

Report on a Workshop on Foot-and-Mouth Disease (FMD) control in Tanzania: Sokoine University of Agriculture, Morogoro, 15 – 16 April 2015¹.

Summary

A workshop on the control of foot-and-mouth disease (FMD) in Tanzania was held at Sokoine University of Agriculture, Morogoro, Tanzania, on the 15th and 16th April 2015. The workshop brought together a wide range of national stakeholders in the different livestock systems, together with the leading government authorities responsible for FMD control in Tanzania.

The objectives of the workshop were:

1. To identify the likely benefits from better FMD control on sustainable livestock development in Tanzania, and the broader growth and sustainable livelihood aspirations of different stakeholders
2. To review the current barriers and challenges facing better FMD control
3. To identify the key incentives for FMD control in Tanzania among the wide range of stakeholders affected by the disease
4. To identify the key research and development options and solutions necessary to fit the needs and capacities of different stakeholders

The full agenda of the workshop is provided in Annex 1, and a listing of participants in Annex 2.

The workshop was an extremely open and interactive process. It opened with a summary of the national approach to FMD control from the Department of Veterinary Services, followed by overviews of the major livestock systems in Tanzania, and the relevance of FMD and its control to each of them. Every presentation was followed by a facilitated open discussion among workshop participants.

The workshop then moved into a series of four sessions over the following day and a half, each session addressing one of the workshop objectives. The order of the objectives was adjusted to enable the assembled participants to first look to the future, and discuss and characterise the major benefits to be achieved from better FMD control, or even FMD freedom. The workshop then moved through the objectives to finish with the key actions necessary by different stakeholder groups to achieve the envisioned benefits. The sessions were structured follows:

¹ Workshop organizers: Rudovick Kazwala (Sokoine University of Agriculture), Tiziana Lembo (Boyd Orr Centre for Population and Ecosystem Health, University of Glasgow), Brian Perry (University of Edinburgh). Workshop funders: BBSRC / DFID / Scottish Government (Combating Infectious Diseases of Livestock for International Development initiative) funded the original research. The workshop was funded through a Wellcome Trust extension to the Afrique One consortium, contributions by MSD Animal Health to the University of Glasgow, and the Boyd Orr Centre for Population and Ecosystem Health.

Session one: Evidence based impacts of FMD and its control in Tanzania (presentations with discussion)

Session two: Benefits from FMD control in each sector

Session three: Barriers and challenges facing FMD control in each sector

Session four: Incentives in each sector to do something about better FMD control

Session five: Solutions needed within each sector to tackle FMD

Each session was conducted through four separate working groups of participants, each group being chosen at random. Each group generally contained a mixture of veterinary department, smallholder pastoralist or agro-pastoralist, commercial dairy, wildlife, academia and other livestock system representatives. The group work process was conducted using Ketso kits² for each of the four groups, allowing the teams to progressively move from benefits to barriers to incentives and ultimately to FMD control solutions.



² <http://www.ketso.com/learn-about-ketso>

Session 1 - To review the evidence-based impacts of FMD in different production systems and sectors in Tanzania

The evidence-based impacts of FMD were reviewed by representatives from a number of sectors in order to illustrate how FMD affects different production systems and stakeholders.

National-level impacts

A brief overview of Veterinary Services Delivery systems was provided. The role of central government and sector ministries relates to policy making, regulation, supervision, monitoring, performance assessments and interventions. Implementers of public function are local government authorities, services boards and/or executive agencies, non-governmental organisations (NGOs) and the private sector/individuals. Agricultural sector reforms have identified which functions are to be performed by the private and public sector, and which should be shared.

Government documents relevant to livestock development issues and FMD control include: (1) National Livestock Policy (2006); (2) Animal Diseases Act 203 and Regulations (2007); and (3) FMD Control and Eradication strategy.

Some information on national FMD status is available. Other data available include the livestock census data (2012) and production-level data (MoLFD basic data booklet). A regional meeting to develop the road map for FMD control was held in October 2014 and a Regional Advisory Group (RAG) was established.

Discussion:

The following points were raised in response to the National Level Impact presentation:

How relevant is the PCP-FMD framework developed by FAO and OIE Tanzania? It is being used as a framework, but at the same time customized to fit Tanzanian conditions.

