Food and Agriculture Organization of the United Nations

Small livestock development in Rwanda: Policy analysis of pig and poultry value chains

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Abbreviations and acronyms

AI	artificial insemination
AIS	agricultural innovation systems
GDP	gross domestic product
KII	key informant interview
LMP	Livestock Master Plan
MINAGRI	Ministry of Agriculture and Animal Resources
MINEDUC	Ministry of Education
NAP	National Agricultural Policy
NIRDA	National Industrial Research and Development Agency
PRISM	Partnership for Resilient and Inclusive Small stock Market
PSTA 4	Strategic Plan for Agriculture Transformation 2018 – 2024
RAB	Rwanda Agriculture and Animal Resources Development Board
RCVD	Rwandan Council of Veterinary Doctors
RICA	Rwanda Inspectorate, Competition and Consumer Protection Authority
RPFA	Rwanda Pig Farmers Association
RPIA	Rwanda Poultry Industry Association
RSB	Rwanda Standards Board
SDGs	Sustainable Development Goals
TAP	Tropical Agriculture Platform
USAID	United States Agency for International Development
VSF	Vétérinaires Sans Frontières

Executive summary

The FAO-led project "Developing capacities in agricultural innovation systems: scaling up the Tropical Agriculture Platform Framework (TAP-AIS)" assessed policies and the enabling environment related to innovation in the small livestock subsector in Rwanda, with a focus on poultry and pig value chains. A Senor Consultant conducted a desk review and policy consultations from August to October 2022. The desk review included global and national policy documents, development partner reports and the TAP-AIS project's agricultural innovation systems (AIS) assessment report of 2021, subsequent stakeholder workshop reports and the five-year strategic plans of Rwanda Pig Farmers Association (RPFA) and Rwanda Poultry Industry Association (RPIA). Policy consultations were held in eight districts of Rwanda through 39 key informant interviews and five focus group discussions comprising 30 participants. Direct observations were also done. Findings were presented to and validated by stakeholders at a national policy dialogue event on 10 November 2022 in Kigali.

Findings comprise: (i) the current situation of policy implementation in the livestock subsector; (ii) analysis of the main problems and policy issues for pig and poultry value chains; and (iii) detailed analysis of the highest-ranked problem – access to affordable, high-quality animal feeds.

Rwanda lacks a stand-alone livestock policy. However, a series of priority actions in the livestock sector are well aligned with various Rwandan agricultural policies, including the National Agriculture Policy (NAP), the Strategic Plan for Agriculture Transformation 2018–2024 (PSTA 4) and the Livestock Master Plan (LMP). These actions are put into practice by an existing network of pig and poultry value-chain actors, including the Ministry of Agriculture and Animal Resources (MINAGRI), Rwanda Agriculture and Animal Resources Development Board (RAB), Enabel, the Belgium federal government development agency, and the project Partnership for Resilient and Inclusive Small Livestock Market (PRISM) supported by the International Fund for Agricultural Development (IFAD), private sector companies such as feed industries and national associations, including Rwanda Pig Farmers' Association (RPFA), Rwanda Poultry Industry Association (RPIA), Rwanda Council of Veterinary Doctors (RCVD), Vétérinaires Sans Frontières (VSF) and others.

The stakeholder consultations identified the main problems and policy issues in pig, poultry, and animal feed value chains. These problems were discussed and ranked according to their importance:

- insufficient access to affordable, suitable and nutritious animal feed;
- low market price for animal products compared to input costs;
- lack of markets due to cultural perceptions about consumption of chicken, eggs and grilled pork;
- financial constraints to smallholder farmer participation in pig and poultry value chains;

- limited farmer access to improved animal breeds;
- limited animal health services related to animal diseases, vaccines and drugs;
- poor standards of animal sheds in smallholder farms;
- limited or poor market infrastructure and processing facilities for animal products;
- limited farmer knowledge and skills for rearing pigs and poultry;
- poor links between small livestock farmers, feed producers and animal processing facilities; and
- lack of transport and logistics for live animals and animal products.

The highest-ranked problem, access to animal feeds, was further analysed using the problem tree technique during the focus group discussions. The problem tree diagram helped visualize the root causes and effects of the core problem. This information helped categorize priority actions to undertake the needed policy changes.

The analysis indicated the following root causes of insufficient access to animal feeds: (i) low production of soybean and maize in Rwanda; (ii) high cost of animal feeds; (iii) very limited number of feed millers concentrated in Kigali, Rwamagana and Musanze; and (iv) weak collaboration between feed millers for collective import of raw materials.

The effects of this core problem are (i) increased malnutrition in pigs and poultry reared by farmers; (ii) reduced number of pig and poultry farms as owners drop out of the business; (iii) deficiency of animal protein in family diets; (iv) emerging human malnutrition; and (v) increased poverty.

Carefully considered policy interventions are needed to sustain the development of pig and poultry production in Rwanda. Small livestock is one of the most important sources of income in rural areas of Rwanda, therefore, future studies should investigate these effects and their impacts on income and livelihoods.

The Government of Rwanda and other stakeholders should undertake the following actions to address limited access to feeds:

- Establish a platform for all actors in small livestock value chains to analyse and solve problems regarding access, availability, and quality of animal feeds for small livestock.
- Conduct a multidisciplinary study on the current Government of Rwanda subsidy scheme supporting maize and soybean inputs to identify bottlenecks and opportunities for raising productivity.
- Support the import of maize and soybeans, including specific varieties of these crops for animal feeds to reduce the competition between human and livestock consumption.
- Incentivize feed millers for collective import of raw materials for animal feed production while supporting the construction of warehouses to store large quantities of imported maize and soybeans.

- Encourage feed millers to strengthen animal feed distribution networks in remote rural areas of Rwanda.
- Promote ongoing research on alternative energy and protein sources for animal feeding (azola, a group of aquatic ferns; black soldier fly larvae; and animal feed concentrates). RAB and Agri-Business Solutions have initiated this ongoing research, which needs to be boosted and scaled up.

It is also necessary to solve the other identified problems, one by one, through urgent policy interventions:

- Create or increase incentives for private investors to establish market infrastructure for small livestock, including feed mills and feed distribution networks, animal processing facilities and cold chains for animal products.
- Review and enforce standards and regulations governing the small livestock sector to enhance quality and promote consumer demand in Rwanda. Relevant operations on the input side include import of animal breeds, breeding centres, hatcheries, feed production and distribution and intellectual property rights. On the output side, standards and regulations would cover pig and poultry sheds, abattoirs, transport and small livestock products (e.g. pork, chickens, eggs).
- Sensitize and motivate commercial banks and microfinance institutions to introduce well-tailored agricultural credit lines in their portfolios and revise measures for credit and insurance access for farmers and investors in the livestock sector.
- Attract investors to transport infrastructure for small livestock with an emphasis on animal welfare. This entails the introduction of specialized trucks to move live animals and animal products (e.g. processed meat) long distances.
- Establish links between small livestock producers (smallholders and small and medium enterprises), feed producers and animal processing facilities.

1. Introduction

FAO Country Offices help governments develop policies, programmes and projects to achieve food security and reduce hunger and malnutrition. FAO Rwanda is implementing a national component of the project "Developing capacities in agricultural innovation systems: scaling up the Tropical Agriculture Platform Framework (TAP-AIS)" in partnership with the Ministry of Agriculture and Animal Resources (MINAGRI). The TAP-AIS project is funded by the European Union and is coordinated by FAO's Office of Innovation (OIN) in Rome, Italy.

In 2021, TAP-AIS Rwanda assessed agricultural innovation systems in the country's small livestock subsector, focusing on poultry, pig and animal feed value chains (FAO, 2021). The study identified organizational and policy-related constraints and challenges in the small livestock innovation system, which are being addressed in the project's ongoing capacity development phase.

The TAP-AIS project is also developing organizational capacities for two national associations working on small livestock, the Rwanda Pig Farmers Association (RPFA) and the Rwanda Poultry Industry Association (RPIA).

Policies and the enabling environment must be conducive to innovation. Consequently, a policy dialogue process is included in the TAP-AIS project to further strengthen capacities for innovation in the small livestock subsector. A policy specialist consultant was assigned to analyse policies, their implementation and the enabling environment related to innovation in the small livestock subsector (Annex 1). The study had these objectives:

- Identify, analyse and prioritize policy issues that influence innovation processes in the small livestock subsector, with an emphasis on pig and poultry value chains.
- Organize a national policy dialogue event with the TAP-AIS Country Project Manager (CPM).
- Make practical recommendations for improving policies and strategic processes to strengthen agricultural innovation.

The consultant was tasked with conducting policy consultations with stakeholders, including MINAGRI, RAB, PRISM/Enabel and PRISM/IFAD projects, RPFA, RPIA and selected farmers. Results and recommendations were presented and validated at FAO's national policy dialogue event on 10 November 2022. The recommendations in this report are meant to provide decision support and advice to the TAP-AIS project, MINAGRI and other stakeholders on harnessing policy actions that would strengthen the enabling environment for innovation.

The scope of this assignment covered the small livestock subsector policy in Rwanda with a focus on pig and poultry value chains. The Government of Rwanda has developed policy documents related to the topic under analysis. These documents comprise the National

Agricultural Policy (NAP) in 2010 and reviewed in 2018 (MINAGRI, 2018a), the Fourth Strategic Plan for Agricultural Transformation (PSTA 4) in 2018 (MINAGRI, 2018b) and the Livestock Master Plan (LMP) in 2017 (Shapiro et al., 2017).

The expected outputs for this assignment include:

- an inception report including a preliminary review of secondary data, methodology and a workplan for the policy analysis;
- a presentation of methods and the workplan at a meeting with the TAP-AIS Country Advisory Team;
- a draft report and two policy briefs prepared and presented at a national policy dialogue event;
- two final policy briefs, one on poultry and pig value chains and one on animal feeds; and
- a final report published by FAO.

This policy analysis examined challenges and how existing policies could be enhanced to improve the current status of pig and poultry value-chain development in Rwanda.

2. Methodology

This policy analysis was conducted from August to October 2022. Secondary data were collected through a desk review, while primary data were collected using key informant interviews (KIIs), focus group discussions (FGDs) involving various stakeholders and direct observations. The method and workplan (Annex 2) were presented to the TAP-AIS country advisory team for comments and inputs before data collection.

2.1. Data collection techniques

Secondary data collection

The desk review identified challenges and gaps in small livestock policies, particularly legislation and regulations regarding the small livestock policy framework. Relevant policies and strategies at the international, regional and national levels, along with their institutional framework, mandates, roles, responsibilities and functionality were reviewed.

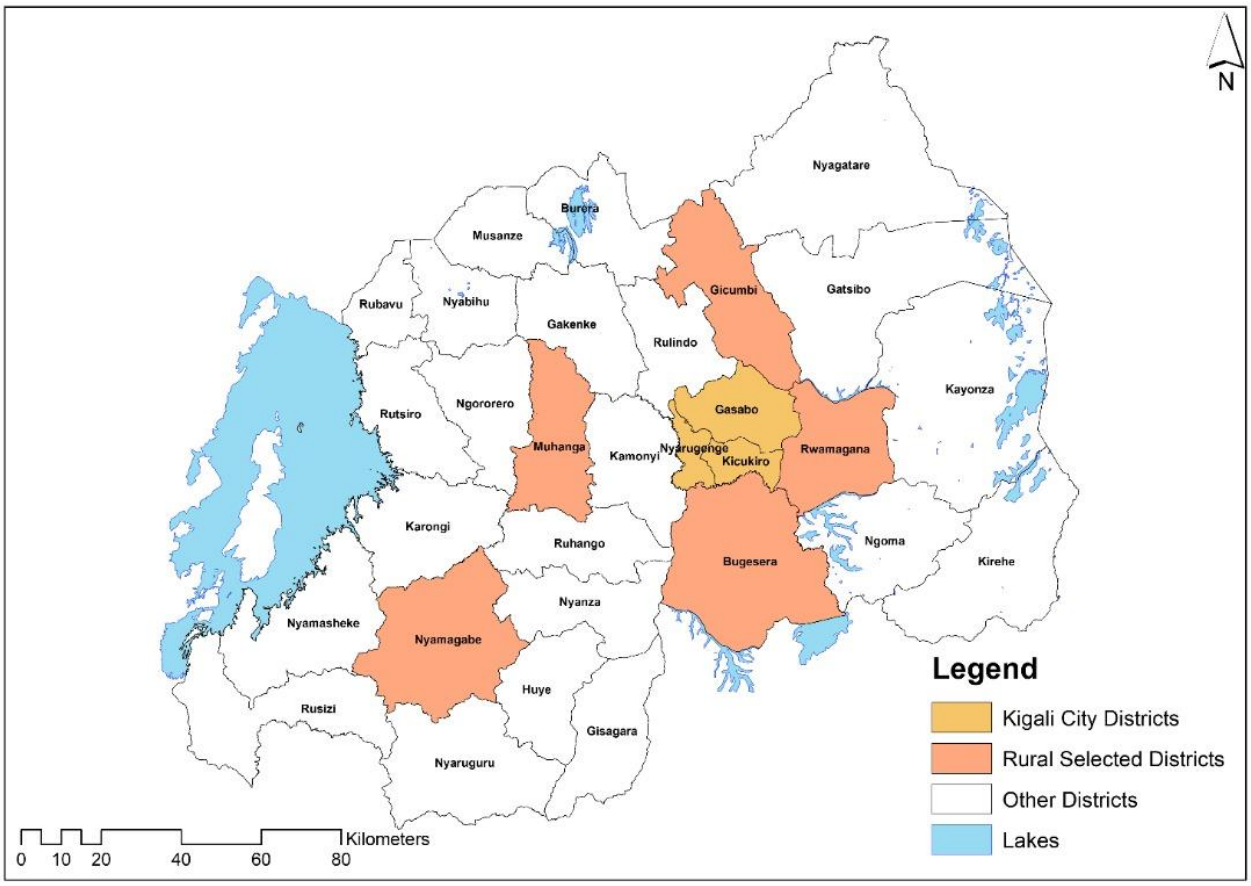
The desk review covered documents and information on policy and the enabling environment related to innovations in the small livestock subsector. These included but were not limited to:

- international and regional frameworks such as the Sustainable Development Goals (SDGs) and the Africa Agenda 2063;
- national policies and strategies: National Agriculture Policy (2018), Vision 2050, National Strategy for Transformation Phase 1 (NST 1), Strategic Plan for Agriculture Transformation Phase 4 (PSTA 4) and Livestock Master Plan (2017);
- annual reports, including RAB 2020–2021 annual report, MINAGRI annual report (2021), recent reports (2020–2021) by FAO and the European Union on poultry, pig and animal feeds and any other relevant published papers; and
- the TAP-AIS project assessment report (FAO, 2022) and subsequent stakeholder workshop reports, and the five-year strategic plans of Enabel, MINAGRI, RAB, RPFA and RPIA (2022–2027).

