Cost-benefit and feasibility analysis for establishing a foot and mouth disease free zone in Rukwa region in Tanzania STDF/PPG/516

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- Value chain actors at all stages
- Academic colleagues in UK and Tanzania

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Aim and scope

- **Aim:** to estimate the costs and benefits of establishing an FMD-free zone in Tanzania

Including consideration of the following:

- Target livestock products and markets to determine **demand and trade benefits** of the establishment of an FMD-zone
- **Livestock population, productivity level, potential access to markets, access to slaughterhouses and processing plants** of the proposed zone
- Human **resource needs** and **infrastructural requirements** related to upfront and ongoing costs
- The **environmental impact** of this FMD-free zone from a conservation and tourism point of view
- **Experiences** in other countries
- **Alternative investments** for FMD management

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Approach

- **Part 1:** Scoping visit Tanzania (September 2016)
  - Semi-structured interviews and secondary data collection to gain overview of the geographic, livestock, human population, socio-economic, disease, infrastructure, governance and service characteristics
- **Part 2:**
  - Primary and secondary data collection and analysis by the national and international consultants
  - Updating of the national control plan by MALF members
  - Development of cost-benefit analysis models
- **Part 3:** Second visit to Tanzania (March 2017)
  - Discussion of progress, addressing of data gaps
  - Full analyses, report writing
- **Part 4:** Study tour to Zambia in July 2017
  - Meeting with the Zambian Chief Veterinary Officer and the coordinator of the Disease Control Unit, visit of laboratory facilities at the Central Veterinary Research Institute
  - Visit to Mbala (Northern Province) to review planned locations of veterinary quarantine and loading ramps on the Zambian side of the border
  - Visit of Tanzanian border crossing
- **Part 5:** Preparation of final report

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Why Rukwa region?

- Geographical location
- Potential for livestock production
- Infrastructure for livestock production
- Public/private partnerships

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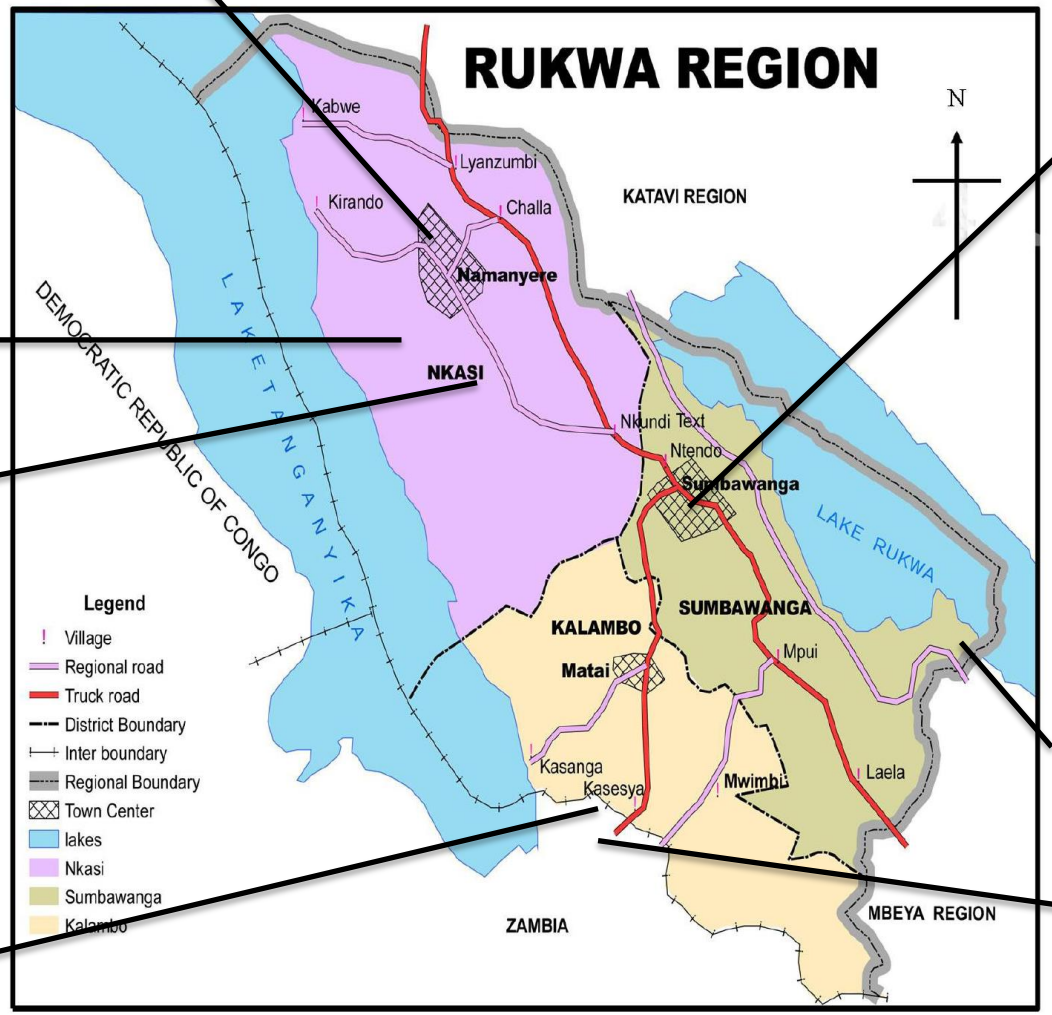
District council
Producers cooperative

