

Enhancing biosecurity along the pig value chains for the control of ASF and other pig diseases



Better lives through livestock

From single disease approach to integrated herd health management approach

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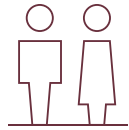
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Roles of pigs to smallholder farmers



FOOD



GENDER



A female pig farmer in Moyo district, Uganda



HEALTH

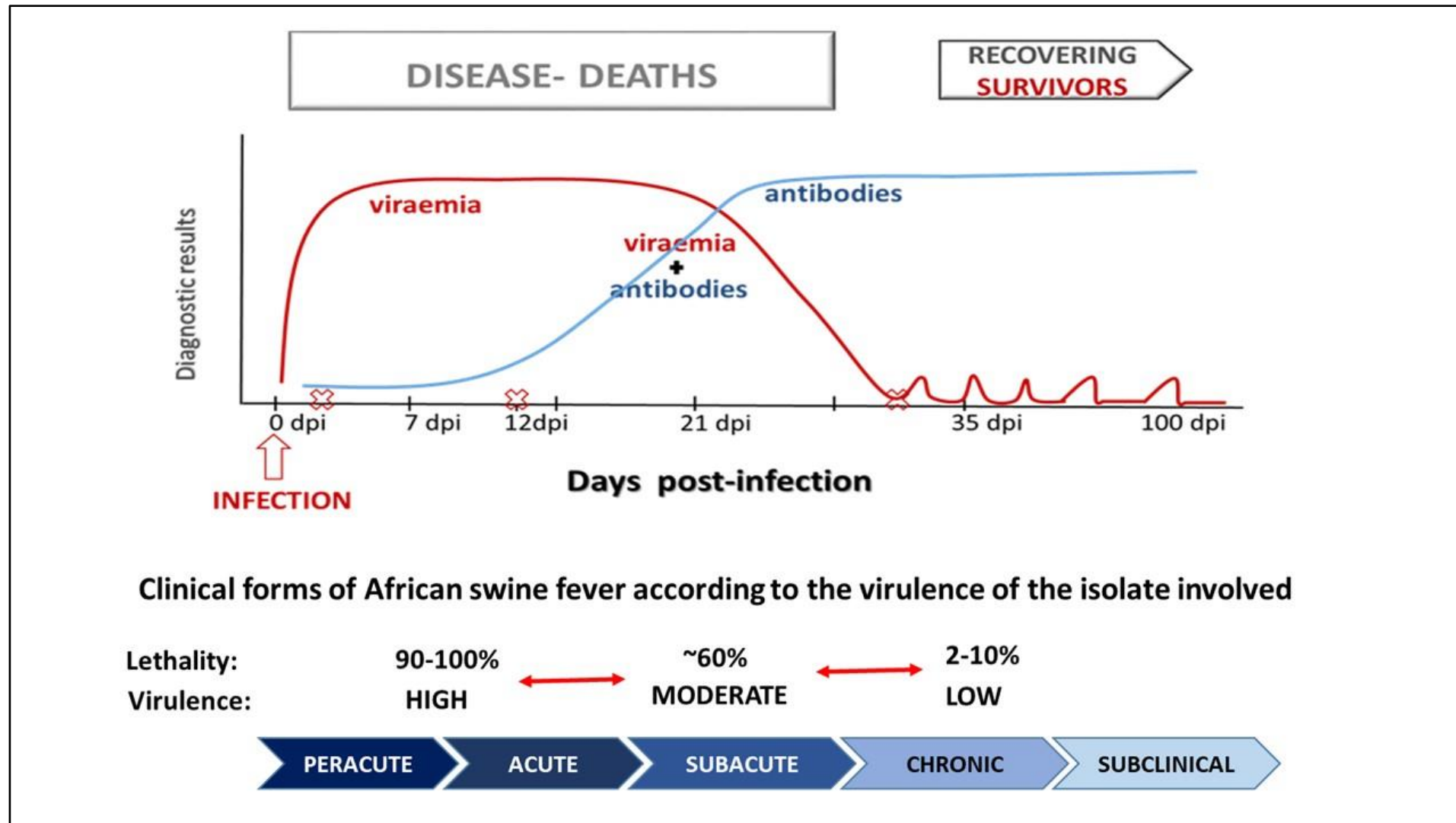


ENVIRONMENT



PROSPERITY

Clinical forms of ASF according to the virulence of the isolate involved





What is a Livestock Value Chain (VC)

- A VC follows as it moves from the **primary producer** to the **final consumer**.
- In principle at least, **value is added at each stage of the chain**, hence is the **pathway of processes** that a **product** the term “value chain” (IFAD).
- **Value addition is determined by the market and is not necessarily increased by processing or physical transformation.**
- *For example, a VC for fresh, open-range, organic beef with little physical transformation can generate greater value for the farmer (and other VC actors) than a VC for highly processed beef sausage.*



Characteristics of a VC

- A thriving livestock VC supports other agricultural VCs, as it “pulls” demand from the small-scale producers who grow fodder crops or supply crop residues to livestock producers
- VCs are “**meso-level**” structures in that they fall between the **macro-level** of the economy and the **microlevel** of individual livestock producers
- Livestock VCs can be short and quite simple, or they can be quite long and complex