What work has been done to characterise the different value chains? Are they all known and understood, and how well have they been mapped? What are the values associated with these different chains and their contributors?

Are export markets important? Most of the growing markets in the region are domestic or regional within East African markets, are there specific export markets to complement these? The UAE and the Comores are currently important, and this is expanding. In addition China has requested 10,000 tonnes and have invested in a processing facility in Dodoma, and Egypt has requested 30,000 tonnes of meat. There is currently a difficulty sourcing animals for these markets, but some stakeholders consider that demand might become significant in these export markets. Importantly, export market can catalyse the investments needed for national markets, and also raise standards, technical expertise more broadly (see for example the impact that flower export markets from eastern Africa have had).

From the farmers' perspective, there have been some government efforts in the control of Contagious Bovine Pleuropneumonia (CBPP), but some commented that efforts from government for FMD control are not visible, and most farmers would argue that the problem of FMD is bigger than CBPP. Farmers indicate that they are willing to pay for the vaccine.

The roles of public and private sectors emerged frequently in the discussion. Some considered that a distinction needs to be made between diseases that are treated as private or public goods, and it was noted that internationally (under the OIE) FMD control is considered a public good.

Nevertheless, given the inadequacies of government programmes, many considered that in Tanzania it should be a shared responsibility. In addition, the challenges of FMD control need to be taken into account given that there are different serotypes responsible for the disease. Research outputs on where the different serotypes occur in Tanzania are starting to become available.

Much more effort needs to be made in relation to livestock movements and the regulation of these. In the past a movement permit was needed and the extension officer would inspect animals for signs of disease before they could be moved. This no longer happens and sick animals can be moved.

Commercial sector impacts

FMD has major negative impacts on the dairy sector, including considerable milk losses and sometimes mastitis. The Dairy Board advocates for vaccine use, but no vaccines are available. The responsibility of the Dairy Board as a regulatory board is concerned with increase in production and quality of products, but control of diseases and vaccines are the responsibility of the veterinary services.

Discussion:

The Dairy Board comes under the Ministry, and farmers are members of the Dairy Board, as are milk processors and other stakeholders in the dairy value chain. How well is the voice of the Dairy Board heard? The different stakeholders do make their voices heard, but the questions may be difficult to answer.

Traditional sector impacts

Data were shown demonstrating that FMD has important consequences for many livestock-dependent Tanzanian communities. FMD is the disease of greatest concern to agro-pastoralists and is ranked second by pastoralists. Livestock owners (>80%) report at least one FMD outbreak a year, with some herds suffering from two or more outbreaks annually. Cattle suffer the highest morbidity, especially adult female cattle with considerable impacts on milk production. A loss of traction capacity is also a common problem in traditional systems. FMD control in these systems has therefore the potential to reduce vulnerability through increased milk and crop production.

Wildlife sector impacts

A brief discussion focussed on problems associated with livestock encroachment in protected areas in terms of spreading new serotypes that could then become maintained in buffalo.

Session 2. To identify the benefits from FMD control in each sector.

This was the first of the four discussion group sessions conducted by four working groups. The first looked forwards to the benefits that could be attained through better FMD control by each of the different stakeholders represented in the workshop. The benefits identified by the different working groups are itemised below for each stakeholder group.

A. NATIONAL LEVEL

- Access to national, regional and international livestock product markets (meat, milk, etc.) and trade
- Contributions to food security
- Increased employment opportunities
- Contributions to national and agricultural GDP
- Increased contribution to the national economy by the livestock sector
- International and OIE official recognition
- Proper monitoring and surveillance in place
- Reduced disease exposure to livestock
- Being part of laboratory network fora
- Increased benefits for the government with respect to livestock aspects
- To obtain FMD free status

B. COMMERCIAL DAIRY SECTOR

- Better opportunities for market access - local and international
- Contributions to national GDP
- Employment opportunities up the value chain
- Food safety
- Increased/ improved milk and milk products availability, quality and quantity
- Improve value chain linkages with products
- Improved food and nutrition security
- Increased employment opportunities
- Increased household income
- Increased industrial opportunities for milk
- Increased investment
- Increased national dairy herds
- Increased sales and profit from milk and milk products (local and international markets)
- Reduced importation
- Reduced production costs
- Source of income

