

## PEST MANAGEMENT PLAN FOR RIFT VALLEY FEVER AND VACCINATION IN KAJIADO COUNTY

### 1. BACKGROUND INFORMATION

Kajiado County is located in the southern part of Kenya. It borders Nairobi County to the North East, Narok County to the West, Nakuru and Kiambu Counties to the North, Taita Taveta County to the South East, Machakos and Makueni Counties to the North East and east respectively, and the Republic of Tanzania to the South. It is situated between Longitudes 360 5' and 370 5' East and between Latitudes 10 0' and 30 0' South. The County covers an area of 21,900.9 square kilometers (Km<sup>2</sup>).

The county has a bi-modal rainfall pattern. The short rains fall between October and December while the long rains fall between March and May. There is a general rainfall gradient that increases with altitude. The bimodal rainfall pattern is not uniform across the County. The long (March to May) rains are more pronounced in the western part of the County while the short (October to December) rains are heavier in the eastern part. The rainfall amount ranges from as low as 300mm in the Amboseli basin to as high as 1250mm in the Ngong hills and the slopes of Mt. Kilimanjaro

Most parts of the county are Arid and Semi-Arid (ASAL) with livestock rearing being the predominant economic activity. Similarly, most of the land is not arable, with small proportion of the population undertaking subsistence farming. The main livestock kinds kept are beef and dairy cattle, sheep, goats, commercial poultry (broilers and layers) indigenous chicken. Livestock products in the county include, meat, milk, eggs, skins and hides.

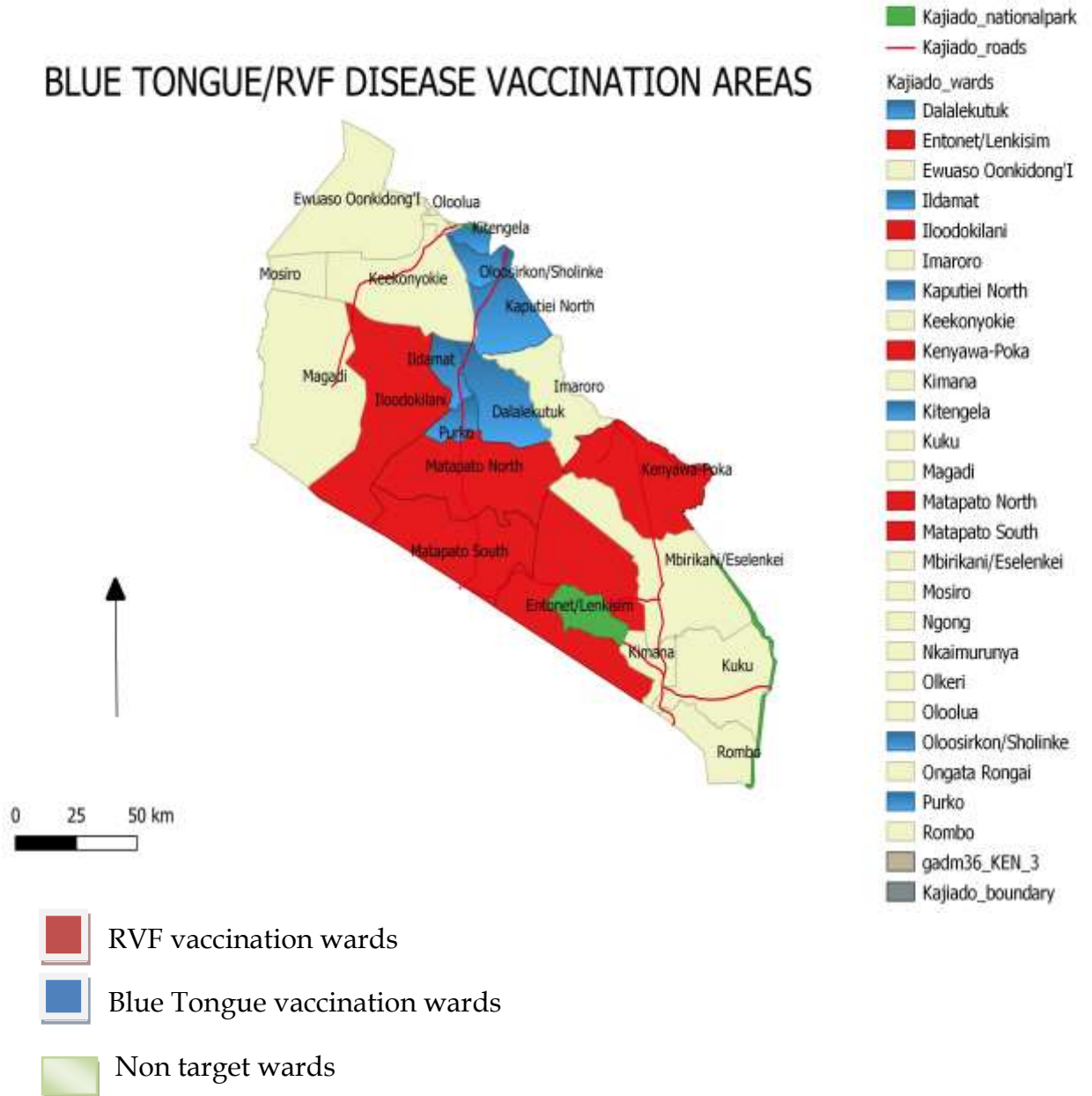
### County Livestock Population figures, 2018