Value Chain Map



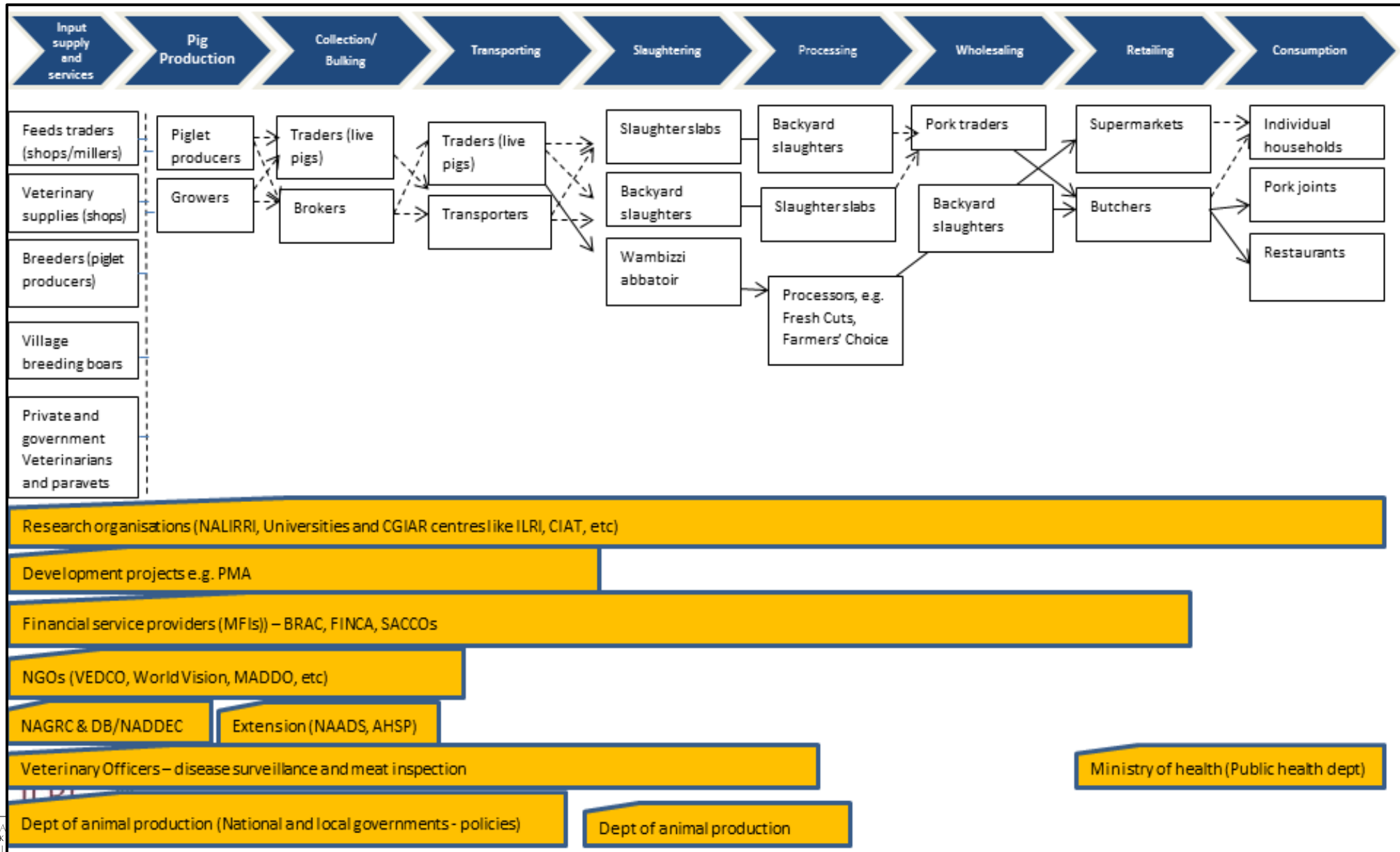
- A VC map is a simplified representation of a complex and dynamic reality
- **The inputs and services that go into each step of the VC, and the enabling environment that affects the VC, cannot easily be shown on a VC map but are vitally important.**

