantial lack of coherence in addressing livestock mitigation across policy areas. Among the policies reviewed, there is some recognition of livestock sector GHG emissions but no discussion of existing levels of livestock emissions. The country's Second National Communication to the UNFCCC, 2015, includes GHG emissions estimates from 2000 showing that agriculture is the largest net emitter including from enteric fermentation and manure management. This information, however, is not included in the strategies reviewed.

The Climate Change Action Plan Priorities for Agriculture, Forestry, and Fisheries, 2014-2018, is the only policy to include an emissions reduction target (reduce livestock emissions by one percent after 2015). The policy, however, does not include a baseline, timeline, or strategies beyond animal waste management and establishing a carbon accounting system for agriculture. The CCAP, 2016-2018, and Draft Environment and Natural Resources Code, 2017, offer broad mitigation strategies that would include livestock mitigation and the CCAP makes one reference to animal waste. These broad strategies include a national GHG inventory, best practices in mitigation applicable for Cambodia, and piloting innovative mitigation strategies. The ASDP, 2014-2018, includes a strategy to improve animal waste management and establish biogas digesters. It notes that the national plan for constructing bio-digesters has resulted in the establishment of 20,338 bio-digesters (as of 2015).

While Cambodia is targeting agriculture sector growth for food security, livelihoods, and national economic reasons, there is little acknowledgement of how sector growth will impact GHG emissions. There is almost no discussion of adaptation and mitigation co-benefits. Only three policies cite CSA and only the ASDP, 2014-2018, cites CSA in the context of mitigation.

### Coherence among mitigation actions

**Animal waste management** is the only mitigation strategy referenced in climate, agriculture, and development policies. Waste management strategies are not well detailed but include establishing biogas digesters. Policies in the climate, agriculture, and environment areas promote **establishing a national GHG inventory or national carbon accounting system**. The CCAP, 2014-2018, includes a project dedicated to developing a national GHG inventory system that would include an agriculture technical working group. The NESAP, 2016-2023,

contains a somewhat more detailed strategy to prepare reports under the Paris Agreement Enhanced Transparency Framework (ETF) by 2020 that have agriculture and land use components including inventories of emissions sources.

The CCAP, 2014-2018, and Draft Environment and Natural Resources Code, 2017, each reference **research on mitigation options** with the CCAP including a general activity to research and study mitigation options and the draft code referencing evaluating best practices applicable to Cambodia, identifying lessons learned, and testing technologies.

Improving sustainable land management is common across policies as an adaptation strategy but only two policies reference **sustainable land management or improved pasture management** in the context of mitigation. The ADSP, 2014-2018, references grazing rotation and planting new grasses and legumes in pastures to increase carbon sequestration. The Draft Environment and Natural Resources Code, 2017, promotes sustainable soil and land use management practices to protect carbon sinks and limit GHG emissions.

Other mitigation strategies that were mentioned in a single policy were CSA and improved feeding (ASDP), mainstreaming mitigation across government and establishing national carbon credit scheme for GHG mitigation (CCAP), and ecological agriculture (Green Growth Roadmap).

**Table 38. Policy mitigation strategies: Cambodia summary.**

Policy	Mitigation strategies indicated, Cambodia			
	Animal waste management	National GHG inventory/Carbon accounting system	Research mitigation options	SLM/improve pasture management
<b>Climate</b>				
<b>NAPA, 2006</b>				
<b>CCSP, 2014-2023</b>	x	x		
<b>NDC, 2015</b>				
<b>CCAP, 2016-2018</b>	x	x	x	
<b>Livestock/Ag</b>				
<b>ASDP, 2014-2018</b>	x			x
<b>CCPAP for Ag, 2014-2018</b>	x	x		
<b>Law on Animal..., 2016</b>				
<b>SPFLD, 2016-2025</b>	x			

<b>Development</b>				
<b>Green Growth Roadmap, 2009</b>		x		
<b>Strategic Plan on Green Growth 2013-2030</b>				
<b>RS-IV, 2018-2023</b>				
<b>Land &amp; Environment</b>				
<b>Law on Land, 2001</b>				
<b>Land Policy, 2015</b>				
<b>NESAP, 2016–2023</b>		x		
<b>Draft ENR Code, 2017</b>		x	x	x
<b>Total</b>	6	5	2	2

## Enabling and disabling conditions

This discussion of enabling and disabling conditions for livestock sector development broadly is drawn directly from the policies reviewed. Many of these are relevant for livestock sector adaptation and mitigation although they are often framed in the context of sector growth and productivity rather than climate change. The Strategic Framework on Livestock Development, 2016-2025, includes the most sector specific discussion.

### Disabling

Policies cite a range of challenges for agricultural development that have implications for livestock adaptation and mitigation. These include:

- difficulty for smallholders to expand or integrate into the emerging modern markets for agricultural products (outside of rice production),
- limited options for post-harvest management and agro-processing, and
- limited capacity among national institutions to address climate change and undertake science-based decision making.

