The Uganda Pig Value Chain
Impact Pathways Narrative

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1. **Uganda pig value chain problem context**

Several factors continue to affect the Uganda pig value chain. The low priority given to the pig sector, especially in the national agricultural sector policy framework—the Development Strategy and Investment Plan (DSIP)—is a major limitation. Despite of the sector registering an exponential growth, productivity has remained low largely due to the dominance of low-input low-output systems practiced by small-scale producers. The low productivity is mainly associated with poor pig health management resulting from disease burdens of diseases such as African Swine Fever (ASF), helminthiasis, and external parasites; poor feeding practices and poor quality of feeds; poor husbandry practices; and absence of appropriate breeding strategies. Low productivity coupled with poor access to services such as veterinary assistance, extension, financial and market information services, and the absence of sustainable farmer organizational institutions, have greatly affected the development of the pig value chain in Uganda. Besides, pig and pig products are marketed mostly informally, with extremely weak linkages between poor smallholder producers and the upstream value chain actors. These weak linkages have had significant negative impacts on farm gate prices. Also, regulations on biosecurity measures and waste management are poorly implemented and adherence of farmers and other actors to these regulations is equally limited. Poor implementation of the same regulations results in negative environmental impacts and the spread of diseases.

1.1 **Key underlying causes of the problems**

It is widely believed that the low prioritization of the pig sector in the country’s agricultural policy framework is a legacy problem of the unfavourable Idi Amin-era policies towards the pig sector. Some of these polices have continued impacting negatively on the country’s capacity and willingness to increase investment in the sector. The absence of strong linkages between the smallholders and upstream actors is due to weak farmer organizational/institutional arrangements. Poor feeding is a result of inadequate information and knowledge for farmers, extension agents, and feed stockists regarding pig feeds and feeding strategies. The problem is exacerbated by seasonality, lack of quality control, and high cost of commercial feeds and feed ingredients.

2. **Value chain program vision**

The Livestock and Fish CGIAR research program’s vision for the Uganda pig value chain is to increase pig productivity, household income in the smallholder pig production systems, and the performance of the associated value chain actors, in order to improve poor consumers’ access to high quality pork and pork products and ultimately contribute to resilient livelihoods in an eco-friendly manner. This vision is based on indicative statements of what success would look like for key value chain actors as summarized below:

a) **Poor pig value chain actors would want to:**

   i. earn sustainable and reliable income,
   ii. be heard and be able to influence,
   iii. be capable of producing, organizing, and marketing their pig products,
   iv. access technical, marketing, and financial support, and
   v. be connected to wider value chains.

b) **Wider pig value chain system actors would want to have:**

   i. access to safe and high quality pork products,
   ii. consistent and reliable supply and demand for pork products,
   iii. legal policy arrangements that support contracts,
iv. reduced negative environmental impacts of pig production, and
v. lower transaction costs and increased coherence between chain segments.

c) Wider stakeholders including (development agents and researchers) would want to see:
i. high potential to consume pork products,
ii. high return on investment/ value for money in pig production, evidence of potential for the pig industry

The program will therefore meet the following goals:
a) Improved livelihoods, incomes, and assets of smallholder pig producers, especially the vulnerable, in a sustainable manner through increased productivity, reduced exposure to risk, improved market access, and lower associated negative environmental impacts.
b) Poor consumers have sustainable access to affordable, high quality, and safe pork and pork products.

3. Uganda pig value chain impact pathways

The ultimate impacts of the Livestock and Fish program in the pig value chain will include improving farm level pig productivity, increasing household income, improving household nutrition and health status, and maintaining the status of natural resources in the value chain. Potential key partners and actors will include: the National Agricultural Research Systems (NARES) including the National Livestock Research Institute (NaLiIRRI), Ministry of Agriculture Animal Industry and Fisheries (MAAIF), National Agricultural Advisory Services (NAADS), Local Governments, Makerere University, Gulu University, Swedish University for Agricultural Sciences (SLU), Iowa State University, NGOs including VEDCO, VSF, GRAMEEN Foundation, VSO, farmer groups including Wambizzi Cooperative-Abattoirs, Buwanguzi Butaba Farmer groups, SNV-Uganda, the Uganda Piggery Organization (UPO), Pig Production and Marketing Uganda (private business), input suppliers, and private veterinary businesses.