Actors of a VC

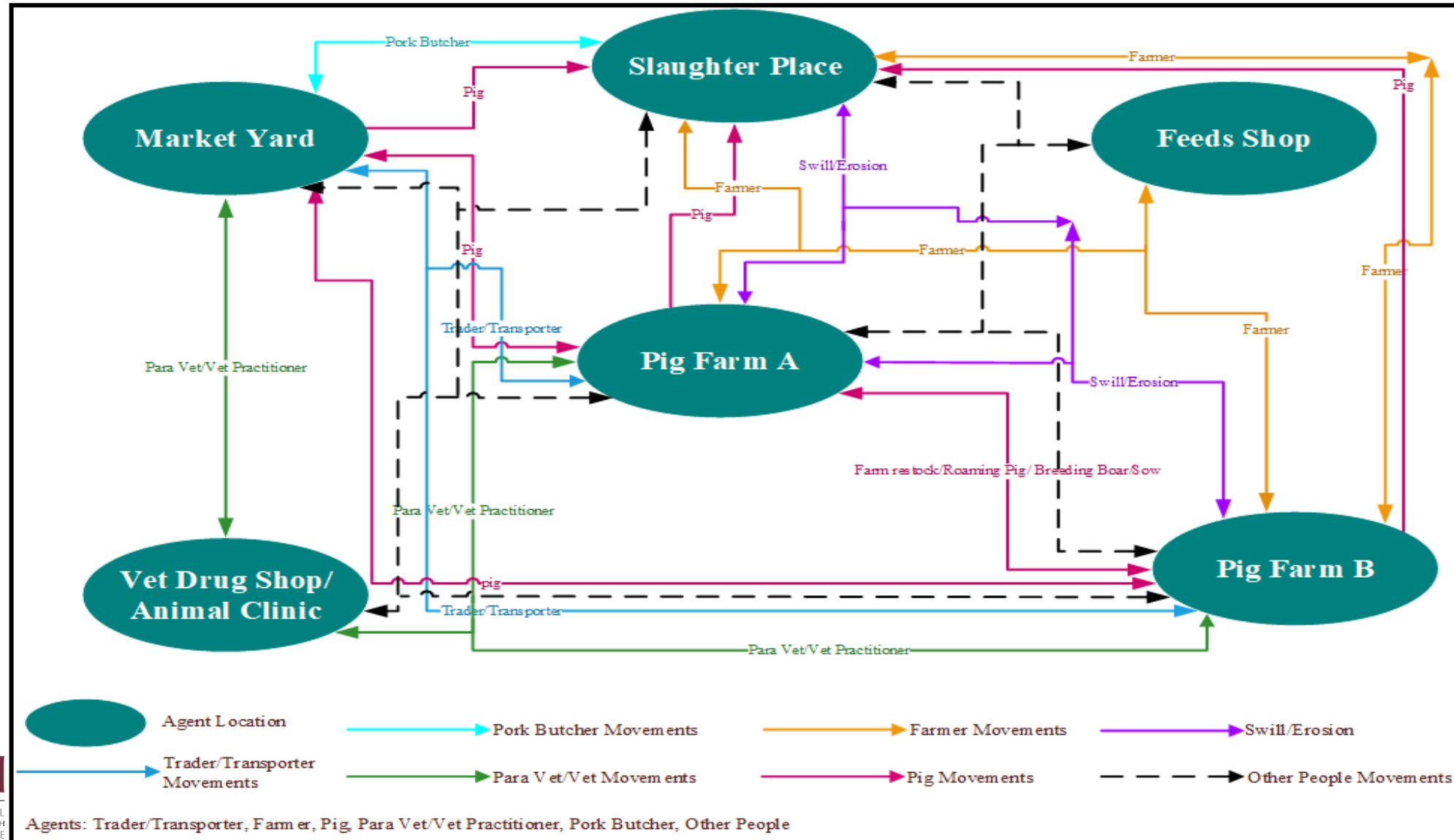


- **Actors** (producers, collectors/traders, consumers)
- **Inputs and services** (feed, veterinary drugs and services, extension advice, market information and finance)
- **Enabling environment**
 - the institutional, policy, legal and business environment – access to grazing land, licensing restrictions on para-veterinarians, etc.
 - cultural, social, religious and gender-based systems and practices – control of cash from animal products, etc.
 - rural infrastructure – delineated stock routes, watering holes, etc.

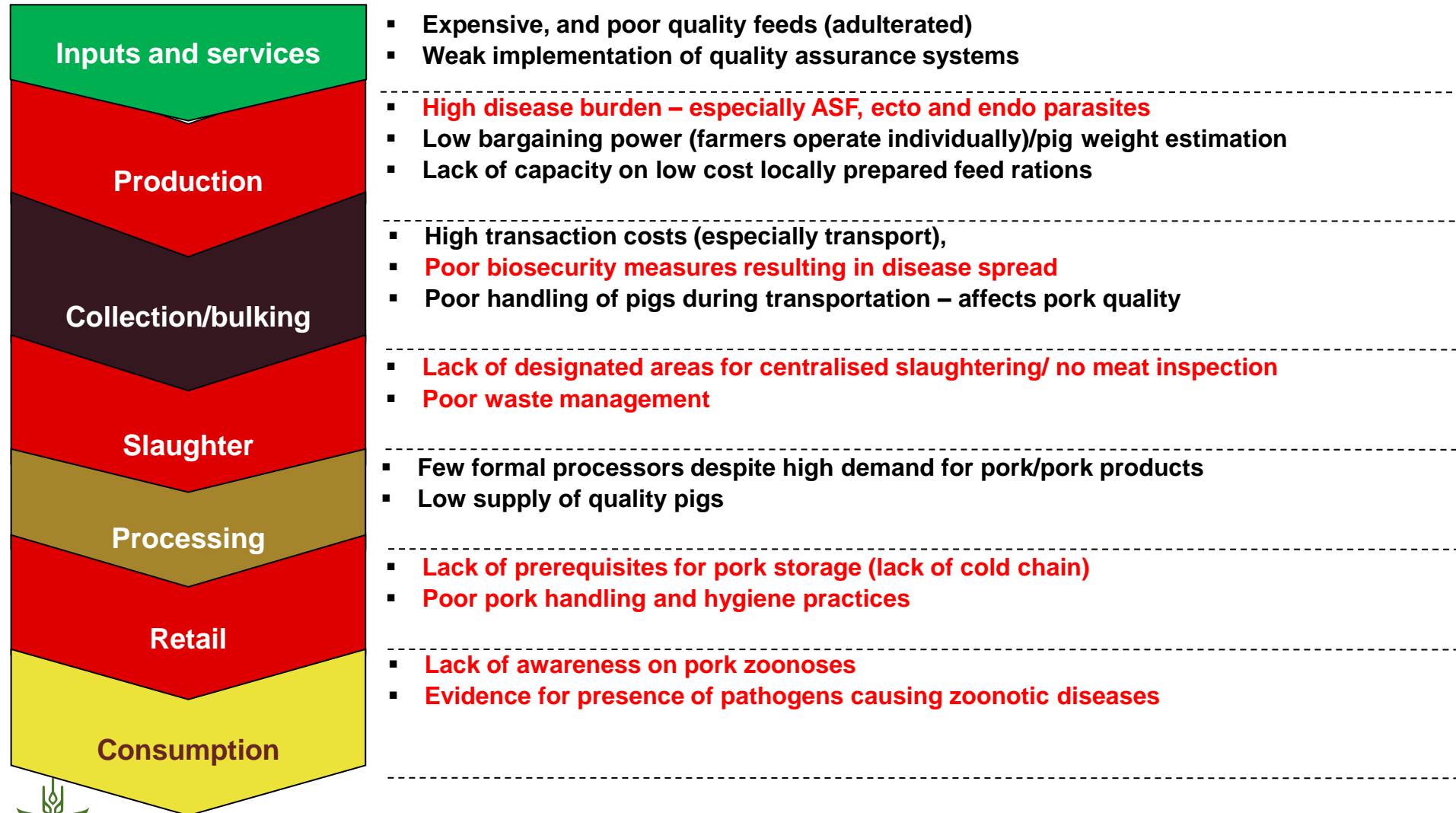
A smallholder Pig Value Chain Map (ex. of Uganda)