Specific to the livestock sector, the Strategic Framework on Livestock Development, 2016-2025, references the high costs of local production (including high interest rates for credit), lack of access to improved breeds, lack of capacity in livestock processing, and market volatility (including a surplus of meat and poultry products from neighbouring countries suppressing prices). The framework also discusses the lack of access to veterinary services

and poorly organised vaccination services. The framework notes that smallholder livestock producers, in particular, are missing out on the opportunity presented by expanding market demand because of the inability to meet market quality and safety standards.

Additionally, while policies aim to address these issues, challenges remain related to:

- quality and availability of animal feed and medicines,
- access to timely information on animal production and marketing,
- land tenure insecurity,
- weak enforcement of laws,
- limited access to agriculture financing and extension services, and
- livestock diseases, a prominent constraint that continues to affect production.

Climate policies recognise climate change risks to agriculture including flood, drought, and mean temperature increase. Climate policies emphasise flood impacts as widespread flooding in 2000, 2001, 2011, and 2013 affected much of the country including the destruction of agricultural lands.

### **Enabling**

Policies note enabling conditions such as Cambodia's robust economic growth and expanding market demand for animal products due to the growing population and urbanization. Policies also cite the country's political commitment to agriculture and to addressing climate change and sustainable development. Cambodia has committed to developing the agriculture sector as demonstrated by the integration of agriculture as a prominent pillar in national development. Agriculture policies note government-driven enabling conditions such as improvements in support for animal health, agriculture extension, facilitation of sector exports, animal feed production, land tenure, and government and private sector services and investment in production and markets. The Strategic Framework on Livestock Development, 2016-2025, also notes the importance of the development and enforcement of the Law on Animal Health and Production, 2016, as an important legal framework for sector growth and sustainability (the law does not reference climate change).

Further enabling conditions for adaptation in Cambodia are the Pilot Programme on Climate Resilience (Climate Investment Funds) through which the country is accessing USD91 million to build institutional capacity to incorporate climate resilience into development plans and “climate proof critical water management systems, agriculture, and rural and urban infrastructure” (CIF 2019). The Cambodia Climate Change Alliance (funded by EU, UNDP, SIDA) has also offered long-term support to climate resilience in agriculture as well as other sectors.

## **Transboundary policy impacts**

### **Regional cooperation**

Two of the policies reviewed could contribute positively to addressing climate change across boundaries. The CCCSP, 2014-2023, includes an action to promote regional climate change cooperation within inter-governmental mechanisms. The policy action specifies cooperation under ASEAN framework and transboundary initiatives including within the Mekong River Basin framework. Additionally, CCCSP aims to “actively engage with regional and global initiatives and programmes for cross-learning and sharing Cambodia’s experience on climate change with the international community.” NESAP, 2016–2023, also includes a transboundary objective in its project on strengthening climate information and early warning systems. The project aims to increase transboundary exchange of climate and weather information as well as related best practices and lessons learned.

### **Disease control**

Cambodia has prioritised the control of transboundary animal diseases in the Law on Animal Health and Production, 2016, and Strategic Planning Framework for Livestock Development, 2015–2024. Measures include developing national and regional strategies for controlling or eradicating priority diseases and increasing biosecurity through creating disease-free zones, avoiding informal trade, and quarantining new animals. These measures have strong potential to reduce animal disease in Cambodia and neighbouring countries’ livestock production areas. These measures could negatively impact informal cross-border trade to Thailand, Vietnam, and Laos with livelihood implications in the near-term, however, strengthened animal health systems will improve overall sector productivity in the region.

### **Increasing exports**

Cambodia's ASDP, 2014-2018, emphasises increasing export of animal products. With relatively low levels of livestock production in Cambodia and increasing demand for livestock products through the region, it seems unlikely that these additional exports would have significant transboundary impacts in destination countries.

### **Policy integration of climate change and livestock**

Policies reviewed offer mixed levels of climate change integration, often limited attention to the livestock sector overall, and limited reference to the SDGs (present in just two policies), although five pre-2015 policies reference the MDGs. This section examines each policy area (climate, livestock and agriculture, development, and land and environment) for integration of livestock sector climate change adaptation and mitigation and alignment with the SDGs and national development goals. Policies were scored for extent of livestock adaptation and mitigation integration (Table 39). Higher scores designate more dedicated and detailed climate-related strategies for the livestock sector. The analysis for each policy area also examines the key actors in policy development, as described in the policy, and sources of finance. Where external actors were identified, these are included in brackets.