C. COMMERCIAL MEAT SECTOR

- Opportunities for market access and sales because of healthier animals – local, regional and international
- Increased demand for meat and meat products from external markets
- Contributions to national GDP
- Employment opportunities up the value chain
- Food safety
- Improved value chain linkages and products
- Increased food and nutrition security because of increased availability of meat
- Increased business for the meat sector, hence increased revenue
- Increased employment opportunities
- Increased household income
- Increased industrial opportunities for meat

- Increased investment in the sector
- Increased production and quality of meat and meat products
- Processing and branding
- Reduced condemnation of carcasses
- Reduced production costs

D. TRADITIONAL SYSTEMS

- Increased crop production due to increased traction capacity
- Better relationships in the community
- Employment opportunities
- Improved food and nutritional security. Better sources of protein
- Improved availability of milk for children health and development
- Improved calf health
- Improved cow health will allow improved profits from milk sale because the healthier the cow the higher the price of the milk
- Improved household income (milk sales, increased animal value, better business, healthy meat), revenue and livelihoods.
- More funding to send children to school
- Improved relationships between farmers and veterinary services
- Improved reliability of milk production (sustainability of markets)
- Improved social status
- Increase in healthy cows
- Increase in livestock births and reduced abortions
- Increased herds and herd size (number of cows and calves)
- Increased production of butter and therefore reduced need for buying cooking oil
- Increased local trade opportunities
- Increased market opportunities and market price of cattle
- Increased production - number of animals, milk production and meat production
- Peace of mind
- Reduced livestock movements
- Reduced treatment costs

E. WILDLIFE SECTOR

- Reduced maintenance in wildlife hosts
- If no FMD, livestock and wildlife can share the same grazing areas
- Improved community relationships
- Improved people-park relationships and collaboration
- Improved wildlife health (FMD freedom)
- Increased export of wild animals
- Increased game meat trade
- Increased tourism
- Less criticism from the public regarding wildlife as a source of FMD
- Market access of game products (meat and meat products)
- Reduced exposure and disease transmission between livestock and wildlife

- Reduced livestock - wildlife conflicts
- F. COMMUNITY LEVEL
- Reduced conflicts between herd owners
 - Increased community knowledge on FMD
 - Increased opportunities for income generated from wildlife for the community
 - No more reports of abortion in women (zoonotic aspects of FMD)
 - Decrease in mouth /gum disease in humans
- G. CROP AGRICULTURE
- Improved crop production (from improved traction capacity)
 - Improved opportunities for other work / income generation
- H. VALUE CHAINS
- Increased employment
 - Increased food safety
 - Increased investment
 - Safe animal products
- I. RESEARCH
- International collaborations on FMD research
 - International recognition
 - More resources to deal with other diseases
 - Opportunity for innovations

Session 3. To identify the barriers and challenges facing better FMD control by the different stakeholder groups represented.

Having identified the key benefits to be obtained from better FMD control, the workshop participants moved to identifying the major barriers and challenges facing each of the stakeholder groups. These barriers identified by the four working groups are listed below.

- A. NATIONAL LEVEL
- Absence of appropriate laboratory infrastructure with suitable biosecurity levels to test specimens
 - Absent vaccine matching capacity
 - Competing priorities and limited importance of FMD amongst livestock health issues
 - Ineffective reporting / surveillance system and constraints with obtaining specimens from circulating strains during outbreaks
 - Corruption (facilitating illegal movements)
 - Emphasis more on crop agriculture than on livestock production
 - Inadequate collaboration between livestock keepers and government
 - Inadequate resources (financial and technical)
 - Lack of a national FMD control strategy / plan / policy in place (short-term)
 - Lack of effective cold chain infrastructure
 - Lack of effective vaccines
 - Lack of land ownership policy