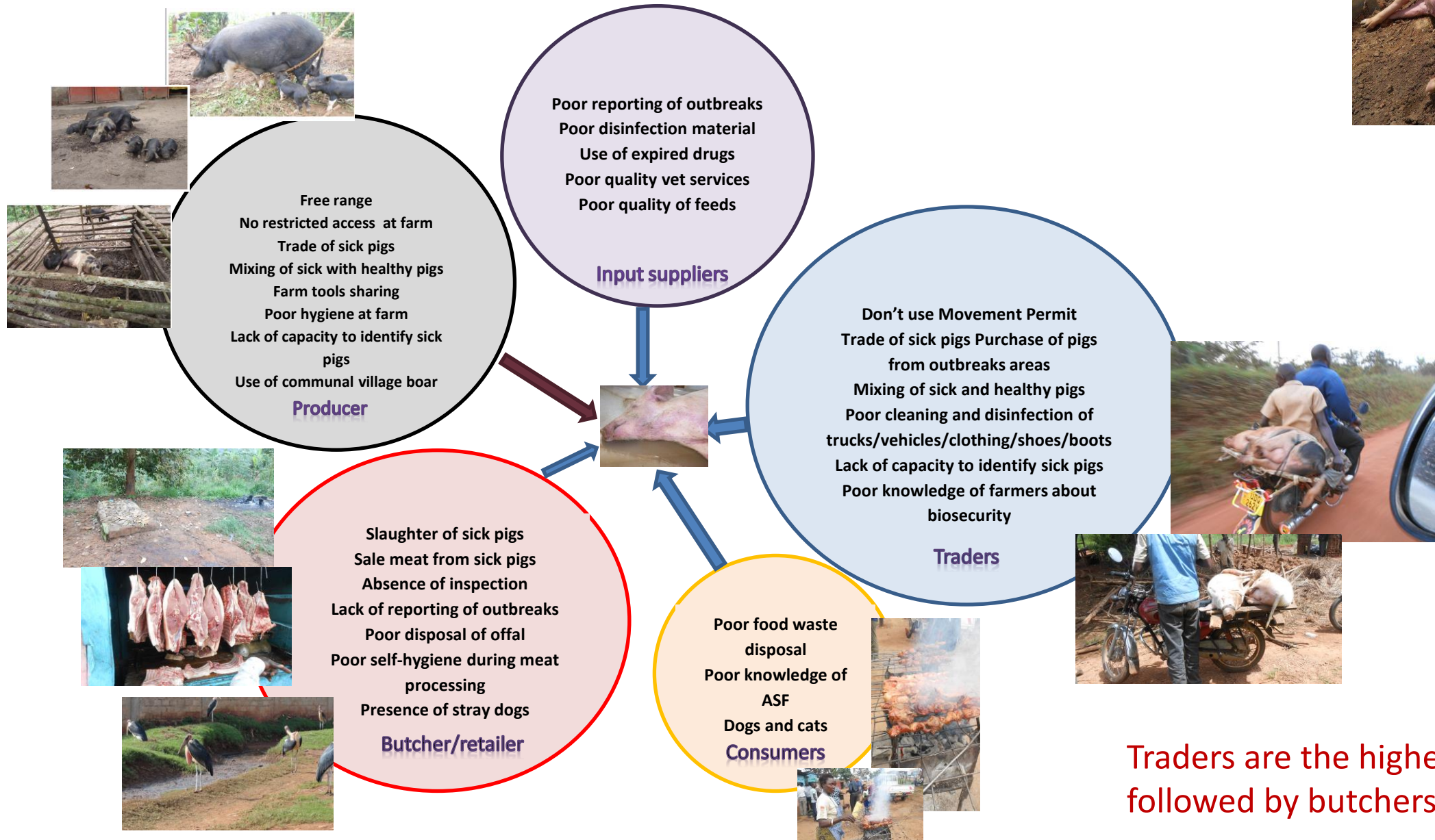
Social networks and movement of agents of the Smallholder Pig Value Chain