Program impacts will be delivered via three main pathways:
a) Innovative models for increasing farmers’ access to quality and reliable inputs and services for improved pig productivity.
b) Strategies for improving supply and access to quality and safe pork products.
c) Innovations for improving farm management and disposal of pig waste.

General assumptions:
- Partners are interested and have the resources to scale out innovations.
- Good communication strategies are in place.
- The value chain approach will deliver results to the Uganda pig value chain actors.
- There is sufficient demand for pig and pig products in Uganda.
- Smallholder pig production systems are sustainable.
- The pig sector will become a priority in the national agricultural policy framework.
- Different stakeholders are willing to be part of the partnership.
- Climate and physical environment and factors of production are supportive for pig production, especially access to water during hot periods of the year.
- Better organized markets are attractive to traders and middlemen.
General risks

- Religious biases regarding the industry continue to affect the growth of pig production in the country.
- Persistence of the government not including pig production as a priority in its policies affect interest on and growth of the sector.

3.1 Impact pathway 1: Innovative models of farmers’ access to quality and reliable inputs and services for increased productivity

The ultimate impact of this pathway will be the increased household income resulting from improved pig productivity and farmers running profitable pig enterprises (Figure 1). Improved pig productivity is expected to arise from changes in behaviour and practices such as farmers being able to increase stocks of good quality, healthy, and better fed pigs due to their increased access to quality and affordable pig production inputs and services. In addition, ownership of healthy pigs will also arise from various value chain actors accessing information and knowledge regarding biosecurity protocols and their use. The key program output to deliver this pathway will be improved biosecurity measures along the value chain and improved management and rapid diagnostic tests for priority diseases such as African swine fever, parasites and pig-related zoonosis. Other outputs will include integrated models of delivery of information, product and services to improve management, feeding, and prevention and control of priority diseases and pig-related zoonosis.

Improving productivity through farmers accessing quality inputs and services will involve drug shops/dealers providing quality products and pig feed processors/dealers producing quality and standard feeds by using recommended feeds ingredients and appropriately formulated feed rations. Both of these changes will require regulatory bodies to fully implement policies and regulations on pig feeds processing. Also, farmers will have to formulate and provide to their animals affordable diets based on locally available feed resources. Improved pig productivity will result from the use of animal genotypes tailored to the local conditions/environments, and the implementation of appropriate breeding strategies, including the selection and proper use of village boars. Furthermore, improved pig productivity will arise from farmers organizing in groups for efficient and reliable access to quality inputs and services. The promotion of innovative and sustainable pig marketing hub models will help to improve not only the prices received by farmers, but also access to inputs and services. Specific research and development activities embedded in this part of the pathway will include building partnerships for increased access to information and knowledge, building capacity to implement regulations; and research on developing affordable and reliable pig feeding and breeding strategies, and feasible and effective biosecurity measures.
Increase in household income from pig production will also be a direct result of farmers managing profitable pig enterprises, either through use of improved production innovations or becoming more market oriented. For farmers to become more market oriented (commercial production), they will need to access knowledge on pig production through
improved extension systems, and sustainable and organized farmer institutions, well developed pig collection centers, and pig value chain actors accessing more favourable credit and financial products. Key program outputs will include strategies for increased access to extension services, innovative models for sustainable and organized pig marketing hubs, and credit and financial products that are appropriate to smallholders. Focal research and development themes will include: designing and testing models for building sustainable partnerships for capacity development in pig health, management and feeding, designing and testing alternative pig marketing hub models, designing and testing alternative models for accessing credit and finance.

Several assumptions are made in this pathway: (1) that improvement in smallholder household income for pig producers will depend on the existence of adequate demand for pigs and pig products, (2) that farmers are willing to increase their investment in piggery, (3) that pig market conditions will remain favourable. However, there is the risk of disease outbreaks that might affect the attainment of the identified outcome.