### **External actors in policy development**

Most policies reviewed list the involvement of external actors or their involvement is described in subsequent policies. There are no references to external involvement, however, for four policies—NDC, ASDP, Rectangular Strategy IV, and Draft Environmental and Natural Resources Code, 2017. Of those that list external actors, climate policies mention the EU, SIDA, and UNDP through Cambodia Climate Change Alliance (CCCA) and the NAPA lists GEF and UNDP. Agriculture and livestock policies mention FAO, CCAFS, and UNDP, while development policies mention UNESCAP and for the National Strategic Plan on Green Growth, 2013 – 2030, an “exchange of experience” with GGGI, OECD, UNESCAP, and UNEP. The Law on Land, 2001, was supported by ADB and GTZ. The CCCSP, 2014-2023, and National Environment Strategy and Action Plan, 2016–2023, list unnamed development partners. See the policy summary tables below for more detail.



**Table 39. Cambodia policy integration of livestock sector adaptation and mitigation summary (scoring on a scale of 0 to 3).**

Cambodia	Livestock Adaptation score	Livestock Mitigation score
<b>Climate Policy</b>		
Climate Average	1.5	0.5
CCCSP, 2014-2023	2	1
CCAP, 2016-2018	1	1
NDC, 2015	1	0
NAPA, 2006	2	0
<b>Livestock &amp; Agriculture Policy</b>		
Livestock & Agriculture Average	1.5	1
ASDP, 2014-2018	2	2
CCPAP for Ag..., 2014-2018	2	1
SPFLD, 2016-2025	2	1
Law on Animal..., 2016	0	0
<b>Development Policy</b>		
Development Average	1	0.33
RS-IV, 2018	1	0
Green Growth Roadmap, 2009	1	1
Strategic Plan on Green Growth, 2013 – 2030	1	0
<b>Land &amp; Environment Policy</b>		
Land & Environment Average	1.25	0.75
Draft ENR Code, 2017	2	1
NESAP, 2016–2023	2	1
Land Policy, 2015	1	1
Law on Land, 2001	0	0

### Climate policy

The **Cambodia Climate Change Strategic Plan (CCCSP), 2014-2023**, is the country's first comprehensive policy to address climate change and is designated as the primary policy for implementing the country's NDC. The CCCSP aims to guide national entities and assist partners in taking climate action to support the national development strategy through three phases of implementation. The CCCSP has a strong set of ten guiding principles including using a combination of science-based, ecosystem-based, and community-based approaches. CCCSP calls for mainstreaming climate change into national and sub-national development plans and encourages all ministries to develop sectoral climate change

strategic plans. Following this guidance, the Ministry of Agriculture, Forests, and Fisheries (MAFF) developed its Climate Change Action Plan Priorities for Agriculture in 2014. CCCSP integrates livestock adaptation and mitigation priorities that were proposed for inclusion by MAFF. It includes strategies specifically targeting the livestock sector and broader strategies with relevance for livestock. It also includes a strategy to implement key actions identified in the line ministry climate change strategic plans to address climate change impacts (i.e. Climate Change Action Plan Priorities for Agriculture).

The CCCSP directed the formulation of a climate change financing framework, which was completed in 2015, and provides guidance on mobilising and managing climate finance from domestic and international sources. The CCCSP also provides a framework for developing comprehensive monitoring and evaluation for adaptation and mitigation action that is intended to be operationalised at sectoral levels and integrated with the national monitoring and evaluation system.

Cambodia's **Climate Change Action Plan (CCAP), 2016-2018**, aims to support CCCSP implementation through 17 strategic actions that align with the eight strategic objectives of the CCCSP. CCAP has a strong emphasis on planning, institutional, and capacity aspects of mainstreaming climate change including improving national coordination for adaptation and mitigation action. CCAP actions are broadly targeted and, in contrast to the CCCSP, the policy does not mention livestock specifically outside of one action to improve animal waste management. CCAP recognises agriculture and energy as the highest emitting sectors and includes strategies to conduct a national GHG inventory. While the policy does not explicitly emphasise the livestock sector, its first policy action includes identifying, disseminating, and piloting resilient and low carbon solutions for food security.

Cambodia's **NDC, 2015**, states that its development was guided by the Green Growth Road Map, 2009, (which gives scant attention to livestock) and that its implementation will be primarily through the CCCSP. The NDC makes no reference to livestock in adaptation or mitigation commitments nor agricultural emissions. It does highlight agriculture as one of the sectors most impacted by climate change and includes agricultural adaptation commitments relevant to livestock although commitments seem to target crop agriculture. The NDC also references Cambodia's ongoing National Adaptation Planning process which

aims to “strengthen the ongoing climate change adaptation processes through cross-sectoral programming and implementation at national and sub-national levels” rather than create a stand-alone plan.

Cambodia’s **NAPA, 2006**, priority projects are predominantly agriculture-related and numerous projects relate to water access and flood protection. Livestock are explicitly mentioned in two high priority projects (improved water access and integrating livestock into household farming) and two medium priority projects (promoting livestock feed supplements and improving veterinary care). Other projects have relevance for the livestock sector including a focus on flood protection for agriculture, DRR, and soil conservation. The NAPA also references traditional livestock adaptation measures to increased flooding including building elevated enclosures for livestock and increasing feedstock for animals.