Primary data collection

Primary data were collected using key informant interviews (KIIs), focus group discussions (FGDs) and direct observations. An official letter from FAO formally introduced the consultant to (i) RPIA and RPFA; (ii) government institutions; (iii) the private sector; (iv) development partners; and (v) civil society organizations. A purposive sampling technique was used to reach respondents. Data were collected in three districts of Kigali City (Nyarugenge, Kicukiro and Gasabo), where key informants from different institutions are located and in five rural districts of Rwanda (Gicumbi, Rwamagana, Bugesera, Muhanga and Nyamagabe) (Figure 1).

Figure 1. Study area for policy consultations, September 2022



Source: Adapted from the administrative map of Rwanda. GIS@NISR, 2019, Kigali.

The KIIs and FGDs (Table 1) were conducted with knowledgeable individuals involved in pig and poultry value chains. These two techniques drew out participants' views on how policy should be shaped to boost the small livestock subsector.

Key informant interviews

The objectives of the KIIs were to: (i) understand the current status and activity of each stakeholder; (ii) identify challenges in the small livestock sector; and (iii) suggest policy actions.

A KII questionnaire guide (Annex 4) was prepared by the consultant and used to collect information through face-to-face interviews. Each interview included eleven questions and took about 40–45 minutes.

The stakeholders consulted included farmer beneficiaries of small livestock projects such as PRISM/Enabel, PRISM/IFAD and USAID/Orora Wihaze, which support pig and poultry value chains; public institutions (e.g. MINAGRI, RAB); private stakeholders (e.g. service providers, agro-veterinarians, agrofeed industries); development partners (e.g. FAO, European Union); and organizations involved in the pig and poultry value chains such as RPFA and RPIA. A total of 39 individual KIIs were conducted with key stakeholders (Table 1).

Table 1. Key informant interviews and focus group discussions

Date	District	KII participants			FGD participants			Total		
		Men	Women	Total	Men	Women	Total	Men	Women	Total
19/9/2022	Gicumbi	3	2	**5**	4	2	**6**	7	4	**11**
20/9/2022	Bugesera	2	2	**4**	3	3	**6**	5	5	**10**
21/9/2022	Rwamagana	4	2	**6**	4	2	**6**	8	4	**12**
22/9/2022	Muhanga	2	2	**4**	4	2	**6**	6	4	**10**
23/9/2022	Nyamagabe	3	2	**5**	4	2	**6**	7	4	**11**
26-30/9/2022	Nyarugenge	3	1	**4**	0	0	**0**	3	1	**4**
-	Kicukiro	6	1	**7**	0	0	**0**	6	1	**7**
-	Gasabo	3	1	**4**	0	0	**0**	3	1	**4**
Total		**26**	**13**	**39**	**19**	**11**	**30**	**45**	**24**	**69**
Percentage		66.7	33.3	**100**	63.3	36.7	**100**	65.2	34.8	**100**

Source: Author's own elaboration.

Focus group discussions

Focus group discussions were conducted to gain insights into the main policy constraints and solutions via multistakeholder discussions. Guiding questions (Annex 5) were prepared to connect with the TAP-AIS assessment results and their validation and with an analysis conducted in the five-year strategic plans for RPIA and RPFA.

Each FGD comprised six participants (one district animal resources officer, an RPIA or RPFA representative, a private veterinarian, a poultry or pig farmer and a pig or poultry trader). The choice of districts and participants in the FGDs was purposive and based on their experience and active participation in developing pig and poultry value chains. Five FGDs were held, involving 30 participants from the five rural selected districts of Rwanda, namely Gicumbi, Bugesera, Rwamagana, Muhanga and Nyamagabe (Table 1).

Participants were first informed about the context and objectives of the FGD, including its relation to the TAP-AIS project and its 2021 assessment results. They were then shown the problems identified by the TAP-AIS assessment results. They discussed these problems, agreed on their persistence and added other problems they face daily concerning pig and poultry value-chain development. Finally, they listed five to ten more problems, agreed on the five most important ones and performed a pairwise-comparison technique to rank them from the most to the least important. The highest-ranked problem, common to the five FGDs, was picked as the core problem to be analysed using the problem tree analysis.

During the FGDs, problem tree analysis was used for a deeper analysis of the causes and effects of the major problem: access to animal feed. A short presentation on the tool was necessary for the participants to use it efficiently. Flip charts combined with cards were used

to map the root causes and effects of the key problem. The problem was written in the centre of the flip chart and became the 'trunk' of the tree, its roots denoted the causes, and branches represented the effects and impacts. Each FGD took between one and a half to two hours. Results were written on cards and discussions were recorded to help the policy analyst keep track of important ideas. The consolidation of the results from the five FGDs focused on common opinions from participants and rejected conflicting information.

Direct observations

Direct observations complemented the findings of the desk review, KIIs and FGDs. Field observations were conducted at different pig and poultry farms during field data collection. Selected feed processing industries were also visited. These observations confirmed or rejected some findings.

2.2. Data analysis and reporting

Secondary data were arranged into four categories: policy development related to small livestock, policy implementation, challenges, gaps and ways to improve. The grouped information was analysed by category.

The analysis of data from KIIs and FGDs started by reading the notes and typing responses question by question. Where necessary, recorded sessions were consulted to complement the texts.

The responses were underlined and coloured to visualize them by category. As part of the analysis, conflicting responses were rejected, and only commonalities and complementarities were systematically processed. During data analysis, recorded data were again consulted, and the policy-related issues were reviewed. This suggested how the causes and effects of the core problem on the targeted small livestock value chains could be reduced. The information collected through FGDs confirmed the findings from existing reports and KII data.

Secondary data from reports and policy documents and primary data from KIIs and FGDs were triangulated to draft the policy analysis report with key recommendations for improving the current status of poultry, pig and animal feed value chains in Rwanda. Two policy briefs were also prepared, one on pig and poultry value chains and one on animal feed.

3. Analysis of policies and strategies relevant to small livestock in Rwanda

This section comprises an overview of Rwandan policies, strategies and legal frameworks related to livestock and policy implementation by institutions involved in the livestock subsector.

3.1. Rwandan policies, strategies and legal frameworks related to livestock

Agriculture is the backbone of the Rwandan economy. It contributes 22 percent of the gross domestic product (GDP), 19 percent of exports, 66 percent of employment (MINAGRI, 2021) and 90 percent of the country's food needs (NISR, 2021b). The Rwandan agricultural sector comprises crops and livestock commodities and is characterized by smallholder farming with low productivity and soil erosion threatened by nutrient depletion. About 90 percent of farms are smaller than 0.8 ha, and only two percent are larger than 2 ha (NISR, 2021a). The Government of Rwanda has put significant effort into producing more crop and livestock-sourced foods for the country's growing population. About 90 percent of the food produced in the country is consumed nationally, with additional imports such as rice, maize, beans, wheat, soybeans and animal products (e.g. fish, egg, chicken meat, pork) to meet demand from a growing population. This demand is expected to increase as Rwanda's population of over 13 million people is projected to exceed 16 million by 2032 and 32 million by 2050 (Republic of Rwanda, 2020). The population density in Rwanda is the highest in Africa, with 523 people per square km, with an increase of 2.3 percent in 2021 (UN, 2022).

The Government of Rwanda has formulated several agricultural policies, programmes and strategies to increase crop and livestock productivity. These include the National Agricultural Policy (NAP), the agriculture development strategy and associated programmes, the Livestock Master Plan (LMP), along with various strategies, laws, regulations and standards for pig and poultry value chains.

National Agriculture Policy

The National Agriculture Policy (NAP) responds to the evolving national dynamics in agricultural sector development (MINAGRI, 2018). The NAP sets up a framework for Rwanda to achieve the Sustainable Development Goals (SDGs), which gives a central place to the agricultural sector with a focus on sustaining natural resources and overcoming hunger, malnutrition and food insecurity. The policy also aligns with the Comprehensive African Agriculture Development Programme (CAADP), reinforced in the 2014 Malabo Declaration, which aims to improve nutrition and food security. The NAP also provides Rwanda with a framework to achieve the East African Community Vision 2050, which aims to enhance agricultural productivity for food security and a transformed rural economy under its pillar on agriculture, food security and rural development. At the national level, it provides guidance for strategies and subsidiary policies relevant to agricultural sector growth given Vision 2050

of Rwanda and the first phase of the National Strategy for Transformation (NST 1). It seeks to increase crop and livestock quality, productivity and production by modernizing agriculture and increasing resilience to climate change (MINAGRI, 2018).

Agricultural development strategy and programmes

The first Strategic Plan for Agricultural Transformation in Rwanda (PSTA 1) was developed from 2004 to 2008 in response to the need to transform agriculture. In 2006, H.E. the President of the Republic of Rwanda initiated the One Cow Per Poor Family Programme (Girinka). In 2007 the Government of Rwanda launched the Crop Intensification Programme (CIP) to increase the productivity of priority food crops, achieve food security and increase rural household income. In 2009, it also launched the Livestock Intensification Programme, focusing on cattle value-chain development (RAB, 2019) with an objective to raise the productivity of priority domestic animals (e.g. dairy cattle, fish, poultry, and pigs) and increase revenue for smallholder farmers, thereby ensuring food and nutrition security through sustainable crop and livestock intensification. Small ruminants, pigs, poultry, and rabbits should be promoted as sources of meat for Rwandese, especially now that the orientation for cattle is dairy. Otherwise, the country will soon run short of beef. Small livestock fits in well with the small land sizes in most of the country. Poultry and pigs should be promoted in peri-urban areas where there is easy access to feeds and other inputs and ready urban markets (RAB, 2020a).

In 2017, the Government of Rwanda developed the Fourth Strategic Plan for Agricultural Transformation known as PSTA 4 (MINAGRI, 2018), building on the achievements of the PSTA 1, PSTA 2 and PSTA 3 and in response to other national strategies such as Vision 2020, NST 1, Vision 2050 and international frameworks such as CAADP and SDGs, targeting zero hunger, among others. Compared to the previous strategic plans, the PSTA 4 strongly focused on private investments for agriculture growth.

The TAP-AIS project is aligned to the PSTA 4, stipulating that “Communities of practices, platforms and fora are to be set up and operationalized to spread a culture of learning and knowledge-sharing as well as innovation adoption.”

Livestock Master Plan

The Livestock Master Plan (LMP), developed in 2017, recognizes the positive contribution of animal resources to the national GDP, reduction of poverty, nutritional security and boosting export earnings. To increase the availability of animal products, there is a need to invest in genetic improvement and address animal feed and animal health challenges.

“To address the challenges of limited feed resources for livestock, research efforts will be geared towards finding solutions for expanding and commercializing animal feed value chains including but not limited to maize, soybean and cassava” (Shapiro *et al.*, 2017). “To fight against transboundary animal diseases, investments are proposed to strengthen disease diagnostic capacity in national veterinary and satellite laboratories. For genetic improvement,

breeding centres have been established and artificial insemination for cattle and pigs promoted" (RAB, 2019).

The LMP includes chicken and pig value-chain development roadmaps 2018–2022 and the dairy and red meat development roadmaps. A list of policy actions and strategies in the LMP emphasizes the development of these value chains. Some roadmaps have been implemented, while others still need to be operationalized. This policy analysis found that three main National Agriculture Policy and strategic documents (e.g. NAP, PSTA 4 and Livestock Master Plan) are too general with regard to small livestock and lack clear direction on how to develop the potential of poultry and pig value chains, specifically regarding technologies and policies to overcome the existing challenges in the small livestock subsector.

Strategies, laws, regulations and standards for pig and poultry value chains

The Government of Rwanda, through the Ministry of Agriculture and Animal Resources (MINAGRI), has established legal and regulatory frameworks for the production, supply, distribution and marketing of animal products and feeds to ensure biosafety and help with the trade and distribution of these products in Rwanda, within the region and at international markets. Achieving pig and poultry production targets and selling their products in local, regional, and international markets requires Rwandan producers to meet the mandatory standards.

The strategies, laws, regulations and standards enacted to support pig, poultry and animal feed production, processing, marketing and consumption in Rwanda are listed in Table 2.

Table 2. Policy instruments for small livestock development in Rwanda

Category	Policy instrument
Strategies	• Animal Nutrition Strategy Final Report, 14 April 2009. HTSPE Job No: 1007032 (MINAGRI, 2009) • Livestock Master Plan (MINAGRI, 2017) • National Agriculture Policy (MINAGRI, 2018) • Strategic Plan for Agricultural Transformation, Phase 4 (MINAGRI, 2018)
Laws	• Law No. 33/2002 of 06/11/2002 relating to the identification of domestic animals • Organic Law No. 53/2008 of 02/09/2008, establishing Rwanda Standards Board (RSB) and determining its responsibilities, organization and functioning • Law No. 54/2008 of 10/09/2008, determining the prevention of and fight against contagious diseases of domestic animals • Law No. 56/2013 of 09/08/2013, establishing Rwanda Council of Veterinary Doctors (RCVD) and determining its mission, organization and functioning • Law No. 31/2017 of 25/07/2017, establishing Rwanda Inspectorate, Competition and Consumer Protection Authority (RICA) and determining its mission, organization and functioning • Law No. 003/2018 of 09/02/2018, establishing Rwanda Food and Drug Authority (FDA) and determining its mission, organization and functioning
Standards and codes of practice	• Kenya Standards (KS) 1647: 2001, Code of Practice for Animal Feed Production, Processing, Storage and Distribution (this document is related to Kenya Standards, which inspired Rwanda Standards) • Rwanda Standards East African Standards 231: 2001: Bone Meal for Compounding Animal Feed Specifications • Rwanda Standards East African Standards 230: 2001: Maize Bran as Livestock Feed Specifications • Association of Official Analytical Chemists (AOAC) 942.05: Ash of Animal Feed • Rwanda Standards CAC/RCP 54: 2009: Code of Practice on Good Animal Feeding • Rwanda Standards 98: 2015: Animal Feed Production, Processing, Storage and Distribution Code of Practice • Rwanda Standards 99: 2017: Compounded Poultry Feeds Specification • Rwanda Standards 190:2019: Water Quality Livestock Feeding Tolerance Limits • Rwanda Standards East African Standards 90:2019: Compounded Poultry Feeds • RSB, 2020: Animal Feed Production, Processing, Storage and Distribution, Code Of Practice (RSB, 2020).
Ministerial orders	• Ministerial Order No. 013/11.30 of 18/11/2010 on transport and trade of meat • Ministerial Order No. 012/11.30 of 18/11/2010 on animal slaughtering and meat inspection • Ministerial Order No. 009/11.30 of 18/11/2010 on stray cattle and other domestic animals • Ministerial Order No. 008/11.30 of 18/11/2010 determining the organization of veterinary pharmacy practices

Source: Author's own elaboration.