Key constraints along the pig value chains in Uganda

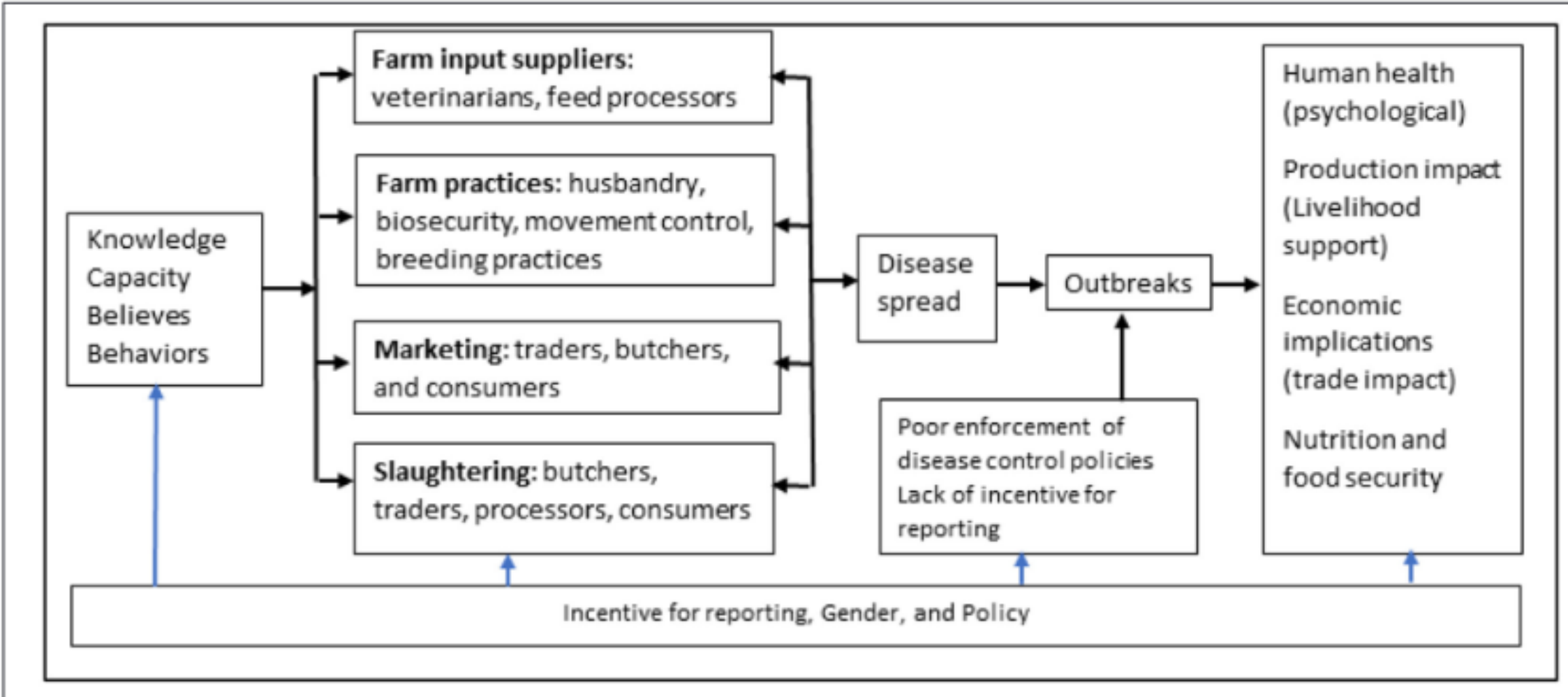


Value chain actors' practices in the spread of ASF



Traders are the highest risk node, followed by butchers

Framework for the drivers of ASF spread along the VC



Which actor earns most profits from biosecurity interventions

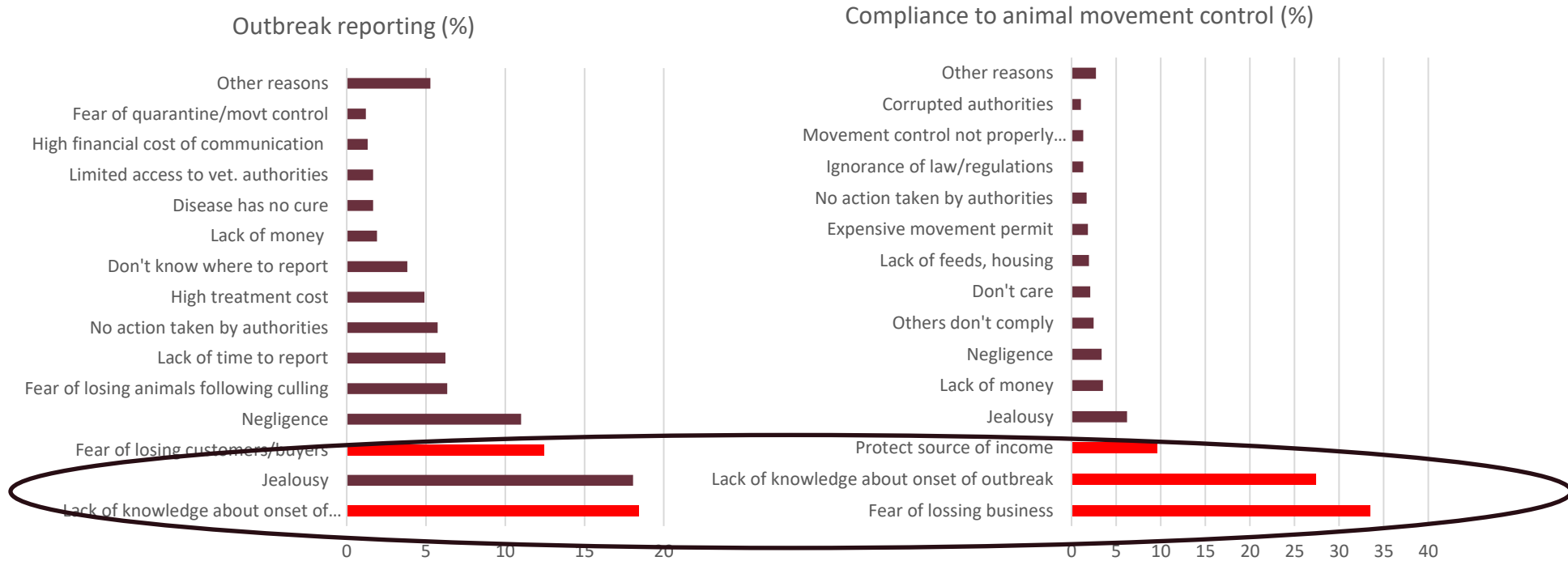
Benefits accrue for both ASF control and farmers margins when biosecurity and business hub interventions are implemented together

Average annual % change of value chain actors' cumulative profit relative to baseline