- Lack of mechanisms for farmers to benefit from subsidies for veterinary products
- Lack of political will
- Lack of vaccination policy
- Limited information regarding existing strains
- Nature of FMD
- No system for importation of vaccines
- Operational impediments- Administrative structures and poor enforcement of legislative frameworks
- Political interference in enforcing control measures and movements
- Poor early warning systems related to FMD and other Transboundary Animal Diseases (TADs)
- Uncontrolled animal movements within and between borders
- Unknown socio-economic impacts of FMD
- Weak communication mechanisms with people on the ground- poor chain of command

B. COMMERCIAL DAIRY SECTOR

- Absence of processing plants at national and local levels
- Cheap imported products on the market- competing with local products
- Different FMD viruses in different areas
- Existence of a number of TADs
- Illegal importation of vaccines (also relevant to other sectors)
- Inadequate volume for export market
- Information gaps - FMD virus distribution
- Lack of credit facilities for livestock enterprises
- Lack of inadequate enabling policy/strategy for this sector
- Lack of proper tracing systems along the value chain
- Lack of proper zoosanitary measures
- Lack of regular check-up of milk for FMDV infection or contamination
- Lack of vaccines matching circulating strains
- Limited product capture - cold chain
- Poor accessibility of timely information and knowledge
- Uncertainties about the design of vaccination strategies: which individuals, what proportion, how often?

C. COMMERCIAL MEAT SECTOR

- Different FMD viruses in different areas and information gaps on FMDV distribution
- Existence of a number of TADs (competing priorities)
- Inadequate man power
- Inadequate quarantine infrastructure
- Inadequate volume for export market
- Lack of capacity to diversify
- Lack of credit facilities for livestock enterprises

- Lack of enabling policy/strategy for this sector
- Lack of financial resources
- Lack of infrastructure (slaughter houses)
- Lack of operational traceability systems along the value chain
- Lack of product standards
- Lack of regular check-up of meat for FMDV infection or contamination
- Lack of vaccines matching circulating virus serotypes and variants, and vaccine efficacy and cost issues
- Poor accessibility of timely information and knowledge
- Porous borders and lack of proper zoosanitary measures
- Unfair competition between import and export of meat and meat products
- Unregulated markets

D. TRADITIONAL SECTOR

- Illegal importation of vaccines
- Inadequate enabling environment for staff to work
- Inadequate veterinary and extension staff
- Inadequate livestock infrastructure
- Inadequate or absence of land-ownership implementation for livestock keepers
- Inadequate pasture/grazing land and water forcing movements to risky areas
- Lack of awareness and solidarity among livestock keepers
- Lack of awareness for local market opportunities
- Lack of FMD specific control programmes in communities
- Lack of interest in local opportunities for the traditional sector because of too much emphasis on high-end export markets
- Limited financial resources at household level (infrastructure)
- Low awareness and knowledge on export opportunities
- Poor awareness and knowledge on disease control and general management
- Poor control of animal movements
- Protected areas are increasing while grazing areas are decreasing
- Resistance to change in traditional systems, e.g. commercial offtake
- Uncertainties as to how to encourage control of livestock movements
- Uncertainties as to how to provide support for grazing (e.g. during draught) while restricting movements

E. WILDLIFE SECTOR

- Free wildlife-livestock interaction in grazing areas and/or at waterholes
- Inability to do any interventions
- Inadequate law enforcement
- Uncertainties as to how to bring together livestock and wildlife sectors for FMD control

F. RESEARCH

- Existence of multiple serotypes and variable FMD virus strains in a given geographic area. High rate of genome mutation in time and space
- Limited information from past research regarding existing strains

- Nature of FMD
- Need for national research programmes funded through internal sources
- Poor early warning systems for FMD and other TADs

Session 4. To identify the incentives to different stakeholders to attaining better FMD control and resultant impacts

The workshop then considered the incentives for each of the different stakeholders to tackling the major obstacles and challenges in order to achieve the impacts they aspire to with better FMD control. The incentives developed by the four working groups are itemised below for each stakeholder group.