Standards applicable to small livestock value chains

The laws, regulations and standards applied to the value chains of pig, poultry, and animal feeds are a good step forward in developing the livestock sector. However, some of these laws are inadequate and have gaps, such as those relating to animal slaughtering, meat inspection and transport and trade of meat. There is also a need for basic hygiene standards for abattoirs, handling, storage, meat packaging and transport.

The analysis indicated other gaps:

- Standards are voluntary and can be enforced only if translated into technical regulations. Certification and inspection are methods to follow up on adherence to standards. However, they are not yet elaborated, for example, for cold-chain systems, slaughterhouses and meat products.
- There is low adoption of standards by the private sector due to their voluntary nature, financial resource constraints, limited knowledge of the importance and value of standards and limitations related to the enforcement of compliance.
- There are few qualified staff in standards and technical regulations development.
- Pig and poultry housing standards for local climatic conditions are not yet elaborated.
- Standards on slaughtering and meat handling enforcement mechanisms to make Rwandan pork and poultry products competitive in regional and international export markets are important but complex and not always adhered to.
- A feed law is needed to protect local feed processors and enforce the existing poultry feed processing standards (SORWAFFA Ltd., 2020). NIRDA, RICA and their partners could play a big role in this endeavour.
- Feed, pig and poultry product processors need appropriate machinery, cooling equipment and large-scale storage systems to meet the required standards.
- Most fine ingredients, including vitamins, minerals, amino acids and other feed additives are imported, and some products do not meet national and international standards.
- The Rwanda Standards Board (RSB) has not yet set feed standards for most livestock species. In addition, feed ingredients are not fully standardized. As a result, feed manufacturers face great difficulties in meeting acceptable standards using such feed ingredients.
- Current local regulations are set by MINAGRI, RAB and Rwanda Inspectorate, Competition and Consumers Protection Authority (RICA), while standards are set by the RSB and, more recently, by Rwanda Food and Drug Authority (FDA). Collaboration mechanisms among these institutions are not yet in place.

Overall, the standards and regulatory environment are supportive of sector growth but with some barriers to development.

3.2. Policy implementation by different institutions

This section examines livestock policy, impact, expected outputs, the institutional enabling environment to achieve the targets and collaborative efforts to move livestock development and achievements towards the Government of Rwanda targets in PSTA 4 and the LMP.

Livestock policy, impacts and expected outputs

In the livestock subsector, a series of priority actions are well aligned with Rwandan agricultural policies. These documents prioritize investments in the small livestock subsector because of its quick returns compared to the dairy cattle value chain. In Rwanda, "the poultry and pig value chains are found to have the opportunities to (i) improve the livelihoods of thousands of poor farmers in rural areas; (ii) contribute to addressing malnutrition and stunting challenges; (iii) raise income for those involved; and (iv) reduce imports while expanding exports of poultry and pork products" (Musabyimana, 2019).

The expected impacts from these policy actions are that:

- Revenue for farmer households and other private actors in the pig and poultry value chain increases in a sustainable way.
- Private investment helps develop a modern animal feed value chain to produce high-quality products, substitute imports and promote exports of livestock products.

The expected outputs are:

1. Increased productivity and profitability in the poultry and pig value chain and the feed industry.
2. Affordable supplies of quality feed with an increasing portion of locally sourced ingredients in line with demand.

The priority for Output 1 is to increase productivity and production per animal by addressing the feed deficit, animal health and genetics. Key policy and investment actions to support increasing productivity are:

- Enhance veterinary coverage through private veterinarians and public–private partnerships to reduce mortality and morbidity.
- Promote maize and soybean production through the allocation of marshlands to farmer cooperatives.
- Accelerate the introduction of improved genetics once feed production and health services are in place.

For Output 2, the priority is to increase the number of feed mills and their competitiveness and support research on locally sourced ingredients. Key policy actions to enhance animal feed production are:

- Support to private sector investment in the pork, poultry and animal feed value chains through price regulation and well-organized imports of raw materials with government incentives through RDB, MINICOM and MINAGRI.
- A steady supply of quality animal feeds produced with locally sourced ingredients such as azola (a group of aquatic ferns), black soldier fly larvae, cassava peels,

vermiculture, hydroponics, sweet potato silage and animal feed concentrates. This should be promoted by RAB's Livestock Research and Technology Transfer Department and private investors.

Evidence shows that the expected outputs and impacts are not yet fully achieved. The main reasons do not lie in the policy formulation but in the means of implementation. Low achievements are linked to limited support to emerging private veterinarians and low establishment of breeding centres to improve genetics across the country. They are also linked to local and global markets for related animal feeds, for which prices are drastically rising. Subsequently, market factors discourage farmers and investors. In addition, government support for established feed millers is low.

Institutional enabling environment for pig and poultry value chains development

The institutional enabling environment for pig and poultry value chains comprises public and private enablers. Public enablers are the Business Development Fund, FDA, MINAGRI, MINICOM, NIRDA, PSF, RAB, RCA, REMA, RICA and RSB. Development partners are FAO, USAID, World Bank, the European Union, IFAD and the embassies of the United Kingdom of Great Britain and Northern Ireland, Netherlands (the Kingdom of) and Belgium. Private sector enablers involve banks, commercial farmers, feed mill operators, insurance companies, microfinance institutions, NGOs, RCVD and traders. All these institutions and actors seek to overcome the challenges in livestock subsector development, for example:

- For certification policy issues, PRISM/Enabel is supporting RICA to enhance its capacity for meat inspection and certification services by training all public and private meat inspectors.
- The Ministry of Agriculture and Animal Resources is working on a national livestock strategy that will have considerable potential for sector development. The work is in progress and will depend on Rwandan Cabinet Approval. RSB is working with stakeholder specialists on standards to be met by feed millers.
- Vétérinaires Sans Frontières (VSF) in Rwanda is working with RCVD on certification for animal health professionals and enforcing the animal health code of ethics.
- The RICA is working closely with RAB on certification and inspection services for one-day chicks, piglets and chicken and pork products.

Much has been done in the livestock sector and policies such as the zero-grazing policy for domestic animals have been enacted, but there are gaps, for example:

- There is no policy on price setting and harmonization for pig and poultry products and animal feed, while Rwanda has a price policy on maize, rice and Irish potatoes implemented by MINAGRI and MINICOM.
- The issues surrounding regulations, certification and licensing for animal breeding and animal feeds have not been addressed.

- In terms of veterinary supplies, mainly drugs and vaccines, there is no single policy that supports prescriptions of veterinary drugs. There is a clear National Pharmacy Policy in human medicine, which lacks veterinary medicine).
- Farmers complain about the quality of feeds produced by local feed millers.

A specific veterinary pharmacy policy, animal products inspection and certification policy and animal feed quality control are expected with the shift of veterinary supplies from MINAGRI to FDA, MINICOM, RCVD, RPFA, RPIA, Rwanda Standards Board (RBS), and the newly established Rwanda Inspectorate, Competition and Consumer Protection Authority (RICA). Many actors play different roles that complement each other for a successful implementation.

Collaboration between institutions implementing small livestock policy actions

There is a participative dimension that builds on the presence of an existing network of pig and poultry value-chain actors, including MINAGRI, NIRDA, PRISM/Enabel, PRISM/IFAD, private sector companies, national associations such as the Rwandan Poultry Industry Association (RPIA), RAB, Rwanda Pig Farmers' Association (RPFA), Rwandan Council of Veterinary Doctors (RCVD) and Vétérinaires Sans Frontières (VSF) (Table 3).

Table 3. Institutions addressing priority issues through complementary actions

Institution	Actions undertaken
Rwanda Agriculture and Animal Resources Development Board (RAB)	The RAB trains Livestock Farmer Field School facilitators and master trainers to ensure pig and poultry technology transfer at the grassroots level while, at the same time, promoting artificial insemination (AI) technology through pig artificial insemination centres to improve genetics and conducting research on vermicomposting and worm feed production.
Rwanda Inspectorate, Competition and Consumer Protection Authority (RICA)	RICA is working closely with RAB on certification and inspection services. RICA inspects and issues licenses for starting industries and other establishments manufacturing products such as feed mills. RICA also inspects quality and standards conformity for imported and exported animal products and animal feeds. It promotes fair competition and consumer rights protection.
PRISM/Enabel	PRISM/Enabel supports the animal feed value chain by developing profitable, resilient, sustainable pig and poultry value chains through the Farmer Field School approach in close collaboration with RAB. PRISM/Enabel targets both smallholder farmers in their transition from traditional to market-oriented farming systems and medium and larger-scale farmers acting as lead firms and innovators.
PRISM/IFAD	Implementing small livestock market infrastructure construction projects in 15 districts of Rwanda. These market infrastructures include 15 district livestock markets, 10 pig slaughter slabs and 20 local veterinary clinics and posts. PRISM/IFAD focusses on smallholder farmers.

Institution	Actions undertaken
National Industrial Research and Development Agency (NIRDA)	The NIRDA selects processing firms to provide them with the technology needed to improve industrial competitiveness and has selected about 10 companies (lead firms) to access machinery and technologies that can help improve value-chain production and productivity.
Rwanda Poultry Industry Association (RPIA) and Rwanda Poultry Industry Association (RPFA)	RPIA and RPFA play an active role in creating an enabling environment that accelerates the professionalization of members and the profitability of their businesses.
Rwanda Council of Veterinary Doctors (RCVD)	The RCVD supports and organizes private veterinarians under one umbrella, which endeavours to provide training, certificates and startup kits for veterinary services to inspect meat and veterinary pharmacies in Rwanda in close collaboration with VSF.
Vétérinaires Sans Frontières (VSF)	VSF trains local private veterinarians working under PRISM/Enabel project and providing them with veterinary kits and a refrigerator to start their business. The VSF and Enabel joint project has very good results with the support to around 60 private vets who each started a veterinary clinic and got motorbikes to serve more farmers. They are now running economically viable businesses.
Development Bank of Rwanda (BRD)	BRD facilitates access to finance and supports subsidized loans by ensuring a reduced interest rate of 8% for selected actors through commercial banks, microfinance institutions and SACCOs. The ongoing exercise has brought on board six banks (BK Bank, Equity Bank, BPR Bank, RIM Bank, Inkunga Finance and COGEBANK). More banks are expected to join the programme. The first results are promising.

Source: Author's own elaboration.

Some interventions by RAB, RICA, PRISM/Enabel, PRISM/IFAD and VSF projects are seeking to address major problems at the level of small production systems such as:

- feed availability and affordability;
- poor feeding practices and general farm management;
- limited access to improved pig and chicken breeds; and
- limited access to veterinary and animal health services.

The Rwanda Agriculture and Animal Resources Development Board, PRISM/Enabel, PRISM/IFAD and VSF projects endeavour to deal with all these issues with the support of NIRDA, RCVD, RPFA and RPIA, private companies and feed millers. However, there are many actors on the ground, but they are not well coordinated nor collaborating efficiently to solve the main problems in small livestock value chains, especially the lack of animal feeds, which has persisted since 2018. In addition, collaboration between feed millers is almost non-existent and farmers collaborate little, as seen through their slow adherence to RPIA and RPFA.

Beyond the big issue of feed availability and affordability, more clarity is needed to know exactly what type of producer should benefit from the support of stakeholder projects and how. It is essential to define more clearly the types of producers, their market orientation (e.g. Democratic Republic of the Congo, Kigali City, local market) and their varied livelihood strategies. For example, many pig and poultry farmers develop a wide set of activities, including other types of livestock production (rabbits, goats, sheep, cattle) and thus lack focus. Regulations on the differentiation of categories of producers are needed to better adjust the support provided by development projects.

Other relevant policy actions

The policy actions listed below are being implemented by institutions involved in the small livestock subsector:

In collaboration with the PRISM/Enabel project, the RAB has initiated an artificial insemination (AI) programme for improving local breed development to enable drought survival and disease resistance. In this endeavour, RAB has established a national pig AI centre at Muhanga Station and local pig AI centres in different areas of the country, namely, Rwamagana, Bugesera, Gicumbi and Kisaro. The RAB is also supporting community breeding practices and an animal selection programme to improve animal genotypes and genetic diversity to achieve resilience through the maintenance of local breeds.

The RAB and PRISM/Enabel are promoting small livestock through home-grown solutions copied from the One Cow Per Poor Family project known as the 'Girinka pass-on system' to reach more farmers. The Livestock Farmer Field School facilitators are playing a key role in introducing the 'pass-on' pig and poultry systems to poor farmers. Results suggest expanding the focus from a cow pass-on system to small livestock in rural communities, especially pigs and chickens.

In partnership with the private sector, RAB and the PRISM/Enabel project are conducting research on animal feed formulations. These include azola (a group of aquatic ferns), black soldier fly larvae, vermiculture and hydroponics trials.

The RAB and USAID livestock projects support farmers to engage in mixed farming systems (crop-livestock integration) to enhance nutrient recycling and reinforce pest and disease management while strengthening the capacity of community animal health workers and district extension workers. These projects are still ongoing under the USAID Orora Wihaze activity.

Individual private processors in Kigali, Bugesera and Rubavu are focusing on animal product value addition for local and foreign markets (e.g. meat processing, packaging).

RAB and key partners have rehabilitated and upgraded public research infrastructure. For example, new laboratories, research stations, greenhouses, hydroponic facilities, post-harvest research facilities and gene banks for crops and livestock have been put in place to conserve and sustain crop and animal genetic resources (RAB, 2019).