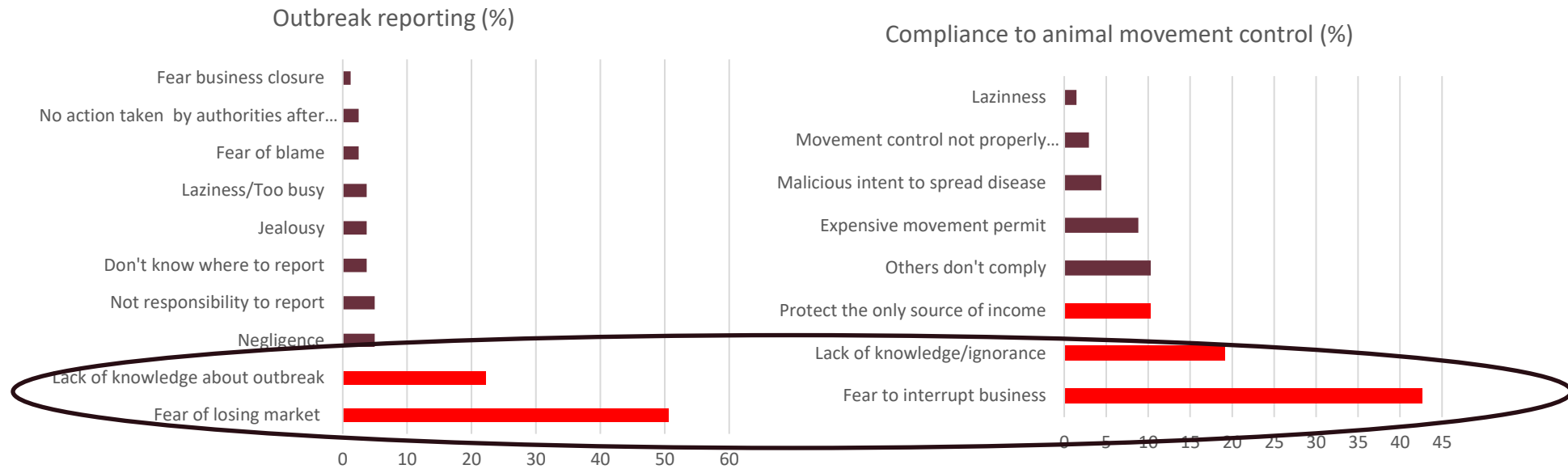
Scenario	Pig value chain actors				
	Producers	Butchers	Traders	Collectors	Wholesalers
ASF biosecurity Vs baseline	-6.2	8.1	10.3	8.6	8.0
Pig business hub Vs baseline	11.3	5.3	8.8	7.3	4.0
Combined ASF biosecurity and pig business hub	6.5	13.1	21.2	17.4	10.4



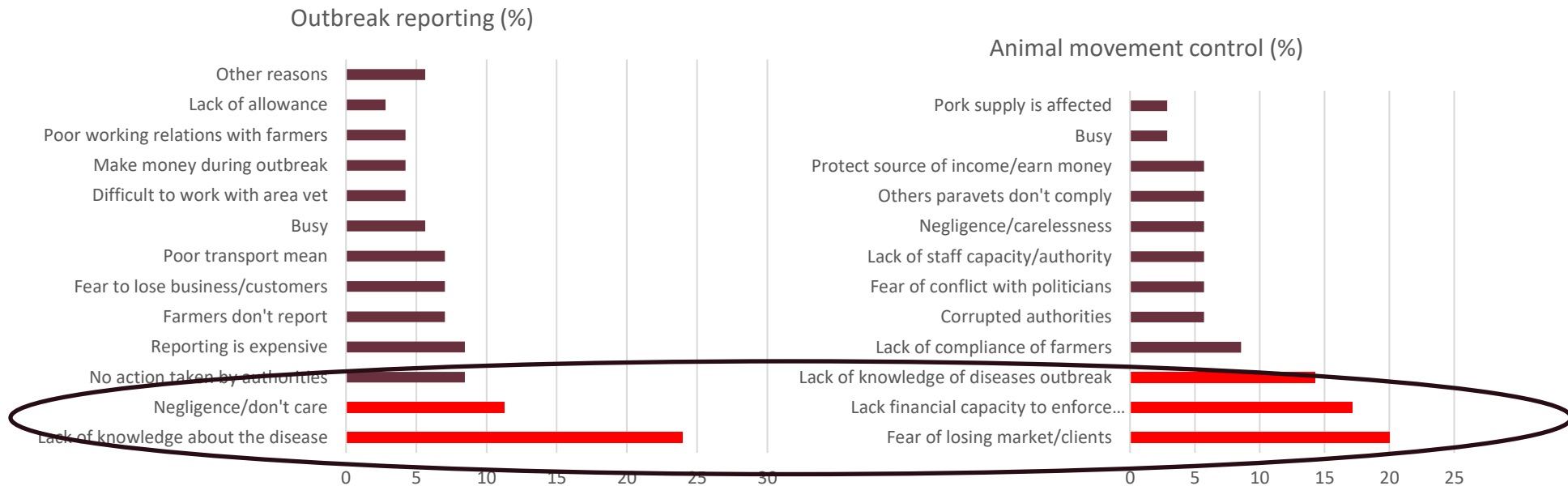
Reasons why Ugandan pig farmers would not report disease outbreak and not comply to animal movement control (n=960)



Reasons why Uganda pig traders would not report ASF outbreak and not comply to pig movement control (n=90)



Reasons why Uganda **vets** would not report ASF outbreak not comply to animal movement control (n=70)



“Protection of income source and lack of knowledge are key drivers of non or poor reporting of ASF outbreak for all value chain actors”

Selected interventions to improve pig performance and reduce risk to ASF

Impact of participatory training of pig farmers on biosecurity



- 960 farmers involved in the study in Uganda
- Improved knowledge of pig farmers on biosecurity
- Reduced outbreaks in some areas following training
- Farmers are willing to take preventive action as they have observed the positive outcomes.

- Training ($p = .038$) significantly increased knowledge of farmers after 12 months, but there were limited changes in farmer's attitude and practice at 12 and 28 months after training.
- Pig production domain (peri-urban/urban production), group membership, gender (male) and education of the farmer positively influenced knowledge gain and attitude of farmers towards biosecurity.
- The results clearly show that knowledge is not the binding constraint to uptake of the biosecurity interventions.