**Table 40. Cambodia climate policy summary.**

Cambodia Climate Policy	Overall policy goal	Policy objective(s), climate	Policy objective(s), livestock	SDGs and national development goals alignment	Key actors, policy development [external actors]	Finance sources
<b>NAPA, 2006</b>	To develop a country-driven programme of action and priority activities addressing adapting to the adverse effects of climate change	<ul style="list-style-type: none"> <li>- To understand characteristics of climate hazards</li> <li>- To understand coping mechanisms to climate change at the grassroots level</li> <li>- To understand existing programmes and institutional arrangements for addressing climate change</li> <li>- To identify and prioritise adaptation activities</li> </ul>	not present	Livestock Sector Adaptation 2 Mitigation 0  Aligned with MDGs, RS- I, 2004, and National Strategic Development Plan, 2006-2010	Ministry of Environment  [GEF, UNDP]	not present
<b>Cambodia Climate Change Strategic Plan (CCCSP), 2014-2023</b>	To create a national framework for engaging stakeholders in a participatory process for responding to climate change to support sustainable development	<ul style="list-style-type: none"> <li>-Reduce vulnerability to climate change impacts</li> <li>-Shift towards a green development path by promoting low-carbon development</li> <li>-Promote public awareness and participation in climate change response</li> </ul>	<ul style="list-style-type: none"> <li>- Promote climate resilience through improving food, water, and energy security</li> <li>-Reduce sectoral risks to climate change impacts</li> </ul>	Livestock Sector Adaptation 2 Mitigation 1  Aligned with MDGs, National Strategic Development Plan, 2009-2013, RS-II, 2008, Green Growth Roadmap, Green Growth Strategic Plan, and sectoral development plans	Ministry of Environment with the Climate Change Technical Team and National Climate Change Committee  [unnamed development partners]	Domestic finance, global and bilateral climate funds, integrate climate change-related activities integrated into traditional sector projects  Develop a Climate Change Financing Framework (completed 2015)
<b>NDC, 2015</b>	No overall goal stated	No specific objective stated	not present	Livestock Sector Adaptation 1 Mitigation 0  Aligned with National Strategic Development Plan (2014-2018), CCCSP,	not present	Build on the climate change financing framework; domestic, bilateral, and multilateral mechanisms; REDD+; global climate funds; Green Climate Fund could become the

				Green Growth Road Map (2009)		principal vehicle for climate finance in the future
<b>Climate Change Action Plan, 2016-2018</b>	To promote implementation of the strategic objectives of the CCCSP, 2014-2023	Same as overall	To establish a resilient low carbon technology hub for food, water, and energy security; other objectives have relevance for livestock adaptation and mitigation	Livestock Sector Adaptation 1 Mitigation 1  Aligned with CCCSP 2014-2023, National Strategic Development Plan, 2014-2018, and sectoral plans	Ministry of Environment with General Secretariat of National Council for Sustainable Development  [technical and financial support from EU, SIDA, and UNDP through Cambodia Climate Change Alliance (CCCA)]	USD28 to 30 million for the three years of implementation; sources include national budget, current development partners of MoE, and further development of MOE donor partnerships

## **Livestock and agriculture policy**

This review includes the Agricultural Sector Strategic Development Plan (ADSP), 2014-2018, and Climate Change Action Plan Priorities for Agriculture, Forestry, and Fisheries (CCPAP), 2014-2018, which continue to be implemented as new policies have yet to be released (RGoC 2019). The ASDP, 2019-2023, has been finalised and is expected to be launched soon, however, the policy was not available for review. Regarding the Rectangular Strategy IV measure to create an Agriculture Master Plan, it is still under development with no clear release date.

The **Agricultural Sector Strategic Development Plan (ADSP), 2014-2018**, is a medium-term plan designed to achieve national priorities for agriculture as laid out in the National Strategic Development Plan, 2014-2018, and Rectangular Strategy-III. ADSP aims to increase livestock sector production, diversification, and commercialization with a focus on animal health and nutrition. The ASDP includes climate change as a cross-cutting issue and dedicated, although not well-detailed, set of measures for livestock adaptation and mitigation. The policy includes an overall focus on commercialization and for cattle, the policy aims to increase the focus on fattening for commercial sale.

The **Climate Change Action Plan Priorities for Agriculture, Forestry, and Fisheries (CCPAP), 2014-2018**, was designed to implement the agriculture goals of the CCCSP. The action plan is brief and oriented around high-level goals, outputs, and actions rather than detailed strategies. The action plan includes a livestock specific goal and outcome related to increasing sustainable livestock production by three percent per annum, improving animal health control, and reducing livestock sector emissions. A key policy action is promoting livestock sector resilience and adaptation; the plan references but does not detail a “technical package” for this action. The action plan states that it is important that its priority actions are included in public investment programmes. The country’s Three Year Rolling Public Investment Programme, 2020-2022, includes agriculture development initiatives but is not fully reviewed here.