A. NATIONAL LEVEL

- Raised political awareness of impacts and benefits
- Advocacy for FMD control
- Availability and affordability of good vaccines associated with appropriate sampling (vaccine matching)
- Availability of a well-planned and -coordinated national FMD control strategy/policy/plan
- Better sense of trust from livestock owners/producers
- Breeding policy
- Change of status - Tanzania declared FMD free
- Good governance at all levels
- Improved export market
- Increased livestock contribution to GDP
- International collaborations
- Land-use plans
- Law to prevent diseases
- Livestock policy - pasture establishment and develop water strategies for pasture
- Develop / strengthen public-private partnerships for prevention/control
- Partnership with vaccine manufacturers to develop appropriate vaccines
- Provision of markets for milk
- Reduced taxes
- Training of traditional farmers in commercial opportunities for livestock
- Unrestricted access to international markets

B. COMMERCIAL DAIRY SYSTEMS

- Acceptance of dairy products at local and international markets
- Availability, accessibility and affordability of good quality vaccines
- Availability of subsidised vaccines and inputs
- Implementation of effective/appropriate vaccination schedules/programmes and other control programmes
- Accessibility of credits
- Accessibility of market
- Accessibility of right and timely information and technology

- Enabling government policy
- Good market prices
- Improved delivery services
- Promotion of milk production and consumption
- Tax exemption (veterinary inputs/infrastructure)

C. COMMERCIAL MEAT

- Acceptance and accessibility of meat and meat products at local and international markets
- Availability, affordability and accessibility of good quality vaccines
- Accessibility of right and timely information and technology
- Analysis of potential export market
- Animal product processing plants to be established
- Certification for origin from FMD free areas
- Creation of traceability mechanisms for vaccinated animals
- Credit accessibility
- Enabling government policy
- Good market prices
- Implementation of effective/appropriate vaccination schedules/programmes and other control programmes
- Improved delivery services
- Live animal sales
- Promotion of meat production and consumption
- Tax exemptions of veterinary inputs/infrastructure

D. TRADITIONAL SYSTEMS

- Adequate veterinary and extension services
- Availability and affordability of good quality / better vaccines / treatment
- Availability of subsidised vaccines
- Awareness of importance of milk production and consumption
- Increased awareness of the disease, and its control and/or prevention options (timely)
- Credit accessibility to improve stock
- Detailed awareness creation on importance of specimen collection during outbreaks
- Exploring control options with community leaders
- Farmer education on disease transmission between wildlife and livestock, and the potential for wildlife to spread the disease
- Feedback of research results
- Good policy
- Improved delivery and infrastructure to address the needs of pastoralists (e.g. water holes and pasture)
- Improved market access
- Improved vaccine thermostability
- Improved value of traditional stock

- Increase in herd size and hence prestige at community level
 - Pastoralists should be educated on disease issues (not only FMD)
 - Pilot vaccination trials to demonstrate impact benefits
 - Price incentives for vaccinated animals
 - Increased reporting for better recognition of impacts and actions
 - Resolution of conflicts related to land
 - Strategic policy enforcement- fines for offenders
 - Tax exemption to be taken to the national level too
- E. WILDLIFE SECTOR
- Better relationship between livestock owners and wildlife
 - FMD presence
 - Good management of wildlife in interface areas
 - Improved relationships between protected areas and communities
 - Increased engagement of wildlife sector in control
 - Increased recognition of integration between livestock health and wildlife conservation
 - Increased status nationally and internationally
 - Presence of well-coordinated FMD control strategy in livestock in interface areas
 - Wildlife protected from transmission from livestock
- F. COMMUNITY LEVEL
- Better information / awareness about pastoralists for government
 - Community awareness creation
 - Improved wildlife benefits to communities
 - Society should be involved in and educated on policy for pastoralists
 - Subsidisation of FMD vaccines
- G. VALUE CHAINS
- Safe products processed (both for producers and consumers)
- H. RESEARCH
- Increased opportunity for doing basic and applied research
 - Prevalence and consequences of the disease

Session 5. To identify the solutions needed in each section to achieve better FMD control

The last group session was to identify the solutions and interventions necessary to remove or reduce the barriers and challenges to better FMD control earlier identified. The solutions for each of the different stakeholders developed by the four working groups are listed below.