Measures that were difficult to implement by farmers	Reasons given for not implementing the measures
Construction of fences/pig structures/housing	High financial cost Lack of knowledge on design of appropriate pig house
Limiting visitors from going to the pig units	Community stigma No means for estimating pig weight at selling
Disposing of dead pigs by burying	Lack of land to bury carcasses; their piece of land is either small or rented. Some communities consume the dead pigs Requires labour
Disposing of dead pigs by burning	High financial cost (requires fuel) Safety issues (fear of bush fire) Environmental pollution (because of the smoke)
Stopping the use of communal boars for breeding	Expensive to own and raise a boar Sociocultural barriers for keeping a boar (for those with children, they fear would make them learn bad manners when they see a boar mounting a sow)
Use of disinfectant and footbath at the farm	Expensive and not feasible for all types of keeping Sociocultural barriers (fear that it may stop people from visiting them)
Boiling swill prior feeding pigs	High financial cost (requires wood)
Isolating sick pigs from healthy ones	Farmers have small plots of land, causing limited space for extra room for pig house
Keeping away animals from the farm such as dogs and other pigs	Difficult to achieve when pigs are scavenging or tethered
Informing authorities about an ASF outbreak in an area	Limited access of farmers to veterinary authorities Slow and limited actions taken by authorities when informed about suspected outbreaks

Impacts of IVR

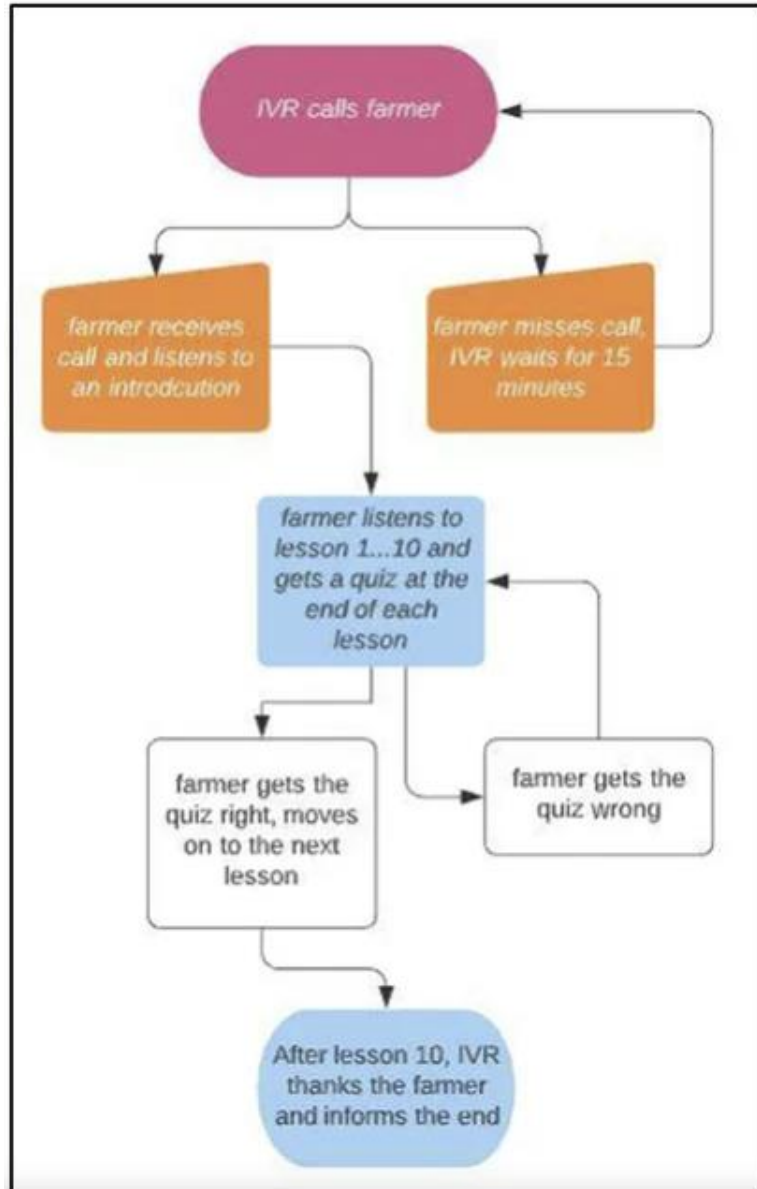
ILRI launches mobile phone-based interactive voice advisory service for pig farmers in Uganda

Posted on 28 May, 2018 by Paul Karaimu

By Edwin Kang'ethe and Michel Dione



Nagadya Berna, a pig farmer in Zimwe Village, Masaka District, using the new interactive voice advisory service on her mobile phone (photo credit ILRI/Michel Dione).



Group	Mean knowledge gain	Std. dev.	N
P+V+	0.82	0.89	99
P+V-	0.77	0.96	100
P-V+	0.44	0.88	102
P-V-	0.30	0.84	107
Total	0.58	0.92	408