Kalambo ranch and blocks

Nkundi ranch

Border market



Regional administration secretariat
South Western Zone Veterinary Centre
SAAFI abattoir
SWA municipality director

Beef producer
Primary market

Mbala Abattoir, Zambia
(Study tour)

Dominance of small-scale cattle holders

Small-scale: 33,155/39,367 = 84.3%
Medium-scale: 4,896/39,367= 12.4%
Large-scale: 1,316/39,367= 3.3%

Agropastoralist system

- Cattle has major importance in cultivation/traction
- Many castrated animals, low offtake rates
- Selling of animals based on needs, little commercial interest
  - Store of wealth
  - Social capital
- Conflicts between crop-producers and livestock keepers over land use; exacerbated by influx of new animals
- FMD occurrence perceived to be low, CBPP more important

Kalambo ranch

- NARCO ranch, since 1974
- 23,526 hectares of land for its own use
- 660 cattle, Boran and Boran-Friesian
- Slaughter on ranch, sell to butchers
- Rents 13 blocks of land (2000-4000 ha each) to producers for livestock keeping, 764 to >1500 animals per block

Nkundi ranch

- Since 2004, former multiplication unit
- 16,800 acres of land
- 714 cattle, Boran-zebu cross-breeds
- Part of SAAFI operations, delivered to SAAFI abattoir

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Market dynamics

- Lack of market opportunities mentioned by all
- Small proportion of animals stays within Rukwa region for local slaughter, breeding or traction
- Major flux to Zambeef and Dayow Beef abattoirs in Zambia and abattoirs outside the region
- SAAFI – Sumbawanga Agricultural and Animal Food Industries Limited
  - Abattoir with capacity of 150 heads per shift, 300 heads per day
  - Modern facilities with slaughter line, processing and packaging unit (incl. meat cuts), cold storage including cold transport
  - Rendering plant for all by-products
  - SAAFI ranch
  - Good business in 2007 and 2008
  - Current operations: zero

Cost-benefit analysis

FMD control plan

- **Staged approach**
  - *Year 1:* Implementation of vaccination in Nkundi and Kalambo ranches including all of Nkasi district
  - *Year 2:* Implementation of vaccination expanded to Sumbawanga, both the district and the municipality
  - *Years 3 to 10:* Vaccination of the whole region
- **Surveillance**
  - Support FMD control in the designated ranches by ensuring that all FMD clinical disease and suspect cases are reported
  - Identify the virus strains involved to inform vaccine matching
  - Surveillance area: All of district

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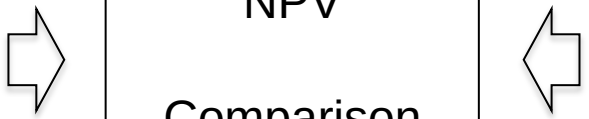
Costs and benefits considered

Intervention costs

Vaccination campaign
- Vaccines and materials
- Vehicles
- Staff
- Communication
- Storage

Surveillance system
- Stakeholder training
- Communication campaign
- Training of health officials
- Equipment
- Sampling
- Testing
- Border check points



BCR

NPV

Comparison with trade income

Benefits

Production loss avoidance in livestock populations, i.e. avoidance of losses due to
- mortality
- abortion
- reduced milk yield
- reduced weight gain
- loss of traction

Expenditure reduction, i.e. decrease in expenditures for palliative treatment

Reduction in outbreak investigation costs

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Results cost-benefit analysis

[m TSh]	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
Total intervention costs undiscounted	3673	7206	8695	8929	9179	9439	9706	9967	10252	10541
Total benefits undiscounted	216	504	659	843	843	843	843	843	843	843
Benefit cost ratio	Median 0.09; 90% central range 0.07 to 0.11									
Net present value	In million TSh: Median -63,500; 90% central range -73.500 to -54.800									
	In million USD: Median -28.59; 90% central range -33.07 to -24.66									

→ a 53% increase in price for export quality hindquarter cuts would be needed to cover the shortfall

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Feasibility considerations

Feasibility considerations

- ☺ Vaccine production and vaccine supply chains
- ☺ Capacity of veterinary services
- ☺ Awareness and commitment from official bodies

- 😐 Porous internal and external borders, livestock movements (incl. illegal movements)
- 😐 Value addition outside country; disconnected supply chains
- 😐 Market opportunities questionable
- 😐 Enforceable movement control and surveillance measures dependent on livestock identification, but Tanzanian Livestock Identification and Traceability System (LITS) not rolled out yet to Rukwa region
- 😐 Strong local champion / continuity / sustainability
- 😐 Funding

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Recommendations

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- Refine the existing national FMD control plan and reconnect with the FAO's **Progressive Control Pathway** (PCP)
- Identify **champions** who can assume leadership and initiate next steps and make them happen
- Conduct research into understanding the **offtake rates and incentivising** farmers
- Create **stable market opportunities**, **connect demand and supply** across different stakeholders in the system
- Enable the **rolling out of LITS**
- Promote **private public partnerships**
- Include **other diseases** in control efforts, use synergies

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Thank you for your attention!