A. NATIONAL LEVEL

- Create awareness/lobby using stakeholder associations to engage stakeholder pressure groups
- Establish infrastructure within the livestock keeper areas to control movements
- Review, develop and finalise the outdated and never implemented national FMD control strategy with input from other stakeholders so that it incorporates the

OIE pathway. Formulate guidelines to implement the policy - relevant to all sectors (Ministry of Livestock and Fisheries Development, MoLFD)

- Follow up by MoLFD on reports by local government
- Formulation of breeding policy (MoLFD and stakeholders)
- Getting inventories of vaccines/monitor vaccination conducted in different areas of the country
- Government to develop working strategy and share with stakeholders
- Government to source vaccines
- Improve surveillance, especially sample collection and testing to determine effective vaccines required in different areas
- Participatory communal land allocation with improved representation by MoLFD on land-use issues to facilitate land ownership and pasture establishment. Land ownership policy to match number of animals
- Make FMD control a public good, i.e. government to subsidise vaccines and specimen testing
- MoLFD to facilitate livestock owners to have land ownership based on the existing laws and train farmers on pasture establishment
- More meetings involving farmers and senior policy-makers related to ministry management issues
- Political will in land-use plans (MoLFD, land stakeholders and Local Government Authority, LGA)
- Recruitment and training of extension staff
- Resources to be allocated for FMD control (MoLFD and partners)
- Review livestock policy
- Strengthening early warning systems (MoLFD, partners, stakeholders)
- Strengthen the chain of command
- Strengthen cold chain
- Tanzania Food and Drugs Authority to allow vaccines which have been approved by Pan African Veterinary Vaccine Centre (PANVAC) to match with the requirements
- Revisit the veterinary structure/organisation (chain of command) – long-term
- Establish communal grazing areas for increasing national livestock population
- Set high standards for management of abattoirs
- Strengthen the Tanzania Veterinary Laboratory Agency for vaccine production and research
- Training of livestock owners on traceability especially if coupled with high prices as incentives
- Vaccination guidelines developed and provided to all sectors
- Vertical integration

B. COMMERCIAL DAIRY SECTOR

- Encourage the private sector to be involved in exports
- Establishment of centres for collection of milk to be sent to processing plants
- Implementation of traceability system

- Link commercial sector to financial institutions (Tanzania Investment Centre, TIC, and Tanzania Investment Bank, TIB)
- Promote domestic market for dairy products
- Promote export market for milk and dairy products
- Strengthen dissemination of research information
- Strengthen school milk feeding to cover whole country (Tanzania Dairy Board, MoLFD and stakeholders)
- Improve the quality of milk and dairy products produced in Tanzania

C. COMMERCIAL MEAT SECTOR

- Abattoirs should remain with the Local Government Authority
- Establish quarantine stations
- Establish collection centres for meat to be sent to processing plants
- Government to provide enabling environment (MoLFD, LGA and Prime Minister's Office Regional Administration)
- Implement traceability systems
- Link commercial sector to financial institutions (TIC and TIB)
- Meat board to raise awareness of value chain analyses
- Meat board to strengthen promotion market scouting
- Promote export market for beef
- Promote local market for meat products
- Strengthen zoosanitary inspections
- Involve the private sector in exports

D. TRADITIONAL SYSTEMS

- Change of traditional livestock keeping systems (mindset change)
- Conduct vaccination trials combined with farmer education and engagement
- Create awareness
- Drought mitigation measures
- Encourage individual ownership of land by encouraging commitment and investment
- Engagement with farmers (including training) to explain FMD control options, for example vaccination
- Establish more infrastructure
- Government to provide enabling environment
- Grazing and land ownership policy and land use plans to avoid conflicts
- Improve traditional herd interventions incorporated in breeding policy
- Link farmers to financial institutions
- Livestock farmer training taking into account local traditional knowledge
- Mindset change of livestock keepers on markets
- Promote farmer associations
- Provide extension guidelines
- The government should better regulate animal movements in and out of the country so to reduced risks of disease spread
- Employ and train extension staff

E. WILDLIFE SECTOR

- Establish better infrastructure and delivery of veterinary services particularly in interface areas to reduce conflicts
- Good relationships between pastoralists and conservation groups
- Improve dialogue / representation between MoLFD, Ministry of Natural Resources and Tourism, MoNRT, and farmers
- Increase awareness on wildlife and livestock diseases in interface areas (MoLFD and MoNRT)
- Land ownership law revised to consider livestock keepers
- Land use plans
- Policy on livestock and wildlife diseases