The least-square mean knowledge changes

Improving enabling environment

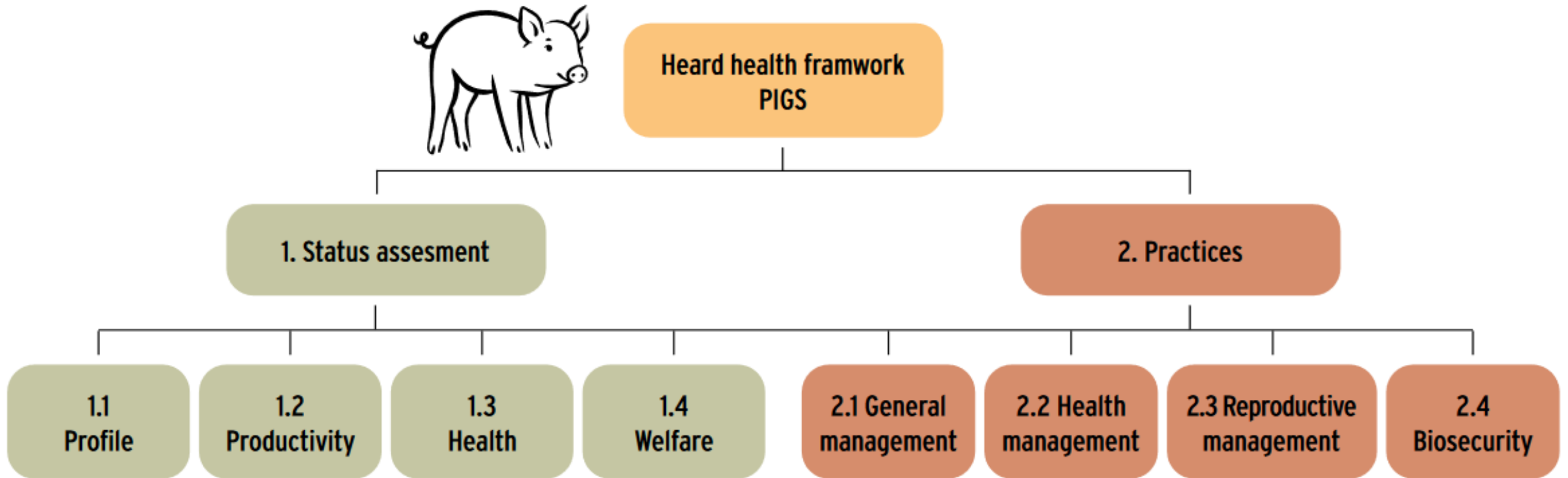
- National Feeds Bill in place to promote animal production and productivity **but** lacks a legal framework for implementation.
- Meat policy in place **but** lacks articulation and implementation of pork quality assurance and standards
- Issues on transport of animals and heat stress



The herd health process

- Bottom-up process
- The dialogue between the farmer and animal health officer is key to first identify the issues hampering productivity and health and then to agree on feasible solutions.
- Application of the herd health approach puts high demands on the skills of animal health professionals.
- Therefore, we introduced a pilot capacity development program called 'Pig herd health champions'

Components of the herd health management approach that can be used to identify issues that hamper livestock health and productivity (in this case with pig herds).
source: bølge et al. 2020



The use of herd health approach in pig systems in Uganda

- The analytic tool was also used to identify productivity issues in small-scale pig farming in Uganda and in the process highlighted other problems than the ones commonly stressed by animal health service providers.
- These included inferior or inappropriate feeding, poor reproductive management, high burden of parasites
- Combined with limited knowledge and implementation of good management practices (Gertzell et al. 2021)

The herd health innovation package of the small holder pig value chain in Uganda

- Build the technical capacity of selected animal health workers from 2 districts (Wakiso and Mukono) - as **herd health (HH) champions** on herd health management (HHM) approach and how to implement the concept at the farm.
- The trained HH champions train **farmer groups** on **HHM** in the selected **treatment** sub-counties in both districts.
- **Establish model demonstration units** (in 2 host farms) per district and exposure visits for farmer groups to the sites.
 - The model farms are designed and renovated to incorporate specific health, welfare, and biosecurity measures.
 - The model demonstration units also integrate other technology innovations – feeds and forages & genetics to maximize benefits of the innovations to farmers.



Before renovation



During renovation

Start with “low hanging fruits”



Before renovation



During renovation

Lessons learnt and recommendations for improving ASF control

- Strengthen disease surveillance systems – Role of the rapid diagnostic tests?
- Develop alternative ways of disease reporting by increasing the involvement of the community with self-regulation system
- Strengthen community –based participatory approach to capacity building through farmers cooperatives
- Importance of involving the whole household in disease prevention and control activities, and particularly women in preventing the spread of zoonotic diseases and the share of income from piggery.
- Develop biosecurity protocols targeting ASF and other diseases (respiratory, parasites, malnutrition) /combining productivity and public health outcomes (ex. ASF/parasite control and porcine cysticercosis)
- Need to promote interventions which both enable women to participate in the market and gain access to financial resources, as well as enhance investment in biosecurity
- Integrated interventions (feeds, breeds and health and welfare) for productivity outcomes

11 THE GENDER DIMENSIONS OF A PIG DISEASE: AFRICAN SWINE FEVER IN UGANDA

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Gendered perceptions of biosecurity and the gender division of labor in pig farming in Uganda

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Qualitative analysis of the risks and practices associated with the spread of African swine fever within the smallholder pig value chains in Uganda



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African swine fever control and market integration in Ugandan peri-urban smallholder pig value chains: An ex-ante impact assessment of interventions and their interaction



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Transboundary and Emerging Diseases

Original Article

Risk Factors for African Swine Fever in Smallholder Pig Production Systems in Uganda

M. M. Dione ✉, J. Akol, K. Roesel, J. Kungu, E. A. Ouma, B. Wieland, D. Pezo

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The Context of Application of Biosecurity for Control of African Swine Fever in Smallholder Pig Systems: Current Gaps and Recommendations

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Transboundary and Emerging Diseases

ORIGINAL ARTICLE | Open Access |

Impact of participatory training of smallholder pig farmers on knowledge, attitudes and practices regarding biosecurity for the control of African swine fever in Uganda

Michel Mainack Dione ✉, Ian Dohoo, Nicholas Ndiwa, Jane Poole, Emily Ouma, Winfred Christine Amia, Barbara Wieland

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Digital Extension Interactive Voice Response (IVR) mLearning: Lessons Learnt From Uganda Pig Value Chain

Michel Dione^{1*}, Edwin Kangethe², Elizabeth Jane Poole², Nicholas Ndiwa², Emily Ouma³ and Iddo Dror⁴

18 GENDER-EQUITABLE PIG BUSINESS HUBS IN UGANDA

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