RAB also introduced an animal tagging system and livestock database to help with disease management, financial products for livestock farmers and, with the collaboration of key stakeholders, train farmers to design their production systems, including housing and feed management suited to their own context (RAB, 2022).

The Ministry of Agriculture and Animal Resources, RAB and the Ministry of Education (MINEDUC) have used institutional structures such as multistakeholder oversight and monitoring committees to ensure coordination and market responsiveness in curriculum development and teaching.

Private investors, with the support of key stakeholders, have established feed industries in Kigali City, Rwamagana and Musanze Districts. This action is in line with the LMP, which stipulates that the government should incentivize private sector investment in animal feed processing (Shapiro *et al*., 2017). The government incentivized these feed mills by providing plots for their establishment.

The Rwanda Agriculture and Animal Resources Development Board, PRISM/Enabel, VSF and RCVD support private veterinarians to develop skills like animal health management, marketing, product packaging and labelling. In addition, they enhance the capacity of veterinary services regarding disease surveillance, vaccination, diagnostic capacity, early warning and rapid response. The main factors affecting disease incidence in Rwanda are related to cross-border animal movements, breed-improvement programmes and other factors such as the prevalence of pests and diseases like African swine fever and coccidiosis for poultry (RAB, 2020b).

With support from MINAGRI and insurance companies, RAB is developing a risk management framework addressing current and future risks in the livestock sector. This policy action justifies the current agriculture insurance scheme (MINAGRI, 2019) that integrates cattle, pig and poultry insurance among other livestock types not insured, such as goats, sheep and rabbits.

RAB and PRISM/IFAD projects are piloting rehabilitation and establishing public small livestock market infrastructures, including slaughtering and processing facilities in 15 districts.

All these policy actions are being implemented but at a slow pace due to insufficient funds.

Achievements and agricultural extension services targets

RAB and PRISM/Enabel, under the Livestock Farmer Field Schools (LFFS) framework, had trained 213 facilitators (133 men and 80 women) as of 31 December 2021. Each facilitator supports two LFFS groups comprising between 15 and 20 farmers each. As a result, 426 LFFS have been formed (236 for poultry and 190 for pigs) in ten districts and are strengthening capacities for poultry and pork production (Enabel, 2022).

Fifty private veterinarians (of which 22 percent are women) have been trained and equipped with a refrigerator, veterinary kits, and a motorbike to serve their clients in 12 districts more

effectively. Thirty-six have set up a business and are operational. These veterinarians report an increased number of clients. Many farmers are now served at their farm rather than having to come to the vet's clinic. In addition to this work undertaken by VSF, 116 pig AI technicians have been trained by RAB at its Muhanga Station. RAB's veterinary laboratory at Rubilizi Station has been upgraded and 30 staff received training. Five pig AI private centres have been established in Muhanga, Rwamagana (Muyumbu), Bugesera, Kisaro, Gicumbi and two others are planned in Rusizi and Rubavu. These centres will enhance local AI services in collaboration with the national Zipline centre at the nearby RAB Muhanga Station. All established pig AI centres are well connected to the one at RAB Muhanga Station and to the nearest Ministry of Health centres where inseminators collect semen via Zipline. The semen is transported by drones managed by the national Zipline centre based in Muhanga District.

In terms of maize and soybean production, the PRISM/Enabel project has partnered with AGRITERRA to build the capacity of maize and soybean farmer cooperatives to produce and aggregate their products and build market links. In October 2021, the Ngoma Outgrower Service Company was launched to boost six farmer cooperatives in Ngoma District and increase the income of around 3 000 farmers by producing local quality maize and soybeans for the pig and poultry feed industry. Support included forming 114 farmer groups and training 116 farmer facilitators to support them along with 23 Farmer Field Schools, which have trained 668 farmers in improved agricultural practices. This has resulted in the sowing of 232 ha of maize and 90 ha of soybeans. However, the productivity increase is still low compared to the potential for maize (2 000 kg/ha against 6 000 kg/ha) and soybeans (1 400 kg/ha against 3 000 kg/ha).

In addition, the livestock subsector associations, RPIA, RPFA and RCVD have been supported by PRISM/Enabel in developing their five-year strategic plans. Collaboration and coordination of these associations should be emphasized.

Achievements against PSTA 4 and Livestock Master Plan targets

The targets of the Strategic Plan for Agriculture Transformation (PSTA 4) and those of the Livestock Master Plan (LMP) were not fully achieved for several reasons discussed below.

Targets and achievements from PSTA 4 (2018–2024)

PSTA 4 mid-term review data shows that productivity achievements in 2021 for maize (1.6 tonnes/ha) and soybeans (0.5 tonnes/ha) were below target and that performance against 2024 PSTA 4 targets is 54.4 percent and 39.1 percent (Table 4). For animal production performance in tonnes against the 2024 PSTA 4 targets, only the poultry value chain and meat are on track with 95.1 percent and 81.5 percent, while milk (70 percent) and honey (67 percent) are on watch and need additional effort to meet the 2024 PSTA 4 targets. Table 5 shows that pork (31.2 percent), fish (33 percent) and eggs (43 percent) are far below 2024 PSTA 4 targets and need extra effort. It is likely that these three commodities will not achieve their targets by 2024.

Table 4. Maize and soybean productivity against 2021 and 2024 PSTA 4 targets

Commodity	Total targets (2021) (tonnes/ha)	Total achievements (2021) (tonnes/ha)	Performance, % against 2021 targets	Total targets (2024) (tonnes/ha)	Performance, % against 2024 targets
Maize	2.34	1.6	68.4	2.94	54.4
Soybean	0.84	0.5	59.5	1.28	39.1

Source: MINAGRI. 2022. *PSTA 4 mid-term review June 2022*. Kigali. Rwanda (unpublished).

Table 5. 2021 animal production against 2021 and 2024 PSTA 4 targets

Animal production	Total targets (2021) in tonnes	Total achievements (2021) in tonnes	Performance, % against 2021 targets	Total targets (2024) in tonnes	Performance in % against 2024 targets
Poultry	25	39	156	41	95.1
Pork	28	24	85.7	76.9	31.2
Eggs	13 078	8 272	63.3	19 403	43
Milk	1 091 803	891 326	81.6	1 274 554	70
Meat	128 091	174 904	136.5	215 058	81.5
Fish	90 000	41 664	46.3	127 681	33
Honey	6 988	5 800	83.0	8 611	67

Source: MINAGRI. 2022. *PSTA 4 mid-term review. June 2022*. Kigali. Rwanda (unpublished).

Targets and achievements from Rwanda Livestock Master Plan (2016/17 – 2021/22)

The Livestock Master Plan (LMP) and the PSTA 4 are envisioning investments to improve the productivity of the pig and poultry value chains, including better genetics, feed and health services, which could help meet the national targets with complementary policy support. The LMP has set detailed national targets for pigs and poultry.

Pig value chain: According to the LMP, the number of sows in family mixed pig systems was expected to increase from 252 960 in 2016/17 to 407 394 in 2021/22, a 61 percent increase (Table 6). Pig meat production from these systems was also projected to increase from 19 869 tonnes to 27 871 tonnes, a 40 percent increase (Shapiro *et al*., 2017).

Table 6. Expected change in production in family mixed pig systems 2016/17 to 2021/22

Pig production	2016/17	2021/22	Change
Number of sows	252 960	407 394	61%
Meat production (tonnes)	19 869	27 871	40%

Source: Shapiro, B. I., Gebru, G., Desta, S., & Nigussie, K. 2017. Rwanda Livestock Master Plan. International Livestock Research Institute (ILRI). Kigali. Rwanda.

Table 7. Expected change in poultry production 2016/17 to 2021/22

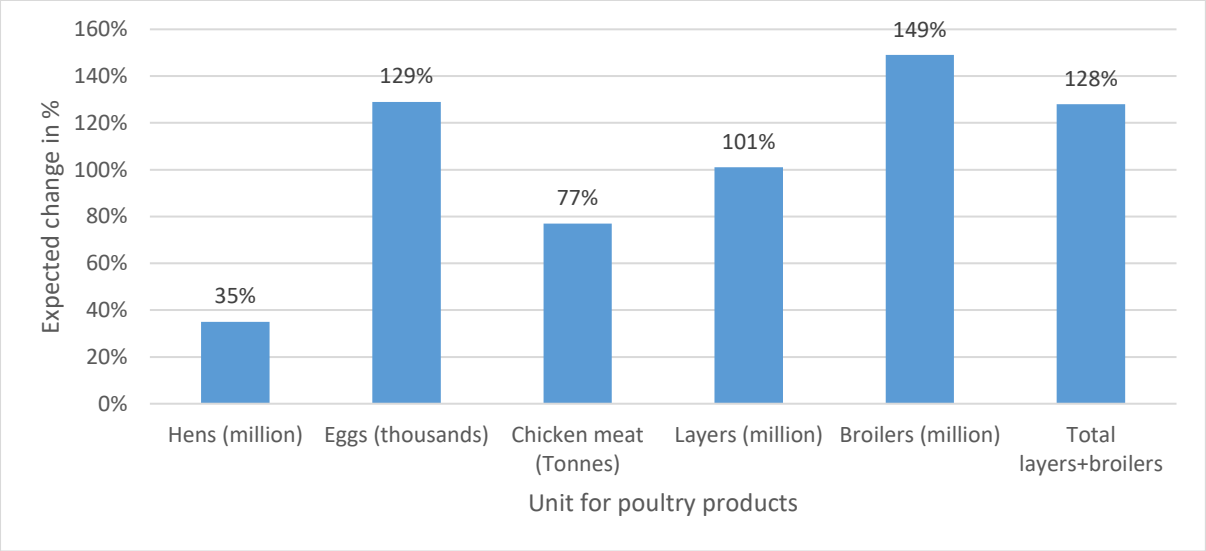
System	Item (unit)	2016/17 (baseline)	2021/22	Change, %
Improved traditional family chicken and crossbreed family chicken	Hens (million)	5.2	7.07	35
	Eggs (thousand)	83 370	190 754	129
	Chicken meat (tonnes)	5 081	9 018	77
Specialized commercial poultry	Layers (million)	0.77	1.55	101
	Broilers (million)	0.97	2.42	149
	Total layers + broilers (million)	1.74	3.97	128

Source: Shapiro, B. I., Gebru, G., Desta, S., & Nigussie, K. 2017. *Rwanda Livestock Master Plan*. International Livestock Research Institute (ILRI). Kigali. Rwanda.

Poultry value chain: The government recognizes the strategic role the poultry value chain can play. Its vision for the sector is described in the LMP (Shapiro *et al.,* 2017), which covers market prospects up to 2021/22. The objective was to transform the country's poultry industry from subsistence-based to knowledge-intensive and market-oriented and to raise the number of hens from 5.2 million in 2016/17 to 7.07 million in 2021/22. The government wants to enhance productivity in three subsystems: improved traditional family chicken, crossbreed family chicken and specialized commercial poultry production (Table 7). This transformation would result in a more advanced poultry sector, better income for chicken growers and improved food and nutrition security for the Rwandan people.

The expected changes in poultry production are more visible in Figure 2. A percentage increase was expected for broilers, eggs, layers and chicken meat. The increase is, in particular, driven by commercial specialized chicken production: both layers and broilers expected to reach over 100 percent change compared to the 2016/17 baseline.

Figure 2. Expected changes in poultry production 2016/17 to 20217/22



Source: Shapiro, B. I., Gebru, G., Desta, S. and Nigussie, K. 2017. *Rwanda Livestock Master Plan*. International Livestock Research Institute (ILRI). Kigali. Rwanda.

Not all the targets in pig and poultry value chains have been achieved due to the challenges facing the small livestock subsector. Despite the efforts of various actors involved, the COVID-19 shocks and stresses reduced production in 2020–2021 due to successive lockdowns. Many actors dropped out of the business due to losses incurred and difficult access to markets. The Democratic Republic of the Congo, the main client for meat and eggs, closed its frontiers. Uganda also closed its frontiers for a long time. Feed industries also suffered from price fluctuations for soybeans and maize imported from Kenya, Malawi, the United Republic of Tanzania and Zambia. According to one informant, "several feed millers have limited storage capacity and cash and cannot buy soybean meal for months ahead. The Soybean Company (SOYCO), based in Kayonza, buys soybean meal in neighbouring countries when it is cheap and then sells it to Rwanda feed millers when they are in harsh need".

To overcome these challenges, two policy actions are boosting pig and poultry production while covering risks for farmers:

- The Ministry of Agriculture and Animal Resources, under its Crop Intensification Programme (CIP), has put in place the National Agricultural Subsidy Scheme for farmers to obtain improved seeds and fertilizers for five priority crops (maize, rice, cassava, Irish potatoes and soybeans) with a 50 percent government subsidy.
- The Ministry of Agriculture and Animal Resources has also put in place the National Agriculture Insurance Scheme for five crops (maize, rice, Irish potatoes, French beans and chili) and three livestock types (cattle, pigs and chickens) with a 50 percent subsidy on insurance premiums paid by farmers.

4. Results of policy consultations

4.1. Priority problems in the small livestock subsector

The priority problems in pig and poultry value chains were identified by participants in the five focus group discussions (FGDs) conducted in the five selected districts. These problems were further ranked from 'very important' to 'least important' using the pairwise-comparison technique. Participants in each FGD then had an opportunity to further explain the five most important problems common to pig and poultry value chains, the results of which are presented in Table 8. A more detailed analysis of policy issues is outlined in Table 9.

Table 8. Problems ranked by participants during the FGDs

Problem	Rank by district					Overall ranking
	Gicumbi	Bugesera	Rwama-gana	Muhanga	Nyama-gabe	
Insufficient access to affordable, suitable, and nutritious animal feeds	1	1	1	1	1	**1**
Low market prices for animal products compared to input costs, implying losses	2	2	3	2	2	**2**
Lack of markets due to cultural consumption perceptions regarding chickens, eggs, and grilled pork	0	3	5	3	3	**3**
Financial constraints to smallholder farmer participation in pig and poultry value chains	3	5	0	0	4	**4**
Ineffective improved animal breeds for farmers	4	4	0	0	0	**5**
Limited animal health services, vaccines and medicines	0	0	2	4	0	**6**
Poor standards for animal sheds in smallholder farms	5	0	0	5	0	**7**
Limited or poor market infrastructure and processing facilities	0	0	4	0	0	**8**
Farmers' limited knowledge and skills in rearing pigs and poultry	0	0	0	0	5	**9**
Poor links between small livestock farmers and feed producers	0	0	0	0	0	**10**
Lack of transport and logistics for live animals and their products	0	0	0	0	0	**11**

Note: 1 = Very important, 5 = Least important
Source: Author's own elaboration..