The **Strategic Planning Framework for Livestock Development, 2016-2025**, is the master plan and roadmap for Cambodia’s livestock sector development. Its mission is to promote good animal health and production practices through effective human resource

development, research and extension, policy development and law enforcement, public-private partnerships, and communication. It includes target indicators, factors that could affect implementation, and options to address risk factors. The framework aims to mainstream climate change as a cross-cutting issue noting that the Department of Animal Health and Production will develop adaptation and mitigation strategies with support from climate change experts. The framework references improving animal breeds, feed, and health for adaptation and animal waste management for mitigation.

The **Law on Animal Health and Production, 2016**, aims to regulate livestock health and production with a focus on disease control, conserving animal genetic resources, and ensuring safe veterinary practices, animal feed, and animal processing. Across 22 chapters, the law details regulations, stakeholder responsibilities, and institutional arrangements for management of the livestock sector. There is no reference to climate change, however, the extensive regulations put forth for animal health and production should support overall sector resilience.

**Table 41. Cambodia livestock and agriculture policy summary.**

Cambodia Livestock & Agriculture Policy	Overall policy goal	Policy objective(s), climate	Policy objective(s), livestock	SDGs and national development goals alignment	Key actors, policy development [external actors]	Finance sources
<b>Agricultural Sector Strategic Development Plan (ASDP), 2014-2018</b>	Increase agricultural growth to 5% per annum through enhancing agricultural productivity, diversification and commercialization and livestock and aquaculture...	Reduce negative climate change impacts on agricultural production through increasing climate change adaptation and mitigation interventions	- Promotion of livestock and aquaculture -Enhancement of agricultural productivity, diversification, and commercialization	Livestock sector Adaptation 2 Mitigation 2  Aligned with ASEAN agreements and frameworks, Rectangular Strategy Phase-III, and the National Strategic Development Plan, 2014-2018	Ministry of Agriculture, Forestry, and Fisheries [none named]	USD348 million (USD46.7 million for livestock production and health); domestic finances, development partners, smaller amounts from non-government organisations, civil societies, and private sector
<b>Climate Change Action Plan Priorities for Ag, Forestry, and Fisheries (CCPAP), 2014-2018</b>	To respond to the impacts of the climate change on agriculture and implement CCCSP	same as overall	To increase sustainable livestock production (3% p.a.) and animal health control, and contribute to reducing GHG emission from animal production by 1% after 2015	Livestock sector Adaptation 2 Mitigation 1  Aligned with CCCSP which is aligned with MDGs	Ministry of Agriculture, Forestry, and Fisheries [CCAFS, UNDP]	USD25.6 million for livestock priority actions; finance is based on the climate change financing framework; aims to increase finance through mainstreaming climate into traditional development projects.
<b>Law on Animal Health and Production, 2016</b>	To regulate animal production and health	not present	-Ensure management and development of animal production; -Protect human and animal health and welfare and the environment;	Livestock sector Adaptation 0 Mitigation 0	Ministry of Agriculture, Forestry, and Fisheries  [FAO]	An Animal Disease Emergency Fund shall be sourced from: - A separate national budget in the annual MAFF budget framework



			<ul style="list-style-type: none"> <li>-Control, prevent and eradicate the spread of animal diseases;</li> <li>-Conserve animal resources and breeds</li> <li>-Ensure quality and safe animal products for domestic market and export</li> </ul>	Not explicitly aligned with international or national development goals although strategies are consistent with other livestock and agriculture policy		<ul style="list-style-type: none"> <li>- Financing from development partners</li> <li>- Other legal sources of finance</li> </ul> <p>(no other reference to financing the law)</p>
<b>Strategic Planning Framework for Livestock Development (SPFLD), 2016-2025</b>	To strengthen animal health and production services that will reduce the impact of animal diseases, increase animal production, and enhance safe trade	(Not a policy objective but a mainstreamed issue) To mainstream climate change through integration of adaptation and mitigation into the livestock development process and activities	Strengthen animal production and health; Promote laws and research and development; Improve institutional and human resource development; Promote public and private sector partnerships; Strengthen media services on animal health, production and marketing; Strengthen national and international economic and technical cooperation	<p>Livestock sector Adaptation 2 Mitigation 1</p> <p>Aligned with MDG 1 for poverty reduction and food security, RS-III, ADSP, 2014-2018, and national climate change framework</p>	<p>Ministry of Agriculture, Forestry, and Fisheries, Department of Animal Health and Production</p> <p>[EU]</p>	National budget, development partners, NGOs, and private sector with the investment cost primarily provided by development partners