3.2 Impact Pathway 2: Improving supply and access to quality and safe pork products

The ultimate impact through this pathway will be the improved household nutrition and health status arising from increased consumption of pork and pork products, and from reduced exposure to zoonotic risks (Figure 2). Increased consumption of pork and pork products is expected to come from two major changes in knowledge, attitudes, and practices: 1) consumers will increase their demand for processed products after accessing more information on quality and nutrition values of various pork products and 2) positive information regarding pork and the pork industry will increase the consumption of pork and its products. Also, butchers and food processors will explore alternative and innovative pork and pork products marketing strategies, including the establishment of appropriate cool chain facilities. The key program output will be a feasible and efficient plan for communicating and disseminating information on the nutritional value of pork products, as well as on the importance of proper cooking to reduce food safety risks, and clarifying misconceptions about the relationship between pork consumption and human neuro-cysticercosis.

The overall supply of pork and pork products will generally be improved with increase government prioritization of the pig industry and increased funding to the sector. This is most likely to happen when policy makers adequately access and use information on the pig sector to plan for the sector and that other stakeholders use the information to lobby and advocate for the pig sector. The key program output will be a strategy for strengthening piggery farmers’ organizations and associations of other actors including butchers, processors, etc. Research and development will focus on improving the capacity of these institutions to lobby and advocate for the pig industry.
Better household nutrition and health outcomes are also expected to arise from reduced exposure to the risk of zoonotic diseases along the pig value chain, largely resulting from fewer disease infested pigs/pork products reaching the market. The key desired change in behaviour and practice will be farmers and traders selling disease free animals, value chain actors adhering to biosecurity measures, meat processors accessing quality training and information on pork inspection, and processors not transferring diseases through non recommended packaging practices. The key program output will be an integrated strategy...
for pig health, zoonosis, and biosecurity management. Focal research and development priorities will include: improving value chain actors’ adherence to biosecurity protocols and implementations of regulations, building effective partnerships for provision of information on best practices in pig health, feeding, and management. Key partners on this will include MAAIF, NaLiRRI (NARES), Ministry of Health, local governments, NAADS, and National Public universities including Makerere and Gulu universities.

The assumption made is that farmers will adapt the improved protocols for controlling zoonotic diseases, and are aware of what their role will be in producing safe pork. The risk however, is that the information about ASF and other diseases, particularly zoonosis, might be mismanaged or misinterpreted. Another assumption is that incomes will be invested in improving household nutrition and that farmers are aware of what constitutes good diets.

3.3 Impact pathway 3: Better management of pig waste

The last pathway involves the attainment of better status for natural resources within the target value chain, through better management and disposal of pig waste (Figure 3). Improved management of pig waste will arise through four major changes in knowledge, attitudes, and practices. First, butchers and abattoir managers will have to improve the management and disposal of pig waste as a result of the implementation of proper slaughtering management practices. It could also be helped if authorities regulate and control pig slaughtering, and there are increased efforts by the government, universities, NAADS and NGOs to provide extension information regarding pig waste management, including the promotion of biogas production from pig manure. Another potential option that needs further evaluation is the use of Indigenous Microorganisms (IMO) technologies. The program output will be the development of an integrated model for regulating and managing pig waste. Research and development activities will focus on: 1) improving the capacity of extension staff to promote better pig waste management practices to all value chain actors, 2) other efforts will focus on improving the capacity of regulatory bodies (at national, district and local level) to implement pig waste management and disposal regulations, 3) generate and disseminate information regarding pig waste management and disposal, and 4) building partnerships and providing partners with the necessary information regarding use of pig waste for biogas production. The key assumption being made, however, is that there is widespread awareness of the negative environmental impacts of poorly managed pig farms and slaughter slabs and abattoirs.
Figure 3: Impact pathway 3-Better management of pig waste

**Program Output**

- Improve the capacity of veterinarians in pig meat inspection and provide actors with information about pig waste management and disposal
- Increase regulatory bodies' capacity to implement pig waste management and disposal regulations
- Generate and disseminate information about pig waste management
- Promote the use of pig waste for biogas production

**Change in Knowledge, Attitude and Practices**

- Butchers practice better management of pig waste
- Authorities fully implement regulation on pig waste management and disposal
- Extension provide information about waste related management
- NGOs and others promote the use of pig manure for biogas production

**Immediate Outcomes**

- Better status of natural resources
- Better management and disposal of pig waste

**Intermediate Outcomes**

- Authorities regularize and centralize pig slaughtering
- Butchers practice better management of pig waste