Table 9. Policy problems and enabling environment in pig and poultry value chains

Rank	Identified problem	Analysis of findings	Proposed actions and responsible entity
1	Insufficient access to affordable, suitable, and nutritious animal feeds	• The most important problem for pig and poultry farmers. • High demand for animal feeds among large and small-scale livestock farmers. • High cost of animal feeds from year-to-year and additional transport costs. • Low productivity of soybean and maize. • Very limited number of feed industries in the country. • Weak collaboration between feed millers. • Low incentives for the private sector to invest in feed processing plants. • Supply of low-quality feed which is not affordable for farmers. • Strong competition between animal feed and human consumption for maize and soybeans.	• Collective procurement for farmers could be one way of overcoming high prices and additional transport costs. • The government should continue to support maize and soybean production through input subsidies (seed and fertilizers). • Establishing dispatch feed industries in strategic locations. • Enforce inspections for feed industries and their outlets in collaboration with RCVD and RICA. • The government should facilitate collaboration among feed millers for collective imports and incentivize them through tax exemption measures. • Facilitate the construction of stores, warehouses, and a strategic animal feed reserve. • The government should prioritize improving the availability and affordability of quality animal feeds.
2	Low market prices for animal products compared to input costs, implying losses	• Market prices are volatile for animal feeds and animal products. • Poor market information is a main limiting factor to good market access. • Livestock marketing information is not captured in the existing e-Soko information system, which is meant mainly for crop prices. • The e-Soko system does not include animal products.	• The government should promote transparency in prices and information flow. • Collective marketing by farmers could be a way of stabilizing market prices. • The government should encourage organizing farmer associations and cooperatives and could further strengthen the supervision and regulation of producer marketing groups. • Given the importance of prices in determining livestock production and farmer earnings, the government should strengthen the existing market information system (e-Soko) and institutionalize its links with national and international markets.

Rank	Identified problem	Analysis of findings	Proposed actions and responsible entity
3	Lack of markets due to cultural consumption perceptions about chickens, eggs and grilled pork	• Rwandan culture does not favour the consumption of eggs, as the common perception is that these are for white people or priests). Chicken is for rich people only, while grilled pork is not liked due to a lack of knowledge of cooking techniques. • The low number of consumers for chickens, eggs and grilled pork limits local markets. Hotels accommodating affluent locals and foreign visitors are the main markets for these products. • Producers look to exports, especially to the Democratic Republic of the Congo, but the potential market is constrained by taxes and transport costs.	• Promotion of cooking techniques and awareness campaigns for egg and pork consumption are considered a primary solution. • The government should promote processing and consumption of eggs, egg powder and grilled pork in local markets through investment incentives for processors and sellers. • In collaboration with stakeholders, the government should set standards for egg and pig products.
4	Financial constraints to smallholder farmer participation in pig and poultry value chains	• There is limited access to startup capital for farmers in remote areas who want to invest in pig and poultry farming. • A strong credit association or institution would help farmers address issues that require financial capital such as investment in farming, marketing, and animal processing facilities. • There is a lack of specific provisions for funding and support to pig and poultry smallholder farmers.	• The government should incentivize agricultural with tailored interest rates for farming activities. • Farmers should have strong associations and cooperatives. • The government should support awareness campaigns for existing subsidized pig and poultry insurance products.
5	Farmers' limited access to improved animal breeds	• Piglets and one-day chicks are not of good quality breeds, especially in remote areas of the Gicumbi and Bugesera Districts. • Insufficient genetic improvement due to limited pig artificial insemination centres (Muhanga, Rwamagana, Gicumbi, Kisaro and Bugesera). • The national supply of breeds is still low and there are not enough commercial pig and poultry breeds. Almost all pig breeds are imported from Belgium, while chicks	• The Rwanda Agriculture Board (RAB) should enforce import permit requirements to ensure high-quality breeds of chicks and piglets. • Incentivize importers of piglets and one-day-old chicks. • The RAB should help establish pig artificial insemination centres in the provinces to improve animal genetics and link private veterinarians to insemination centres. • Establish pig and poultry breeding centres in strategic locations and organize piglets and one-day-old chick distribution networks.

Rank	Identified problem	Analysis of findings	Proposed actions and responsible entity
		are imported mainly from Uganda, Belgium and Netherlands (the Kingdom of).	
6	Limited animal health services with insufficient provision of vaccines and medicines	• Participants in Nyamagabe and Muhanga Districts noted a dire lack of extension worker support. Farmers desire training to better rear their pig herds and poultry flocks. • Disease outbreaks like African swine fever, exudative dermatitis (greasy pig) for pigs, coccidiosis and respiratory diseases in poultry are frequent. • There is a need to share ideas, knowledge, and information with fellow farmers through groups, but farmer groups are weak or non-existent. • The lack of technologies was considered a significant constraint blocking value-chain development. Farmers want extension workers to help them with modern husbandry techniques, the use of best nutrients and knowledge about better breeds. • The limited number of private veterinarians have low capacity.	• Build local capacity by training private veterinarians, extension workers and selected farmers to become rural paraprofessionals. • Such training should include study tours and attending Livestock Farmer Field Schools. • Provide subsidies for vaccines and veterinary drugs or exempt tax on their import. • The Ministry of Agriculture and Animal Resources (MINAGRI), RAB, Enabel and RCVD partnerships are asked to back up such initiatives and lobby for more private veterinarians. • The government is asked to review curricula to train more veterinarians through Ministry of Education (MINEDUC) Technical and Vocational Education and Training schools, Integrated Polytechnic Regional Colleges and the University of Rwanda to provide them with sufficient and specific on-farm internships and skills for pig and poultry disease control. • The government should incentivize private veterinarians through education (MINEDUC), high-quality training and tax exemptions for private veterinarian business startups.
7	Poor standards for animal sheds in smallholder farms	• Standards are lacking for pig and poultry houses and sheds across all districts.	• In collaboration with farmers, the RAB and Rwanda Standards Board should publish animal shed standards for different categories of domestic animals (cattle, pigs, poultry, goats, and sheep).
8	Limited or poor market infrastructure and	• There is a limited level of transformation for live animals and whole animal carcasses due to poor market	• The government should attract investments in pig and poultry processing plants through incentives like land availability and tax exemptions.

Rank	Identified problem	Analysis of findings	Proposed actions and responsible entity
	processing facilities for animal feeds and products	infrastructures (e.g. slaughtering facilities and trucks for live or processed pork and chicken). • There is little value addition and processing of pork in Rwanda (grilled pork, sausage and jambo production) and for chicken and eggs. • There is very low consumption of pork and chicken (broilers) in domestic households due to poor cooking techniques. • There is a lack of strict biosafety systems (from animal sheds to processing facilities and cutting and packaging of pig and chicken meat). • The market infrastructure and processing facilities could attract more pig and poultry value chain investors. To improve infrastructure and enhance the profitability of livestock enterprises, MINAGRI should collaborate with other stakeholders to identify and attract support for infrastructural development. An appropriate office to coordinate agribusiness and value addition initiatives could be established in MINAGRI or the district level.	• There is a need for training in processing and cooking techniques. • The government should promote the consumption of pork and chicken products through national awareness campaigns. • Publish pig and chicken meat and biosafety standards to improve consumer demand. • MINAGRI should set up offices in each district to coordinate all animal agribusiness initiatives related to market facilities or infrastructure construction. • The government should regulate a revolving fund for market infrastructure in selected districts. • The government should develop and rehabilitate existing livestock market infrastructure in collaboration with stakeholders (15 livestock markets, 10 pig slaughter slabs and veterinary laboratories being established by the PRISM/IFAD project).
9	Limited knowledge and skills among farmers for rearing pigs and poultry	• Farmers are asking for more training and exposure to pig and poultry farming techniques, specifically in Nyamagabe District where there is a dire lack of veterinarians and extension workers. • Private veterinarians like to operate in suburban areas as there are no benefits in remote areas. There is a need for para-veterinarians to operate in rural areas.	• In collaboration with RCVD and Vétérinaires Sans Frontières, the government should encourage the establishment of private veterinarians in all areas of the country and increase the number of para-veterinarians.
10	Poor links between small livestock farmers, feed producers and	• Each category of actors has limited connections or networks for information exchange. They work in isolation. • Farmers acquire animal feeds individually and do not collaborate to develop feeding practices.	• Farmers, feed millers and animal processor groups, associations and cooperatives should be strengthened. • Stakeholders should help them set up collaboration networks through farmer groups, associations, cooperatives, and links with feed millers.

Rank	Identified problem	Analysis of findings	Proposed actions and responsible entity
	animal processing facility owners	• There is weak collaboration between feed millers for the collective import of raw materials. • There is weak collaboration between farmers and animal processing facility owners. Instead, intermediary brokers provide services such as aggregating, transporting and marketing.	• A platform for all actors in the pig and poultry businesses should be established.
11	Lack of transport and logistics for live animals and their respective products	• There are a limited number of cold-chain facilities for transport of pigs, chicken meat and eggs. • Increased mortality rates in pigs transported in trucks or chickens distributed in wooden boxes on bicycles.	• Publish and disseminate regulations on pig and chicken transport with a focus on animal welfare. • The government should encourage using specialized trucks and cold-chain facilities for small livestock slaughterhouse owners, transporters, and traders.

Source: Author's own elaboration.

Insufficient access to affordable, suitable, and nutritious animal feeds is the most significant problem for pig and poultry farmers in Rwanda. This problem is examined more deeply in section 4.2 on the animal feed value chain.

The Government of Rwanda and its stakeholders should take policy actions to strengthen animal feed value chains and increase production and productivity. To address this problem, the government and other stakeholders are recommended to:

- start and encourage collective procurement for farmers to overcome high prices and additional transport costs;
- continue to support maize and soybean production through input subsidies (seed and fertilizers) and conduct a multidisciplinary study to identify bottlenecks and opportunities for raising national productivity;
- establish feed industries in strategic locations;
- enforce inspections for feed companies and their outlets in collaboration with RCVD and RICA;
- enable feed millers' collaboration for collective import;
- incentivize feed millers through tax exemptions on imports of maize and soybeans;
- facilitate the construction of warehouses and establish an animal feed strategic reserve;
- support collective imports of maize and soybeans for feed production to address the shortage of raw materials for feed millers;
- give priority to the availability and affordability of quality animal feed; and
- establish a national platform for all actors in the animal feed value chain.

Low market prices for animal products compared to input costs leads to low profitability and possibly losses for farmers. The current situation discourages farmers from bringing their chickens, eggs and pork to market. Some farmers have abandoned their pig and poultry businesses. Suggested policy changes to address this problem are:

- In collaboration with stakeholders, the government is requested to regulate market prices for animal feeds and pig and poultry products.
- The existing market information system (e-Soko) should include animal feed prices.
- On the farmer side, collective marketing could stabilize market prices and increase farmer income.

Such collaboration should progressively reduce the number of intermediary brokers who dishonestly realize more profit than the producers and it would increase transparency in terms of market information. In addition, promoting links with local, national, and international markets would benefit farmers.

Lack of markets due to cultural perceptions regarding the consumption of chickens, eggs and grilled pork constrains the marketability of pig and poultry products, especially at local markets. For older people, the Rwandan culture does not favour the consumption of eggs. They would say eggs are for white people or priests and that chicken meat is for rich people

only. The Muslim culture prohibits eating pork. Non-Muslims want to eat pork but do not know how to cook it properly. Hence, grilled pork is not popular. Consequently, most producers look to city markets or export to the Democratic Republic of the Congo, but taxes and transport costs constrain trade. Policy options to turn the situation around include:

- promotion of cooking techniques and awareness campaigns for egg and pork consumption across the country; and
- the government and stakeholders could promote processing eggs into powder and consumption of grilled pork in local markets through various incentives for processors and sellers.

MINAGRI and the PRISM/Enabel project have already started creating public awareness for increased consumption of pig and chicken products and should be encouraged to push this initiative forward.

Financial constraints are discussed in section 4.2. This constraint was ranked fourth and proposed the following actions for change:

- The government and stakeholders should incentivize agriculture-oriented banks with interest rates adapted to farming activities.
- Farmers should have strong associations and cooperatives.
- The government and stakeholders should support subsidized pig and poultry insurance awareness campaigns.
- The government should incentivize private pig and poultry businesses through vaccine and drug tax exemptions.

Regarding farmers' access to improved animal breeds, Rwanda has regulations on the import of high-quality animal breeds. Breeding centres need to be enforced. Despite efforts in genetic improvement through pig artificial insemination and established centres, farmers still have limited access to improved pig breeds. Similarly, they have limited access to improved chicken breeds. To address the issue of genetic improvement and traceability across the country, these actions are needed:

- Redefine the role of genetic improvement through certification and licensing.
- Improve coordination among key actors involved in genetic improvement work to reduce the risk of inbreeding.
- Quality control of animal breeds from import points should be compulsory by establishing a robust mechanism through which breeders are certified and their licensed practice monitored by zone and livestock types to prevent uncertified farmers from spreading poor-quality breeds.
- The government and stakeholders should enforce import permit requirements to ensure high-quality breeds of piglets and chicks.
- The Rwanda Agriculture Board should help establish more pig artificial insemination centres in strategic areas.

The limited animal health services suffer from a lack of access to animal disease vaccines and medicines, while recurrent disease outbreaks impoverish small livestock farmers across the country. In Rwanda's 416 sectors, there is currently one public veterinarian per sector. On average, three private veterinarians operate per administrative sector but are not evenly distributed. Some administrative sectors in remote areas have no access to private veterinary services. At least eight to ten private veterinarians are needed in each administrative sector (Enabel, 2022). Their work could be controlled by the public veterinarians to avoid overlap of work between public and private service providers. Increasing the number of private veterinarians would be a robust response to animal health issues. However, this needs to be done gradually because their training, installation and equipment are costly. The government should:

- support private veterinarians' establishment in remote areas;
- introduce a subsidy scheme for vaccines and medicines for livestock production, or exempt them from taxes; and
- enforce inspections of feed companies and their outlets.