## Development policy

Cambodia's **Rectangular Strategy for Growth, Employment, Equity, and Efficiency Phase IV (RS-IV), 2018-2023**, provides the country's highest-level guidance for development. The strategy sets forth actions to achieve the country's development goals for 2030 and 2050. RS-IV recognises climate change as a key development challenge and dedicates policy actions to further mainstreaming climate change at national and sub-national levels. RS-IV also highlights agriculture and its role in food security and the national economy as a key strategic area. While RS-IV prioritises both addressing climate change and promoting agriculture, there is no discussion of agriculture or livestock specific adaptation or mitigation strategies. Some strategies dedicated to either promoting agriculture or addressing climate change, however, are relevant to livestock adaptation. Livestock are only specifically mentioned in two strategies, one on improving productivity through research and development and one promoting sector development through continued implementation of the Law on Animal Health and Production and the Strategic Plan Framework for Livestock Development.

To address climate change, RS-IV prioritises continued implementation of the National Strategic Plan on Green Growth, CCCSP, and NESAP, which offer a range of adaptation strategies although they are weak on mitigation. Regarding agriculture, RS-IV prioritises the development and implementation of the Agriculture Sector Strategic Development Plan, 2019- 2023, and Master Plan for Agriculture Sector Development<sup>7</sup>.

RS-IV will be implemented through the yet-to-be finalised National Strategic Development Plan (NSDP), 2019-2023. NSDP will include development indicators and timelines for implementation aligned with RS-IV and sectoral policies. The previous NSDP, 2014-2028, states the importance of implementing the CCCSP and included indicators to track climate change actions. NSDP, 2019-2023, is intended to mainstream Cambodia's SDGs.

The **National Green Growth Roadmap, 2009**, and its implementation plan, the **National Strategic Plan on Green Growth, 2013–2030**, aim to balance economic development with

<sup>7</sup> At the time of writing, the Agriculture Sector Strategic Development Plan, 2019- 2023, was finalised but yet to be released and not available for review; the Agriculture Master Plan was under development.

social and environmental sustainability. The policies were initiated by the Ministry of Environment's Green Growth Secretariat (now integrated into the National Council for Sustainable Development) and supported by the United Nations Economic and Social Commission for Asia and the Pacific (UNESCAP). The policies recognise climate change impacts and note that green growth includes improving climate resilience and choosing low carbon options. They provide limited strategies, however, dedicated to agriculture adaptation and none for mitigation. The agricultural focus of the documents is on promoting organic production. The National Green Growth Roadmap does propose cross-sectoral projects to improve implementation of NAPA, conduct climate change assessments, and develop a climate change response programme. The policy contains just one reference to livestock in the recommendation to promote ecological agriculture that integrates livestock and aquaculture into farming systems. The National Strategic Plan on Green Growth recognises that agriculture is vulnerable to climate change but does not include discussion of particular risks. The policy does not refer to livestock (other than that green agriculture does not harm animal health) although there is emphasis on natural fertilizers implying the use of manure.

**Table 42. Cambodia development policy summary.**

Cambodia Development Policy	Overall policy goal	Policy objective(s), climate	Policy objective(s), livestock	SDGs and national development goals alignment	Key actors, policy development [external actors]	Finance sources
<b>National Green Growth Roadmap, 2009</b>	To foster sustainability of economic growth by enhancing sustainable consumption and production, greening markets and businesses, and creating favourable climate for the establishment of sustainable infrastructure	To establish and maintain Green Growth, defined as environmentally sustainable economic progress that fosters low-carbon, socially inclusive development	To address food security/ agriculture through green economic growth projects and programmes and low carbon solutions	Livestock Sector Adaptation 1 Mitigation 1  Aligned with MDGs, National Strategic Development Plan, Rectangular Strategy, and NAPA	Ministry of Environment, Green Growth Secretariat  [UNESCAP]	Use the Ministry of Economy and Finance's Financial Sector Development Strategy; operationalise the Polluter Pays Principle to promote the internalisation of environmental costs
<b>National Strategic Plan on Green Growth 2013-2030</b>	Green growth--economic, environmental, social, and cultural sustainability for poverty alleviation), ensuring political stability and macroeconomic stability to reach developed country status	To reduce GHG emissions and climate change adaptation	To promote green agriculture--organic production that does not damage the environment or human or animal lives	Livestock Sector Adaptation 1 Mitigation 0  Aligned with Rio+20 principles and National Green Growth Roadmap	Ministry of Environment and National Council on Green Growth  [exchange of experience with GGGI, OECD, UNESCAP, UNEP]	National budget and other sources
<b>Rectangular Strategy, Phase IV (RS-IV), 2018-2023</b>	Growth, employment, equity, and efficiency	To ensure environment sustainability and readiness for climate change	To promote agricultural and rural development	Livestock Sector Adaptation 1 Mitigation 0  Aligned with SDGs, Vision 2030, Vision 2050, numerous sector policies	Sixth Legislature of the National Assembly  [none listed]	National budgets as detailed in the medium-term revenue mobilisation strategy 2019-2023 and sector budget plans; development partners