F. COMMUNITY LEVEL

- Establish a community representative for development of movement strategy
- Monitor research activities and provide feedback to livestock owners
- Use research information in strategy reviews and development

G. RESEARCH

- Carry out surveillance (MoLFD)
- Conduct research to understand the genetic basis of virus change so as to predict and prepare for better vaccines in advance (MoLFD and research institutions)
- Ensure dissemination of research results (MoLFD and MoNRT)
- Formulation of a research programme funded through internal sources (MoLFD)
- Priority and resources to be allocated to FMD research

Wrap up synthesis session

At the conclusion of the workshop, the various issues presented and documented by the groups were discussed. Three overall priority areas of action were identified by the group of participants.

These are:

1. Improve communication mechanisms for better dialogue amongst and between stakeholders concerned with FMD control, including the involvement of livestock owners in the national dialogue
2. Review and finalise the national FMD control plan in line with the Progressive Control Pathway (PCP) developed by the Food and Agriculture Organization (FAO)/World Organisation for Animal Health (OIE), and taking into account the control solutions identified by this workshop
3. Develop a policy and strategy for FMD vaccine sourcing, importation and delivery, to improve accessibility of vaccines to all different stakeholder groups.

ANNEX 1. AGENDA, Workshop on Foot-and-Mouth Disease (FMD) control in Tanzania, ICE Conference Hall, Sokoine University of Agriculture, Morogoro, Tanzania, 15th – 16th April 2015

WEDNESDAY, 15th of April 2015

8.30 – 8.45	Opening and welcome address	R. Kazwala
8.45 – 9.00	Objectives and expected outcomes of the workshop	B. Perry
9.00 – 11.00	FMD impacts from the perspective of different stakeholders / sectors:	Chaired by R. Kazwala Facilitated by B. Perry

This section was characterized by a number of presentations / view points by specific individuals representative of five key sectors, and was followed by open discussions involving all participants.

9.00 – 9.20	1. National-level: Where does FMD sit in the context of animal health issues and what are its impacts at the national level?	N. Mtui- Malamsha
9.20 – 9.40	2. Impacts on the commercial meat sector	G. Laswai
9.40 – 10.00	3. Impacts on the commercial dairy sector	G. Laswai, L. Kiuya
10.00 – 10.20	4. Impacts on the traditional (pastoralist/ agro-pastoralist) sector	T. Lembo
10.20 – 10.40	5. Impacts on the wildlife sector	J. Keyyu
10.40 – 11.00	Wrap-up discussions on impacts	B. Perry
11.00 – 11.25	Coffee break	All
11.25 – 11.30	Structure of the group work to follow	T. Lembo
11.30 - 13.00	Group work to identify the benefits for the five stakeholder groups above from addressing FMD impacts	All
13.00 – 14.00	Lunch break	All
14.00 – 15.30	Group work to identify the incentives for the five stakeholder groups above from addressing FMD impacts	All
15.30 – 16.00	Coffee break	All

16.00 – 17.30	Group work to identify the barriers for the five stakeholder groups above to addressing FMD impacts	All
17.30 – 18.00	Wrap-up session	B. Perry

THURSDAY, 16th of April 2015

9.00 – 10.30	Group work to identify potential solutions to the barriers identified at the end of Day 1	All
10.30 – 11.00	Coffee break	All
11.00 – 12.00	Group discussions to identify: <ul style="list-style-type: none"> - Common themes across sectors - Sector-specific issues - Trade-off issues - Priority areas - Potential sustainability mechanisms - Roles and responsibilities based on identified priorities 	All (B. Perry to facilitate)
12.00 – 12.50	Representatives from the five sectors above to comment on identified priorities & the way forward	All (B. Perry to facilitate)
12.50 – 13.00	Closing remarks	R. Kazwala
13.00 – 14.00	Lunch	All