Enforcing inspections would boost veterinary services across the country, even in very remote areas. Once established, veterinarians could also be used by the Rwanda Council of Veterinary Doctors (RCVD) in collaboration with district veterinarians to regularly inspect livestock farms, hatcheries, and abattoirs in their area of operations.

Poor standards for animal sheds in smallholder farms have a negative impact on egg, chicken and pork product quality. RBS and RICA should review and revise all standards as needed. Standards should cover 'farm to table' activities. Rwanda also needs standards for cold-chain systems, slaughterhouses and meat products. Meat processors should have, for instance, standards for sausage and other pork products (e.g. jambo pork sausage) to be sold to local hotels or exported. To overcome this problem, RAB and RSB should collaborate with farmers to:

- elaborate animal shed standards for different categories of domestic animals, cold-chain systems, slaughterhouses and meat products standards.

Limited or poor market infrastructure and animal feed or product processing facilities constrain small livestock subsector development. There should be pilot market infrastructures that can be scaled out across all districts. Some work is being done by the RAB and PRISM/IFAD project, which have already established 15 livestock markets, 10 pig slaughter slabs and 10 veterinary labs in 15 districts**.**

Proposed actions and responsible entities:

- In collaboration with stakeholders, the government should scale out the successes of the PRISM/IFAD pilot project to the remaining 15 districts of Rwanda.
- The government should attract investments in pig and poultry processing plants through incentives like offering land plots and tax exemptions.

- The government should promote the consumption of pork and chicken products through national awareness campaigns.
- The government and stakeholders should train traders and consumers on how to cook pork and poultry.
- The Rwanda Inspectorate, Competition and Consumer Protection Authority, in collaboration with stakeholders, should publish and disseminate pig and chicken meat standards and biosafety measures to improve consumer demand.
- The ministry of agriculture and animal resources and districts should host an office to coordinate all animal agribusiness initiatives related to market facilities and infrastructure construction.
- The government should establish a revolving fund for market infrastructure in different districts of Rwanda.
- The government should develop and rehabilitate existing livestock marketing infrastructure in collaboration with relevant stakeholders.

Limited knowledge and skills among farmers for rearing pigs and poultry remains a problem. Small livestock farmers' access to extension and advisory services is insufficient. Private animal health and nutrition workers do not like to establish their businesses in remote areas and farmers cannot afford to pay them. Hence, there is little training on how to take care of reared animals. To solve these problems, it is recommended that:

- Stakeholders involved in pig and poultry value chains train farmers to use digital tools such as phone messages or WhatsApp's to reach as many as possible at any distance; (over 70 percent of farming households own a mobile phone or a smartphone).
- Digital training modules for pig and poultry farmers should be prepared and distributed by the Rwanda Agriculture and Animal Resources Development Board, PRISM/Enabel, Rwanda Council of Veterinary Doctors, USAID Orora Wihaze and similar agencies.

Poor links between small livestock farmers, feed producers and animal processing facility owners are a challenge. Farmers and feed producers do not have strong links and tend to work in isolation. They do not collaborate and do not have a culture of jointly solving problems. The recommendations are:

- Farmers should collaborate on sourcing animal feeds to reduce price volatility.
- Feed millers can improve their way of doing business by collectively sourcing and stocking maize and soybeans as raw materials.
- Farmers, feed millers, animal processor groups, associations and cooperative groups should be strengthened and coordinated.
- A platform for all actors in the pig and poultry businesses should be established.

Lack of transport and logistics for live animals and animal products hampers the development of pig and poultry value chains. Pigs are stressed during lorry transport and some mortality occurs, especially during long-distance transport. The same applies to

chickens when transported on bicycles. Thus, transport facilities are one of the main problems in marketing live animals and animal products. Interventions proposed to solve this problem include:

- The government should publish and disseminate regulations on pig and chicken transport with a focus on animal welfare.
- The government should encourage the use of specialized trucks and cold-chain facilities to transport pig and poultry products to markets.

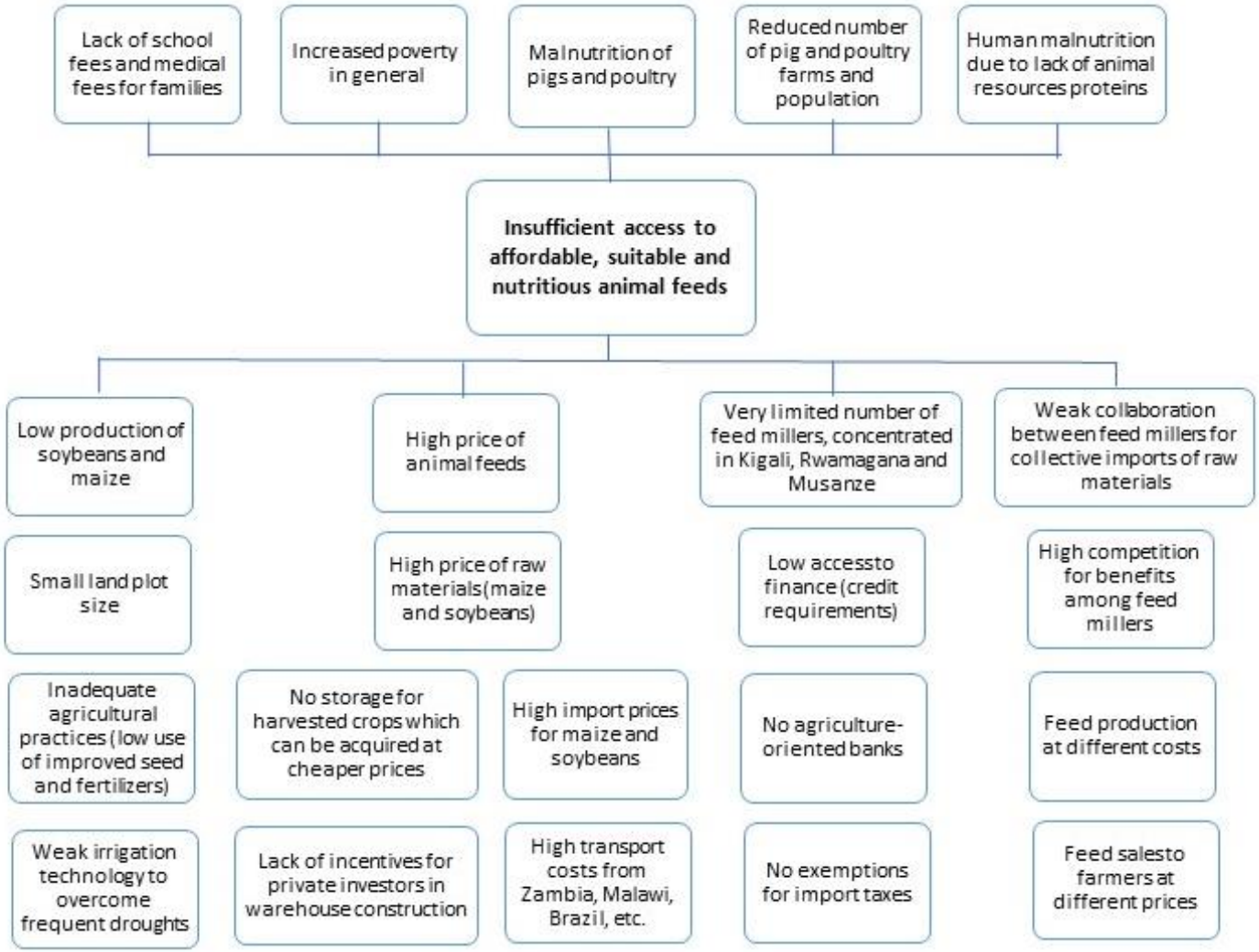
4.2. Animal feed value chain: main problems and policy issues

Access to animal feed was ranked problem number one (Table 8) and is the core problem for small livestock development. Using the problem tree analysis technique, the root causes and effects of insufficient access to affordable, suitable and nutritious animal feeds were analysed. The main root causes include:

- low production of soybeans and maize;
- high cost of animal feeds;
- very limited number of feed millers concentrated in Kigali, Musanze and Rwamagana and;
- weak collaboration between feed millers for the collective import of raw materials.

Each of these root causes has underlying secondary and tertiary causes (Figure 3). An analysis of the root causes is discussed in Table 10.

Figure 3. Root causes and effects of insufficient access to animal feeds by farmers



Source: Author's own elaboration.

Table 10. Root causes of animal feed problems and policy implications

No	Root cause	Underlying causes	Policy implications
1	Low production of soybean and maize	• Productivity is still very low compared to the potential for maize 1 600 kg/ha against 6 000 kg/ha) and soybean (500 kg/ha against 3 000 kg/ha. • This is caused by the small size of land plots coupled with inadequate agricultural practices (e.g. low use of improved seed and fertilizer). • Weak irrigation technology to build resilience to frequent droughts.	• The government should continue to support maize and soybean production through input subsidies (seed and fertilizers). • The government, through district officers, should mobilize farmers to use unexploited land. • The Rwanda Agriculture and Animal Resources Development Board (RAB) and relevant projects should expand irrigation technology, specifically in Eastern Province, where the productivity of these crops is higher than in other provinces of Rwanda.
2	High cost of animal feeds	• The high price of raw materials (maize and soybean) caused by high import prices and high transport costs (e.g. from Brazil, Kenya, Malawi, Pakistan, United Republic of Tanzania and Zambia). • The high price of raw materials (maize and soybeans) is linked to the strong competition between human and animal consumption. Rwanda has only soybean varieties for human consumption, which are also used for animal feed. • Lack of private investors in warehouse construction to buy and conserve cereals and pulses at harvest time when prices are lower.	• The government should support imports of soybeans and maize varieties for animals. • The government should encourage private investors to establish feed mills and support imports from Latin America where prices are lower (Brazil, Colombia). • Feed millers and importers should be incentivized through exemptions of taxes on imports of maize and soybeans. Importers should also be supported to construct warehouses to store large quantities of cereals and soybeans to respond to shortage periods of raw materials. A strategic reserve could be constructed through public–private partnership as suggested by a RAB informant.

No	Root cause	Underlying causes	Policy implications
3	Limited number of feed millers concentrated in Kigali City, Rwamagana and Musanze Towns	• Low access to finance due in part to difficult credit requirements. • Lack of agriculture-oriented banks. • No tax exemptions for imports of needed raw materials.	• The policy response should be to establish feed industries in all provinces and support imports of raw materials. The government should intervene to sensitize feed millers to the benefits of collective importing versus importing individually.
4	Weak collaboration between feed millers	• Lack of coordination among this category of actors. • Individual import of raw materials. • High competition among feed millers due to imports at different prices and sales at different prices.	• To solve these problems, there is a need for price harmonization to avoid disorder in marketing feed products. To harmonize the cost of feeds produced, imports should be at the same price and be supported by collective imports. Feed costs should be regularly reviewed by the Ministry of Agriculture and Animal Resources and the Ministry of Trade and Industry based on cost-benefit analysis as it is done for rice, maize, Irish potatoe and milk.

Source: Author's own elaboration.

Production of maize and soybeans is constrained by the small land plot size (0.6 ha on average) per household coupled with inadequate agricultural practices (e.g. low use of improved seed and fertilizers) and weak irrigation technology. Productivity is low compared to the potential for maize (1 600 kg/ha against 6 000 kg/ha) and soybeans (500 kg/ha against 3 000 kg/ha) despite the presence of intensive agricultural advisory services.

The cost of animal feed has been rising from 2019 to 2022, triggered mainly by costly imports of raw materials and high transport costs from Brazil, Kenya, Malawi, Pakistan and the United Republic of Tanzania and Zambia.

These high costs are also linked to the strong competition for maize and soybeans. Farmers only grow those varieties for human consumption, and these are also used for animal feed. There is a lack of private investment in warehouses for storing cereals post-harvest when prices are lower. A strategic reserve could be established through public–private partnerships, as suggested by an RAB key informant.

For these reasons, there has been a drastic increase in feed prices since 2021. For example, according to a spokesperson from Gorilla Feeds, "...during the months of July, August and September 2022, the poultry broiler starter cost increased from 560 RWF to 575 RWF and then again to 580 RWF, while poultry layer feed increased from 500 RWF to 545 RWF and then again to 555 RWF. These rapid increases discourage farmers and private investors, forcing them to drop out of the business. Suggested policy interventions include supporting feed millers to construct warehouses for storing large quantities of cereals and soybeans to cover shortage periods.

The limited number of feed millers concentrated in Kigali City are not meeting the demand for feeds. Gorilla Feeds, Zamura Feeds, Uzima Feeds, Rwanda Best Ltd, PRODEV and Tunga are all established in Kigali, with some having branches or distributors in Musanze and Rwamagana. The number and location of feed millers are not a problem as such, but most of these mills operate at below 50% of their daily capacity due to an insufficient supply of raw materials. According to them, they need changes in procurement and supply chains. Sourcing and stocking maize and soybeans collectively through collaboration among animal feed companies can improve their way of doing business and improve feed availability in remote areas. Collective import of raw materials could help reduce prices, but this requires strong coordination and collaboration mechanisms that could be established by the government.

The weak collaboration between animal feed companies was highlighted by participants in the FGDs. Prices of animal feeds are different from one miller to another. Prices provided by Gorilla and Uzima for July 2022 serve as examples. This information was confirmed by millers during the key informant interviews. They argued that the sources of raw materials are different because they are imported from different countries (e.g. Zambia, the United Republic of Tanzania, Kenya or Malawi) for which transport costs differ due to long distances to or from Rwanda. This obstacle could be overcome if the government could regulate

coordination and collaboration mechanisms among important actors in the pig and poultry value chains.