## Land and environment policy

The **National Environment Strategy and Action Plan (NESAP), 2016–2023**, outlines priority policy and governance initiatives and financing mechanisms to support environmentally sustainable economic development. NESAP mainstreams “responding to climate change impacts” referencing the findings of the Second National Communication. NESAP recognises agriculture as a key driver for economic growth and livelihoods and as vulnerable to climate change impacts. Additionally, it includes a project that involves strengthening GHG inventories for agriculture and land use change. It includes only one explicit reference to livestock in the context of declining productivity due to land degradation, however, it has a range of dedicated agricultural strategies with relevance for livestock. These include sustainable land management, mainstreaming adaptation in local planning, disaster risk management, and climate sensitive agricultural extension.

The **Draft Environment and Natural Resources Code, 2017**, provides a legal framework and high-level comprehensive approach to adaptation and mitigation in Cambodia. The code focuses on increasing climate change-related institutional capacity and coordination, financing, and monitoring and evaluation, and mainstreaming climate change across development and sectoral planning and operations. If adopted, the code will provide robust mechanisms for climate action, environmental protection, and accountability that go beyond Cambodia’s existing laws and policies (MRLG, 2019). Sectoral-specific discussion, however, is limited. There is little discussion of agriculture, and livestock are only discussed in terms of traditional rights and their impact on biodiversity. While attention to livestock is a gap, the code has strong potential to greatly raise the profile of climate action among government entities. The code directs the development of a national climate change response addressing adaptation and mitigation and integration of climate change across relevant sectoral plans, budgets, and monitoring frameworks. Cambodia’s Draft Environment and Natural Resources Code was initiated in 2015; the 11<sup>th</sup> version was released in 2019 and expected to be adopted soon (MRLG 2019). This analysis reviews the publicly available Draft 9.1 from July 2017.

Cambodia’s **Law on Land, 2001**, aims to regulate land administration, management, and distribution. The law establishes private ownership rights to agricultural land, asserts

indigenous rights to land, and creates a national land registry to support the land market. The law does not reference climate change or livestock. The references to agriculture are mainly regarding the relationship between cultivation and land ownership or use rights. A lack of resources to implement the law and some contradictions between the land law and Civil Code have led to legal ambiguity and implementation of the land law remains uneven (Trzcinski and Upham 2014). Land governance in Cambodia has also been criticised for failing to protect smallholders and indigenous communities from losing their land to more powerful interests (Scurrah and Hirsch 2015). The weak implementation could lead to land tenure insecurity for livestock owners.

Cambodia's **White Paper on Land Policy, 2015**,<sup>8</sup> provides additional direction for land use, land management, and natural resource management. The policy envisions equitable, transparent, effective, and sustainable land management, use, and distribution that supports national goals. The policy includes a section on land policy and climate change and notes the need to prepare for climate change trends specifically referencing agricultural adaptation, managing natural resources for environmental sustainability, and reducing natural disasters risk and risks to food supply. The policy also directs the Ministry of Land Management, Urban Planning and Construction to develop a sector climate change policy to be incorporated into the CCCSP. The policy includes promoting Economic Land Concessions that grant state land to agroindustry<sup>9</sup> as well as land use planning to protect agriculture land from conversion to other uses. The policy references livestock explicitly in just two areas, 1) promoting contract farming for smallholders, including for livestock production and 2) directing the Ministry of Water Resources and Meteorology to plan flood management measures to protect humans, animals, and property.

<sup>8</sup> For this analysis, the author reviewed the copy of the policy released on 28 August 2012; a more recent English translation was not found.

<sup>9</sup> This policy has been controversial, Neef, et al., 2013.

**Table 43. Cambodia land and environment policy summary.**

Cambodia Land & Environment Policy	Overall policy goal	Policy objective(s), climate	Policy objective(s), livestock	SDGs and national development goals alignment	Key actors, policy development [external actors]	Finance sources
<b>Law on Land, 2001</b>	To determine ownership regime for immovable properties in the Kingdom of Cambodia for the purpose of guaranteeing the rights of ownership and other rights related to immovable property	not present	not present	Livestock Sector Adaptation 0 Mitigation 0  No explicit alignment	Ministry of Land Management, Urban Planning and Construction  [ADB, GTZ]	not present
<b>Land Policy White Paper, 2015</b>	To facilitate the use and management of land and natural resources for socio-economic development in an equitable and sustainable manner	None; however, policy states that to address climate change, it shall emphasise reduction of natural disaster risk and risks to food supply	To guarantee the management, protection, and use of land and natural resources in a transparent and effective manner in order to ensure equity of socio-economic development, maintain environmental sustainability, and prevent disputes on land use	Livestock Sector Adaptation 1 Mitigation 1  Aligned with MDGs, Constitution, Law on Land, Civil Code, and various sectoral policies	Council for Land Policy	not present