ANNEX 2. LIST OF INVITEES AND PARTICIPANTS

Participants	Able to attend	Phone n.	Email address
Food and Agriculture Organization			
Keith Sumption	N	+ 39 348 87 05 696	Keith.Sumption@fao.org
Fredrick Kivaria (Country Office)	N	+ 255 754 086 860	fredkiv@yahoo.com ; Fredrick.Kivaria@fao.org
CGIAR Livestock and Fish Collaborative Research Programme			
Amos Omore	N		a.omore@cgiar.org
Commercial sector			
TANPRODA – production association	N		
Chair of the Meat Board (based at SUA)	N		
Chair of the Dairy Board (based at SUA)	N		
Germana H. Laswai (commercial dairy sector)	Y	+ 255 754 572 647	laswai@suanet.ac.tz
Two representatives from commercial ranches	N		
Ministry of Livestock and Fisheries Development – Directorate of Veterinary Services			
Abdul A. Hayghaimo (DVS)	Y		
Joram Elisha Mghwira (FMD Focal Person)	N	+ 255 762 698 204; + 255 688 456 799	joelmghwira@gmail.com
Emmanuel Swai (Epidemiology unit)	N	+ 255 754 816 967; + 255 715 816 967	esswai@gmail.com
Njombe (Directorate of Production and Marketing, including livestock movement surveys)	N		
Bahari (FAO-funded pilot study of livestock identification and traceability)	N		
Christine Bakunane (Zoosanitary issuing permits for export)	Y	+ 255 753 817 887	ndayirile@yahoo.co.uk
Niwael Mtui-Malamsha (Food standards)	Y	+ 255 756 846 265	niwaelanna@yahoo.co.uk
Peter Z. Njau (now retired)	Y	+ 255 754 263 013	pznjau@hotmail.com
Ministry of Livestock and Fisheries Development - Tanzania Veterinary Laboratory Agency			
Chanasa Ngeleja	Y	+ 255 713 295 137	carngeleja@yahoo.com
Raphael Sallu	Y	+ 255 784 202 054	raphaelsallu@yahoo.com
The Pirbright Institute			
Kasia Bankowska	N		kasia.bankowska@pirbright.ac.uk
Sokoine University of Agriculture			
Rudovick Kazwala (Acting Dean – also TVA)	Y	+ 255 754 297 441	kazwala@googlemail.com

Sharadhuli I. Kwera	Y	+ 255 787 569 684	sikimera@gmail.com , sikimera@suanet.ac.tz
Christopher Kasanga (also SACIDS)	Y	+ 255 786 181 444	chrisskasa@gmail.com
Gloria Ndhlovu	Y	+ 255 764 634 418	gloriasn2000@yahoo.com
Tanzania National Parks			
Inyasi A. Lejora	Y	+ 255 754 838 700	inyasi.lejora@tanzaniaparks.com
Tanzania Veterinary Association			
Dominic Kambarage (also SUA)	N		
Tanzania Wildlife Research Institute			
Julius Keyyu	Y	+ 255 754 892 020	keyyu@yahoo.com
Robert Fyumagwa	N	+ 255 787 237 703	rfyumagwa@yahoo.com
Traditional sector			
Julius Olodonjilalo (Simanjiro)	Y	+ 255 787 223 684	juliusolodonjilalo@gmail.com
Abraham William (Simanjiro)	Y	+ 255 782 787 872	
Lawrence M. Kiuya	Y	+ 255 784 758 542	lawrencekiuya@gmail.com
Benjamin R. Sungura	Y	+ 255 787 113 978	
Emmanuel Mbapa	Y	+ 255 718 943 113	
Petro D. Njuchu	Y	+ 255 782 191 031	
Bhakilana Mafwere	Y	+ 255 754 275 307	bhakilana@yahoo.com
University of Edinburgh			
Brian Perry	Y	+254 734 600250	prof.brianperry@gmail.com
University of Glasgow			
Sarah Cleaveland	Y	+ 255 782 459 271; + 44 7841 24 83 74	Sarah.Cleaveland@glasgow.ac.uk
Tiziana Lembo	Y	+ 255 786 82 00 44; + 44 7779 26 44 69	Tiziana.Lembo@glasgow.ac.uk
Richard Reeve	N	+ 44 7812 63 21 14	Richard.Reeve@glasgow.ac.uk
Dan Haydon	N	+ 44 779 53 41 626	Daniel.Haydon@glasgow.ac.uk