Effects of the animal feed problem

In the problem tree analysis (Figure 3), participants identified the following effects of the core problem of insufficient access to affordable, suitable and nutritious animal feeds:

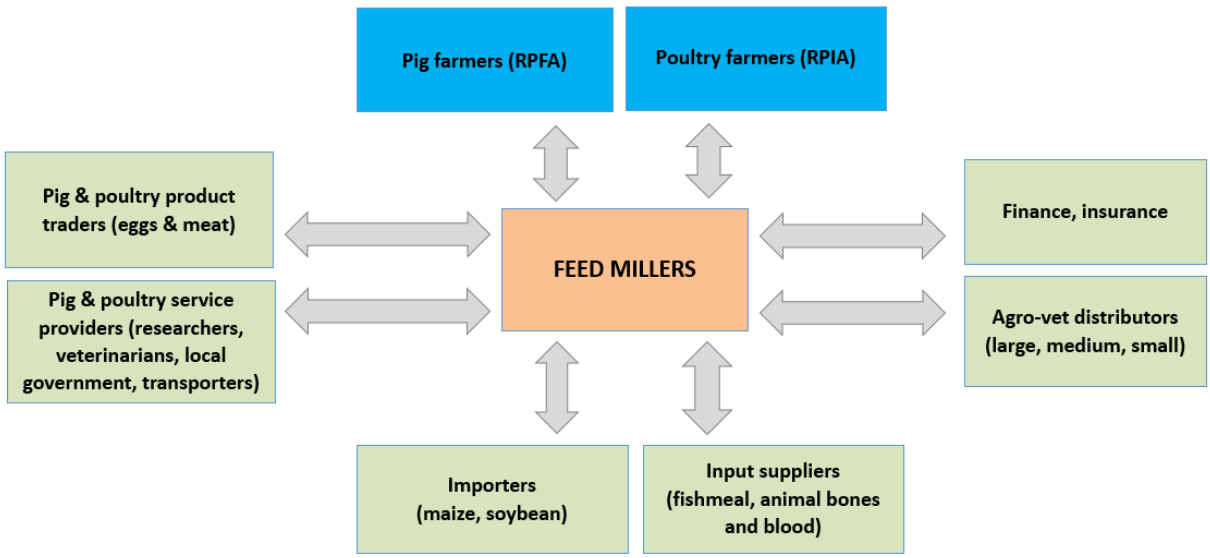
- increased malnutrition in pigs and poultry;
- increased human malnutrition due to low animal protein intake; and
- increased poverty, lack of school fees and medical fees for families in need.

In collaboration with stakeholders, the government could intervene with solutions to reduce the severity of these negative effects. In this regard:

- The government could promote diversification of the feed base through alternative sources of energy and protein (e.g. azola, black soldier fly larvae) to cope with both short- and long-term needs for animal feeds.
- Stakeholders could create a national platform to solve the shortage of animal feed for pigs and poultry.

To address the insufficiency of animal feeds, stakeholders need to come together (Figure 4). This would include feed companies, pig and poultry farmers, importers of maize and soybean, input suppliers, feed distributors, financial and insurance companies, pig and poultry product traders, service providers such as government institutions, private and public veterinarians and transporters.

Figure 4. Establishing a national platform for actors in animal feed value chains



Source: Author's own elaboration.

4.3. Consolidated analysis of the enabling environment

Priority setting and actionable recommendations for the development of the three value chains are clustered around access to animal feeds, market infrastructure, animal health services, financial access and means of transport.

To address limited access to affordable, suitable, and nutritious animal feeds, the following areas of policy intervention are suggested:

- The government and key stakeholders should enable pig and poultry farmers to collaborate through collective procurement of animal feeds. In the current situation, farmers acquire animal feeds in isolation and do not cooperate in developing feeding practices. Stakeholders can help them set up collaboration networks through farmer groups, associations, cooperatives and links with feed millers.
- The government should accept imports of specific varieties and genetically modified species meant for animal feeding because there is high competition between those who need animal feed and human consumption.

Regarding the limited or poor market infrastructure, some work is being done by RAB and PRISM/IFAD projects, which have so far established 15 livestock markets, 10 pig slaughter slabs and 10 veterinary labs as pilots in 15 districts. The local authorities will use the market revenue to develop and maintain livestock market infrastructure. It is recommended:

- to attract investments in pig processing plants by purchasing land plots at or near markets and tax exemptions for five years of production; and
- to promote processing and cooking techniques along with pork and chicken consumption through awareness campaigns.

For animal health services:

- The government should incentivize private veterinarians through tax exemptions for five years, specifically in remote areas and, at the same pace, apply tax exemptions for imports of vaccines and drugs or provide a subsidy to farmers for these medicines. Farmers are not currently able to afford pig vaccines.
- The government and other stakeholders should elaborate standards for pig sheds and pig products, including the use of scales for pig products at markets.

Regarding the financial constraints faced by farmers, the following actions are recommended:

- The government should incentivize establishing agriculture-oriented banks and regulate interest rates for farmers and investors to obtain agricultural loans. As in other developing economies, the maximum interest rate would be three to five percent. Rwanda has several commercial banks, but they do not understand agricultural and livestock requirements for paying back loans. It is expected that an agriculture-oriented bank would provide payment schedules corresponding to agricultural seasons for crop and livestock production.

- The government and other stakeholders should conduct awareness campaigns for subsidized pig insurance. Currently, the government subsidy offered to pig farmers equals 50 percent of the insurance premium set by insurance companies.

Regarding transport issues, the analysis found high costs for raw materials for animal feeds and delivery services of animal feeds produced by processing plants to distributors before reaching pig and poultry farmers. The means of transport from processors are limited in terms of cold-chain facilities for pork products, chickens, and eggs. There are no specialized trucks for live animals. Chickens are transported in wooden boxes on bicycles for distribution, while eggs are transported in poor-quality boxes, incurring incessant losses. To address these problems, the following actions are recommended:

- The government should elaborate regulations for small livestock transport in reference to animal welfare. This entails the involvement of private investors to introduce specialized trucks and other innovative means of transport with detailed standards to move live animals or their products over long distances.
- Road security services should help enforce the safety and quality of transport of animal products through checks and sanctions.

5. Conclusions and policy recommendations

5.1. Conclusions

The TAP-AIS project assessed small livestock policies and their implementation towards the innovations to be introduced in the subsector. The findings show:

There are few but well-formulated policies for pig and poultry farming in Rwanda. However, the implementation process is hindered by insufficient financial means.

Stakeholders need more coordination and collaboration to develop pig, poultry and animal feed value chains. Stakeholders include farmers, small livestock subsector associations, national feed millers and:

- Business Development Fund (BDF)
- Food and Drug Administration (FDA)
- Ministry of Agriculture and Animal Resources (MINAGRI)
- Ministry of Trade and Industry (MINICOM)
- National Industrial Research and Development Agency (NIRDA)
- Rwanda Agriculture and Animal Resources Development Board (RAB)
- Rwanda Consumer's Rights Protection Organization (ADECOR)
- Rwanda Cooperative Agency (RCA)
- Rwanda Inspectorate, Competition and Consumer Protection Authority (RICA)
- Rwanda Poultry Industry Association (RPIA)
- Rwanda Pig Farmers Association (RPFA)
- Rwanda Standards Board (RSB)
- Rwanda Utilities Regulatory Authority (RURA)

Feed millers operate with limited support from the government. This leads to a need for collective importing and marketing for feed millers, which implies that partnerships need to be built while developing their functional capacities (e.g. capacity to organize, deliver and relate with others).

Eight identified problems hinder subsector development:

- insufficient access to animal feeds;
- low market prices for animal products compared to input costs;
- lack of markets due to cultural perceptions regarding the consumption of chickens, eggs and pork;
- financial constraints on smallholder farmers;
- limited animal health services;
- poor standards for animal sheds;
- limited market infrastructure and processing facilities; and
- limited knowledge and skills for rearing pigs and poultry.

The most urgent problem for the pig and poultry businesses relate to insufficient access to animal feeds. There are four root causes, (i) low production of soybeans and maize, (ii) high prices for animal feeds; (iii) limited number of feed millers concentrated in Kigali, Rwamagana and Musanze cities; and (iv) weak collaboration between feed millers for collective import of raw materials.

There are four main consequences stemming from these problems, (i) increased malnutrition of pigs and poultry, (ii) reduced number of pig and poultry farms, (iii) increased human malnutrition due to lack of animal protein, and (iv) increased poverty.

5.2. Policy recommendations

Urgent policy actions were recommended to improve the policy environment and promote the value chains for pigs, poultry and animal feeds. Apart from the government's work on regulatory frameworks, other stakeholders involved in the development of the livestock subsector have important roles to play. The policy recommendations are grouped under nine themes below.

Insufficient access to animal feeds

The government and stakeholders involved in small livestock production should consider:

- Establishing a national platform led jointly by Rwanda Pig Farmers Association and Rwanda Poultry Industry Association that would include all the main actors involved in the pig, poultry and animal feed value chains.
- Conducting a multidisciplinary study on the current government subsidy scheme supporting maize and soybean inputs to identify bottlenecks and opportunities for increasing productivity.
- Supporting imports of specific varieties of maize and soybeans for animal feeding to overcome competition between human and livestock consumption.
- Incentivizing feed millers for collective import of raw materials for animal feed production while supporting the construction of warehouses to store large quantities of imported maize and soybeans.
- Encouraging feed millers to strengthen animal feed distribution networks in remote rural areas.
- Respecting standards or licensing for feed formulae property rights. These standards were elaborated but remain dependent on a new livestock law awaiting cabinet approval.
- Promoting ongoing research on alternative sources of energy and protein sources for animal feeding.
- Removing trade barriers between Rwanda and neighbouring countries (United Republic of Tanzania, Uganda, Democratic Republic of the Congo and Burundi).

Low market prices for pig and poultry products

The government and other stakeholders should consider:

- Intervening in market price regulation for animal feeds and pig and poultry products. This could be done by strengthening the market information system (e-Soko/MINAGRI) that would include animal feed prices, which are currently lacking in the system.
- Stabilizing market prices through collective marketing by farmers instead of using the usual individual marketing system. Such collaboration should progressively reduce the number of dishonest brokers and increase producers' profits on eggs, chickens and pork. Promoting collaboration should enhance links with local, national and international markets.

Cultural perceptions regarding the consumption of eggs, chickens and pork

The government and key stakeholders should focus on:

- Awareness campaigns and promoting cooking techniques for eggs, chickens and pork.
- Promoting the processing of eggs into powder and the consumption of grilled pork in local markets through various incentives to processors, sellers and consumers.

Financial constraints faced by farmers and feed millers

- The government should incentivize setting up agriculture-oriented banks and, at the same time, regulate interest rates on loans for farmers and investors. As in other developing economies, the maximum interest rate would be three to five percent. Rwanda currently has several commercial banks, but they do not understand agricultural and livestock requirements for paying back loans. An agriculture-oriented bank would adjust payment schedules to match seasons for crop and livestock production.
- The government and other stakeholders should conduct awareness campaigns about subsidized insurance. The government subsidy offered to pig and poultry farmers equals 50 percent of the insurance premium set by insurance companies. Few farmers have access to existing subsidies due to low awareness.

Ineffective improvement of animal breeds

- The government and other stakeholders should enforce import permit requirements to ensure high-quality breeds for piglets and one-day-old chicks.
- The Rwanda Agriculture Board should help establish more provincial breeding and artificial insemination centres to improve pig genetics.
- District livestock officers, Rwanda Cooperative Value Chain Development and Vétérinaires Sans Frontières should link private veterinarians to breeding and artificial insemination centres to promote the adoption of animal breeds.

Poor standards for animal sheds at the farm level

The government and key stakeholders should consider:

- Ensuring quality modernization of pig, poultry and animal feed value chains. In this regard, FDA, NIRDA, RAB, RICA, RPFA, RPIA and RSB should put in place enforceable legislation, such as infrastructure standards for pig and poultry farms.
- Elaborating standards for breeding centres and hatcheries, processing, storage facilities, transport and packaging of animal feeds, pig and poultry products. Standards cover all the steps from the farm to slaughterhouses and cold-chain systems for meat products. In parallel, meat processors should have standards for saucisson, jambo and other meat products for local hotels or export. The government and other stakeholders should develop and enforce a code of practice that meets national and international standards at all stages of production and marketing of pig and poultry products.

Limited animal health services

- The government should introduce a subsidy scheme for vaccines and medicines as one of the major livestock production inputs or simply exempt them from taxes**.** This subsidy scheme exists for the import of inorganic fertilizers and successfully stimulates farmers to use more of this input for increased agricultural production. It can be adapted for livestock vaccines and medicines.

Poor market infrastructure and processing facilities

- The government should attract investments in market construction and processing plants through incentives such as land plot availability and tax exemptions for five years of production. Such incentives to private investors should be extended to local market development and animal product distribution networks.
- The government should promote and enforce the use of cold-chain infrastructure, certified and calibrated scales for animal products and regular inspection of eggs, chickens and pork at market level.

Limited knowledge and skills for rearing pigs

- The government, in collaboration with district livestock officers, the Research Council of Veterinary Doctors and Vétérinaires Sans Frontières should encourage setting up private veterinarians and para-veterinarians in remote areas to provide regular training and coaching for farmers.

Some of these priority actions have no regulatory frameworks. The government should collaborate with stakeholders to review and revise existing frameworks and elaborate new regulatory frameworks.

The policy actions suggested here should not be seen as exhaustive. Readers are welcome to comment and suggest additional options.

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Annex 1. Terms of Reference for policy analysis

General description of tasks and objectives to be achieved

Background

FAO Rwanda is implementing a national component of the project Developing capacities in agricultural innovation systems: scaling up the Tropical Agriculture Platform Framework (TAP-AIS project)" in partnership with the Ministry of Agriculture and Animal Resources (MINAGRI). The TAP-AIS project is funded by the European Union and is coordinated by FAO's Research and Extension Unit (OINR), Office of Innovation, Rome, Italy.

Rwanda is one of nine TAP-AIS project countries and focuses on Output 2, in which national agricultural innovation systems (AIS) are assessed, capacity development needs are identified, and agricultural innovation systems strengthened. The results contribute to the global project's information and communications platform.

In 2021, TAP-AIS Rwanda carried out an assessment of AIS for the small livestock subsector with a focus on poultry and pig value chains and animal feeds. The study identified organizational and policy-related constraints and challenges in the small livestock innovation system that will be addressed in the project's capacity development phase. To this end, TAP-AIS is developing organizational capacities of the Rwanda Pig Farmers Association (RPFA) and the Rwanda Poultry Industry Association (RPIA). Policy analysis and dialogue will further strengthen capacities for innovation in the subsector.