<b>National Environment Strategy and Action Plan, 2016–2023</b>	To integrate environmental considerations into policies, programmes and investments and provide a roadmap for resource mobilisation and actions to achieve sustainable and inclusive development	To support the existing climate change-related strategies and action plans	None; however, agriculture is referenced in numerous outcomes and projects for sub-national climate change planning, sustainable land management, CSA, increasing agriculture productivity, and strengthening monitoring of agriculture emissions sources and sinks	<p>Livestock Sector Adaptation 2 Mitigation 1</p> <p>Aligns with SDGs, NDC, Rectangular Strategy, National Strategic Development Plan, 2014–2018, and Draft Environment and Natural Resources Code</p>	<p>Ministry of Environment and National Council for Sustainable Development</p> <p>[unnamed development partners]</p>	\$260 million for projects and programmes; budget requirements should be incorporated in the national development framework and budgeting with sources from national and international public and private entities
<b>Draft Environment and Natural Resources Code of Cambodia, 2017</b>	To enable the sustainable development of the Kingdom of Cambodia, by protecting the environment and conserving, managing, and restoring natural and cultural resources.	National Council for Sustainable Development shall develop, update, and coordinate a long-term national climate change response addressing climate change mitigation, adaptation, finance, technology development and transfer, and capacity building	not present	<p>Livestock Sector Adaptation 2 Mitigation 1</p> <p>Aims to promote international environmental responsibilities and enforce the international legal instruments to which Cambodia is a party</p>	<p>Ministry of Environment</p> <p>[none listed]</p>	The code provides extensive guidance for financing but does not include discussion on financing its own implementation



## Conclusion

This policy coherence analysis reveals an evolving policy context for livestock sector adaptation and mitigation in Burkina Faso, Niger, Rwanda, Nepal, and Cambodia. The trajectory of policy ambition for livestock adaptation and mitigation is generally on the rise. This is evidenced by more recent policies often providing more comprehensive and detailed strategies. Policies developed post-2015 are explicitly aligned with the SDGs with a few exceptions.<sup>10</sup> The exceptions, however, are often aligned with national development goals which themselves are aligned with the SDGs.

At the same time, there is great opportunity to further integrate livestock adaptation and mitigation across countries and policy areas. In many policies reviewed, there is a need to move beyond superficial references to climate mainstreaming or climate change as a cross-cutting theme to more detailed and comprehensive livestock adaptation and mitigation strategies. This effort could begin with better use of detailed assessments of climate change risks and emissions in the livestock sector, including emissions from land use change. Where this information is not available, policies could support initiatives for improved climate information services, vulnerability assessments, and emissions monitoring. For livestock adaptation, there is a clear need for policy strategies to better integrate climate information to support sector growth and resilience across timescales and climate change scenarios.

All countries could benefit from further integration of livestock adaptation and mitigation strategies and coherence within and across policy areas. Needs include more detailed and comprehensive strategies including discussion of enabling and disabling conditions, specific targets, and monitoring and evaluation to guide policy impact. Improved livestock adaptation and mitigation integration and coherence can support practical actions in areas such as feed, health, and natural resource management that support sector growth through increased resilience. In contrast, a lack of policy coherence and detailed strategies for

<sup>10</sup> These exceptions are Niger 2035, 2017, Rwanda's Livestock Master Plan, 2017, Cambodia's Climate Change Action Plan, 2016-2018, and Cambodia Strategic Planning Framework for Livestock Development, 2016-2025 (aligned with MDGs).

livestock adaptation and mitigation may lead to missed opportunities for improving climate-resilience that supports sector productivity and has mitigation co-benefits.

In each country, there are examples of strong policy guidance for livestock adaptation. Burkina Faso and Niger, in particular, have policies across policy areas that support adaptation. In Rwanda, there is less overall livestock adaptation integration, however, the country's key agriculture strategy, which is most likely to drive on-the-ground action, also offers the most robust livestock adaptation guidance. In Cambodia, livestock adaptation strategies are not well detailed but are well represented in all policy areas other than development. In Nepal, the country's more recent agriculture policies offer the most thorough adaptation guidance.

In terms of mitigation in the livestock sector, examples of robust strategies are more limited. The best examples are Burkina Faso's NDC and Cambodia's Agricultural Sector Strategic Development Plan. Comprehensive mitigation action in the livestock sector and sufficient consideration of adaptation-mitigation co-benefits remain a gap in many policies across countries and policy areas.

Work to further integrate livestock adaptation and mitigation across policy areas will create a more enabling policy environment for robust livestock climate action that fosters adaptation and mitigation synergies and supports sector productivity.

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