### Project Title:
A One Health Approach to Understanding the Epidemiology of Emerging Zoonotic Viral Diseases in Changing Climates

### Annual Report
**Period Covered:** October 2020 to September 2021

<table>
<thead>
<tr>
<th>KCSAP livestock Applied</th>
<th>Value chain: Red Meats /Animal Health</th>
<th>Duration: 18 Months</th>
<th>Start Date: Oct 2020</th>
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<th>Lead Institution:</th>
<th>KALRO</th>
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<tr>
<th>PI and contacts</th>
<th>Dr Rosemary Ngotho – KALRO (<a href="mailto:r.esilaba@gmail.com">r.esilaba@gmail.com</a>)</th>
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<th>Collaborators and their contacts:</th>
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1. Mr. Paul Ngarl - KALRO (muriakingari2@gmail.com) |
2. Mr. Stephen Ongalo - University of Nairobi (ongalo.stephen@gmail.com) |
3. Mr. Vincent Ondedo - KALRO (vinondedo@gmail.com) |
4. Dr James Wakhungu - SCVO (Namanga) |
5. Dr Fredrick Sururu – SCVO (Loitoktok) |
6. Local administrators from various field sites |
7. Pastoralists in various field sites |

### Background
Since domestic animals and wildlife play roles of intermediate hosts in the occurrence of viral zoonotic epidemics, there is need to closely examine the environment-pathogen-reservoir-intermediate hosts-human nexus. Gathered evidence will increase understanding of the epidemiology and dynamics of viral zoonoses. Increased understanding is the foundation on which tools for early detection, surveillance and monitoring of risks can be laid and utilized for better preparedness planning and contribute to design of response, prevention and control strategies for one health.

### Objectives:
1. Understanding the molecular epidemiology of emerging zoonotic coronaviruses: focusing on SARS COV 2 from an animal health perspective.

### Expected Outputs:
1. Understanding the molecular epidemiology of emerging zoonotic coronaviruses increased: focused on SARS COV 2 from an animal health perspective.
2. Communities empowered and E-platforms for monitoring zoonotic disease risks, patterns & trends developed.

## I ACHIEVEMENTS

**Objective 1**

**Activity 1.1:** To conduct proactive epidemiological surveillance for SARS COV 2 in domestic ruminants in purposively selected sites

**Achievements 1.1**
The sampling design was changed from multistage random sampling to purposive, following adjustment to proposed objectives on recommendation from the first PM&E exercise. Sampling has been undertaken in sites in Kajiado where there are high degrees of human-livestock interactions. Evidence of infection with SARS-CoV-2 is to be used as an indicator for zoonotic disease, for which season is not a factor since Covid19 has been an on-going event for two years now.

**Activity 1.2: To process and evaluate biological samples using ELISA and Rt-PCR**

Sub-activities (as planned)

**Achievements 1.2**

The process for single sourcing for the ELISA test kit was initiated. All the collected samples have been processed.

**Activity 1.3: HTS-BCG of positive genomes by a contracted laboratory**

**Achievements 1.3**

The identification of a future partnering lab is in the process.

**Objective 2**

**Activity 2.1: Development of a digital monitoring and surveillance platform**

**Phase 1**
- Front-end Development: Mobile App User Interface (Android)
- Back-end development: Associated Database for Mobile App (Basic)

**Phase 2**
- Front-end Development: Analyst’s User Interface (Web based)
- Back-end Development:
  a) Database functions
  b) Mobile App integration

**Achievements 2.1**

Front-end development in phase 1 was completed. Activities for both phases have been an on-going while maintenance work will be continuous and sustained.

**Activity 2.2: Test and establish the e-platform at the study sites**

**Achievements 2.2**

During the reporting period, sub activity 2.2.1 was undertaken and sub activity 2.2.4 initiated.

**II Other achievements** (e.g., patents, publication such as journal papers, technical reports, presentation in workshops and conferences etc.). List them with proper citations
None so far.

III  **Constraints and how they were overcome**
- Delayed procurement for reagents thus affecting timely lab analysis of the collected samples.
- Complicated process of contracting software development services

IV   **Summary of funds received, accounted for and balance**

<table>
<thead>
<tr>
<th>Project Amount (KES)</th>
<th>Amount Received (KES)</th>
<th>Amount accounted for (KES)</th>
<th>Balance (KES)</th>
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<td>5,000,160.00</td>
<td>3,091,585.00</td>
<td>2,603,775.00</td>
<td>2,396,385.00</td>
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IV   **Way Forward**
Activities Planned for the Period Oct 2021-June 2022
- Sampling in different sites
- HTS-BCG of positive genomes by a contracted laboratory (should the need arise)
- Finalize Software Development