The policy specialist consultant will conduct an in-depth analysis of policies and their implementation, and the enabling environment related to innovation in the small livestock subsector, focusing on poultry and pig value chains and animal feed. Policy consultations will be held with stakeholders, including RFPA and RPIA. Results and recommendations will be presented at a national policy dialogue event. The study will provide decision support and advice to the TAP-AIS project, MINAGRI and other stakeholders on actions to strengthen the enabling environment for innovation in the small livestock subsector.

Objectives

The consultancy has the following objectives:

- To identify, analyse and prioritize policy-related issues that influence innovation processes in the small livestock subsector, with an emphasis on pig and poultry value chains.
- To organize a national policy dialogue event in collaboration with the TAP-AIS Country Project Manager (CPM).

- To make practical recommendations for improving policies and strategic processes to strengthen agricultural innovation in the small livestock subsector.

Tasks and responsibilities

Under the direct supervision of the Assistant FAO Rwanda Programmes, FAO-RW and in collaboration with the TAP-AIS Country Project Manager, the National Project Coordinator, OINR and the consultant will perform the following tasks and responsibilities:

- Review secondary data and information on policy and enabling environment related to innovation in the small livestock subsector.
- Prepare a methodology and workplan for the policy analysis that covers, among others:
    - ongoing policy work among key organizations in Rwanda, including previous and current projects supported by the European Union;
    - multistakeholder consultations from local to national levels; and
    - mainstreaming legal aspects with small livestock value-chain actors.
- Present the methodology and detailed workplan for the policy analysis at a meeting with the TAP-AIS project's country advisory team.
- Collect primary data through interviews, questionnaires and focus group discussions.
- Analyse research data and prepare a draft report**.**
- Present results and recommendations at a policy dialogue event to be organized by FAO Rwanda**.**
- Write a final report on the policy analysis and two policy briefs**.**
- Effective dialogue with FAO Rwanda, the project's CPM, the National Project Coordinator and the projects Country Advisory Team.

Key performance indicators

Expected Outputs	Required Completion Date:
1. Short inception report including preliminary review of secondary data, methodology and workplan for the policy analysis.	1. 02 August 2022
2. Presentation of methodology and workplan at a meeting with the TAP-AIS project's Country Advisory Team.	2. 12 August 2022
3. Draft a report and two related draft policy briefs to be presented at a national policy dialogue event.	3. 23 September 2022
4. Two final policy briefs on poultry and pig value chains, respectively.	4. 07 October 2022
5. Final report (to be published by FAO).	5. 21 October 2022

Annex 2. Proposed Workplan (Gantt chart)

Activity	July-22				August-22				Sept.-22				Oct.-22			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
1. Preparation phase																
1.1. Review secondary data and information on policy and enabling environment related to innovation in the small livestock subsector																
1.2. Prepare a methodology and workplan for the policy analysis that covers previous and current projects supported by the European Union, multistakeholder consultations from local to national levels, mainstreaming legal pieces and aspects with small livestock value-chain actors																
1.3. Present the methodology and detailed workplan for the policy analysis at a meeting with the TAP-AIS project country advisory team																
1.3.1. Prepare data collection tools (questionnaires guide for key informant interviews and multistakeholder discussions)																
1.3.2. Share the data collection tools with FAO to ensure that the content is related to the objective of the project																
2. Execution phase																
2.1. Review legal documents on small livestock and animal feeds																
2.2. Collect data through key informant interviews and multistakeholder discussions (FGDs)																
2.3. Analyse data collected and prepared a draft report																
2.4. Present results and recommendations at a policy dialogue event to be organized by FAO Rwanda																
3. Reporting phase																

Activity	July-22				August-22				Sept.-22				Oct.-22			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
3.1. Write a draft report on the policy analysis and two policy briefs on poultry and pig value chains																
3.2. Submit the draft report to FAO																
3.3. Organize a validation meeting with the FAO team and get inputs for the report																
3.4. Submit to FAO Rwanda Office two final policy briefs on poultry and pig value chains																
3.5. Submit to FAO Rwanda Office a final report to be published by FAO																

Annex 3. Public and private stakeholders interviewed for KIIs and FGDs

1. Summary of key informant interviews

Outside Kigali, one day by district KIIs in the morning and FGDs in the afternoon

Date	Destination	Night	KII participants	FGD participants	Participants
18/9/2022	Gicumbi	Gicumbi	Field observations		
19/9/2022	Gicumbi	Bugesera	5	6	11
20/9/2022	Bugesera	Rwamagana	4	6	10
21/9/2022	Rwamagana	Muhanga	6	6	12
22/9/2022	Muhanga	Nyamagabe	4	6	10
23/9/2022	Nyamagabe	Kigali	5	6	11
			24	30	54

Inside Kigali City: KIIs conducted

No	Date	Destination	KIIs	FGDs	Participants
1	15/9/2022	DDG/RAB, Small Livestock Department, ENABEL1, ENABEL2 MINAGRI PS, DG Planning, Country Project Manager, policy specialist RYAF/MINAGRI	9	0	9
2	16/9/2022	PRISM/IFAD, VSF, RCDV, European Union, Foreign Commonwealth and Development Office/United Kingdom, World Bank	6	0	6
Total			15	0	15

Detailed itinerary and list of public and private stakeholders and development partners interviewed for key information interviews.

Date	Place	Time	Institution/type of actor	Name of respondents
19/9/2022	Gicumbi	09.00 – 10.00	Pig private farmer/RPFA	Mr Claude Shirimpumu
		10.30 – 11.30	Pig LFFS group	Mr Mwumvaneza Damas
		11.45 – 12.45	VSF private vet	Ms MUKANOHELI Esperance
	Bugesera	17.00	Zamura Feed Ltd.	Ms Katie
20/9/2022		11.00	VSF Private vet	Mr Joseph
	Rwamagana	14.30	District official/DVO	Dr Niyitanga Jean de Dieu
			Peal company	Neal Roper
		16.00	Rugali Meat Processing Ltd.	Mr Kasim Hakizimana Casimir
		17.00	Agri-Business Solutions	Mr Jean Baptiste Musabyimana
21/9/2022	Rwamagana		District officials Director of Ag	Niyitanga Jean Baptiste
			Poultry LFFS (Twitezimbere)	Ms Mary Uwotwambaza
			Livestock/RAB Master Trainer	Mr Remy Titien Niyireba
22/9/2022	Muhanga		Poultry farmer	TBD
			Pig farmer	Monique
			Pig scientist/RAB	Safari Sylvestre
			Vet sector	Gasengayire Francine
			Pig trader	Dushimirimana Fulgence
			VSF private vet	Patrick
23/9/2022	Nyamagabe		District Animal Resources Officer	TBD
			Pig farmer	TBD
			Poultry farmer	TBD
			Private vet	TBD
26/9/2022	Kigali	8.00	PRISM/IFAD USAID/Orora Wihaze AGRITERRA Poultry Farmers Association	Michel Ngarambe TBD Claire Butare Andrew
27/9/2022	Kigali	11.30 – 12.30	VSF RCDV European Union /Programme Officer	Expedite Nsengiyaremye Alphonse Cyprien Uwitije
28/9/2022	Kigali	13.00 14.00 15.00	Foreign Commonwealth and Development Office (FCDO)/United Kingdom World Bank	Annie Chapados Isa Schuman Esdras Byiringiro
27/9/2022			MINAGRI PS DG Planning	Jean Claude Musabyimana Dr Chantal Ingabire

Date	Place	Time	Institution/type of actor	Name of respondents
			DG value chains Country Project Manager Policy Specialist RYAF/MINAGRI	Octave Nshimiyimana Mathilde Carine Arnaud
30/9/2022	Kigali	10.30	DDG/RAB	Dr Solange Uwituze
		14.00	RAB	Dr Claire Hirwa
		16.00	Enabel Field Operations Team	Celestin Myambi Augustin Sebakambwe Vincent Nsabuwera

2. Summary of focus group discussions

Date	Destination	Participants	Total
19/9/2022	Gicumbi/Kisaro	Pig farmers (medium) (1), Kisoro company representative (1), RFPA representative (1), district veterinarian (1) and traders (2)	6
20/9/2022	Bugesera	Pig farmers (small, large) (2), researchers (1), LFFS (1), district veterinarian (1) and traders (1)	6
21/9/2022	Rwamagana	Poultry farmers (small, large) (2), RPIA representative (1), LFFS (1), district veterinarian (1) and traders (1)	6
22/9/2022	Muhanga	Poultry farmers (small, large) (2), researchers (1), district veterinarian (1) and traders (2)	6
23/9/2022	Nyamagabe	Poultry farmers (small, large) (2), researchers (1), district veterinarian (1) and traders (2)	6
			30

Annex 4. Guiding questions for key informant interviews

Methodology

- The key informant interviews will collect information on various policy challenges and actions that would promote poultry and pig value-chain development and innovation.
- The interview includes eleven questions and will take about 40–45 minutes.

Q1. Would you like to tell me about your current job position? What is your current and past involvement in the small livestock subsector?

Follow-up:

- *What is your organization's role in the small livestock subsector, especially poultry and pig value chains?*

Q2. How do you perceive the efficiency of the Livestock Master Plan and other policy instruments targeting the small livestock sector?

Follow-up:

- *What is your view on the design and implementation of those instruments?*
- *Would you like to elaborate on the gaps you may have identified in those policy instruments?*

Q3. The AIS assessment by the TAP-AIS project found that poultry and pig value chains are constrained by insufficient access by smallholders to affordable, suitable, and nutritious animal feed. In your experience, what are the current policy issues around this challenge?

Follow-up:

- *You mention that ……., can you elaborate on this issue? What are the consequences of the current policies?*
- *What is currently being done to solve that problem? Who is taking action?*

Q4. The AIS assessment found that pig and poultry value chains are constrained by low market prices compared to input costs. From your point of view, what are the current policy issues around this challenge?

Follow-up:

- *You mention that ……., what are the consequences of the current policy around that issue?*
- *What could be done to solve that problem? Who should take action?*

Q5. The AIS assessment found that pig and poultry value chains are constrained by limited or poor market infrastructure and processing facilities. From your point of view, what are the current policy issues around this challenge?

Follow-up:

- *You mention that ……., what are the consequences of the current policy around that issue?*
- *What could be done to solve that problem? Who should take action?*

Q6. Another finding of the AIS assessment is that animal health services are limited while disease outbreaks continually impoverish farmers. What stipulates the current policy about it?

Follow-up:

- *You mention that……, what are the consequences of the current policy around that issue?*
- *What is being done to solve that problem? Who has to take action?*

smallholder farmer participation in pig value chains. Are the current policies tackling that issue?

Follow-up:

- *You mention that ……, what do you see as consequences of the current policy around that issue?*
- *What could be done to solve that problem? Who has to take action?*

Q8. Through the AIS assessment, it was also found that transport and logistics are lacking for live animals, their products and for advisory service staff. Are the current policies talking about that issue?

Follow-up:

- *You mention that ……, what do you see as consequences of the current policy around that issue?*
- *What could be done to solve that problem? Who has to take action?*

Q9. How do you see the current status of multistakeholder collaboration in Rwanda around the design and implementation of polices related to the development of the small livestock sector?

Follow up:

- *In your view, how could public–private partnerships around small livestock value chains be strengthened?*
- *What regional and international collaboration might benefit the small livestock sector?*

Q10. In your view, what are the most important policy or other actions needed to improve the enabling environment to boost the small livestock subsector in Rwanda?

Follow-up

- *That's an interesting point, can you tell me a bit more?*
- *In the short to medium term, what would be the priority action? Who would be responsible for its design and implementation?*

Q11. Do you have any final comments or reflections on this topic?

Thank you for your information, time, and patience.

Annex 5. Guiding questions for focus group discussions

Methodology

- These guiding questions are refined to better connect to the AIS assessment results and their validation, and the analysis conducted in the five-year strategic plans for the RPIA and RPFA.
- Briefly, participants will be informed on the context and objectives of the focus group discussion, including its relation to the TAP-AIS project.
- The TAP-AIS project and RPIA and RPFA have analyse challenges in the poultry and pig value chains, for which policy and enabling environment challenges need further analysis to inform an upcoming policy dialogue in October 2022.
- The focus group discussion will use the problem tree tool to analyse these challenges, their root causes, and their effects (a short presentation on the tool will be needed).
- The focus group discussion will take two hours maximum.

(1) What is the focal problem or issue to be analysed (trunk of the tree)?

- I have reviewed the policy/enabling environment challenges already identified in the list/cluster prepared by the consultant: Two tables on poultry and pigs challenges respectively are hereto attached: (1) Insufficient animal feeds, (2) limited market infrastructures and processing facilities; (3) limited health services, (4) financial constraints, (5) Transport and logistics issues to markets, (6) Genetics constraints (animal breeding).
- The focus group discussion participants will first reflect on and discuss these challenges in this list. They will rank them (using urgency/importance tool) and find the core problem. This is critical to ensure that we analyse the right problem, which will be the beginning of the problem tree.

(2) What are the root causes (roots of the tree) of that problem?

- Brainstorm regarding the causes of the focal problem (using cards). Emphasize the possible diversity of root causes
- From those roots, which are getting better, which are getting worse, or which are staying the same? This will help to understand the trends.

(3) What are the real effects (branches of the tree) of that problem?

- Brainstorm regarding the effects of the focal problem (using cards). Emphasize the possible diversity of effects
- From those effects, which ones are getting better, which are worse, and which stay the same? Another dimension of effect is how severe the effects are.

(4) Where could a policy change or change in enabling environment to help to address a cause or reduce an effect and create a solution?

- Which policy change or enabling environment should be prioritized? This is important, as time and resources are limited. However, I will use priority setting ranking technique to mention three or four priority actions and rank them. I will take the number one, to not just set priorities based on opinion. How easy or difficult would it be to address a cause or reduce an effect? How impactful would that solution be (quantify the potential benefits)?

N.B.

Using a flip chart for a focus group discussion in combination with cards that can be moved around is paramount.

As with the key informant interviews, it will be useful to first test this focus group discussion with a small group of three to four people.

Acknowledgements

We are grateful to participants in key informant interviews and focus group discussions for their contributions. Stakeholders attending a national policy dialogue on 10 November 2022 in Kigali provided valuable advice on this report. Several reviewers from organizations engaged in the small livestock sector in Rwanda gave insightful comments on two policy briefs based on this work. The study was funded by the European Union under the TAP-AIS project.

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