Sub County	Cattle		Hair sheep	Goats		Donkeys	Pigs	Rabbits
	Dairy	Beef		Dairy	Meat			
Kajiado North	120,000	11,500	4335	450	16000	200	1,900	5035
Kajiado West	100	229,500	336090	459	299280	18500	190	57
Kajiado East	28,000	98400	254745	432	187600	10000	25,973	7220
Kajiado South	3,160	165,830	145265	162	152296	9500	285	456
Kajiado Central	590	90,340	174607	153	291752	19000	323	76
<b>Totals</b>	<b>151,850</b>	<b>562,170</b>	<b>915,042</b>	<b>1,658</b>	<b>946,928</b>	<b>57,200</b>	<b>28,671</b>	<b>12,844</b>

Source: Livestock production annual report.

The most prevalent livestock diseases are Foot and Mouth disease, contagious caprine pleuro pneumonia, contagious bovine pleuro pneumonia, PPR, Sheep and Goat pox, blackquarter and Anthrax. Blue tongue and Rift valley fever are common during floods.

Fig. 1 Kajiado County Map



## **2.RIFT VALLEY FEVER & BLUE TONGUE VACCINATION JUSTIFICATION**

Productivity of livestock is affected by several factors including feeding (nutrition), diseases and routine management practices. Prevalent livestock diseases are major constraints to livestock productivity and marketing. Rift Valley fever (RVF) is a viral zoonosis that primarily affects animals but also has the capacity to infect humans. Infection can cause severe disease in both animals and humans. The disease also results in significant economic losses due to death and abortion among RVF-infected livestock. Epidemics of RVF are a major global health security threat due to the high morbidity and mortality in humans, and the economic impact associated with loss of livestock and ban on international trade. RVF is an important transboundary and notifiable disease because of its potential for rapidly spreading across regions and international borders, resulting in devastating economic effects through losses in the trade of animals and animal products. Outbreaks of RVF in animals can be prevented by a sustained programme of animal vaccination. The possibility of an outbreak for RVF owes to the anticipated El nino rains during the short rains season (October – December ). Kajiado is among the counties with rift valley fever outbreak hotspots and the 2018 April –July floods resulted in outbreaks around lake Amboseli

The subproject complies with the CIDP and the annual work plan of the technical department of veterinary services. Owing to the high economic disadvantages of the disease, there is need to prevent its occurrence. Over 60,000 heads of cattle , 140,00 sheep and goats are at risk of transmitting RVF and over 100,000 sheep at risk of BT and targeted for vaccination. The proposed vaccination will be carried out on livestock within the county with priority given to the hotspots. The target number of beneficiaries is 2000 households.

### 3.THE VACCINATION PROCESS

#### a). Mobilization and targeting

Vaccination will take place in four Sub Counties namely Kajiado West, Kajiado East, Kajiado Central and Kajiado South. 11 wards from these sub counties will be targeted . Neighboring counties like Narok & Makueni and Republic of Tanzania will be informed of the vaccination programme.

The target areas for the activity include the following wards;

- |                           |                    |
|---------------------------|--------------------|
| i. Kaptuie North          | vii.Purko          |
| ii. Kitengela             | viii.Iloodokilani  |
| iii. Oloosirikon/sholinke | ix.Matapato South  |
| iv.Ildamat                | x.Matapato North   |
| v.Dalalekutuk             | xi.Lenkism/Entonet |
| vi.Kenyawa Poka           |                    |

The Mobilization exercise will be undertaken by the Veterinary Department staff in collaboration with local community leaders . During mobilization Local chiefs, influential community elders will mobilize target communities through barazas and meetings. Political leadership will be informed on the project during mobilization.

Risks associated with the vaccination progarmme are environmental pollution, injury to livestock , hypersensitivity and vaccines reaction , these will be communicated to the community during mobilization. In Oder to mitigate the associated risks IPM plan will be implemented, good crushes put up for proper restraint and antihistamine availed.

To effectively cover and reach the target animals good publicity and mobilization of the community to agree on dates and sites of vaccination will be undertaken.

#### b) Vaccine & equipment Procurement

This will be the responsibility of the veterinary department. The CDVS will initiate the procurement process with guidance from the CPCU. 100,000 doses of blue tongue (BT) and 200,000 doses of Rift Valley Fever (RVF) will be procured. The county has adequate cool boxes in good condition and veterinary department will collaborate with the health department for provision of temperature monitors for use at cold stores. This will be activated before the arrival of the vaccines.

**Vaccination equipment & consumables;**

Item	Quantity
BLUE TONGUE VACCINE	100,000
RIFT VALLEY FEVER VACCINE	200,000
Automatic Syringes 50 ml ( German)	4800
Barrels 50 ml (German)	550
hypodermic needles 14 x1/2 gauge (German) doz	480
hypodermic needles 16 x1/2 gauge (German) doz	480
Spare/repair kits	500
Aerosol spray	250
Antihistamine inj	750
Biohazard bags	2500
Sharp containers	500
Dust masks (Doz)	1200
Masking Tape	200
Motorised cool box	25000
Medium sized cool box	10000
Paper Towels - Doz	300
cool boxes	20

**c. Actual Vaccination Plan**

The county plans to carry out vaccinations against Blue Tongue and Rift valley Diseases in the following wards;

- i) Blue Tongue Disease (Kaputiei north, Kitengela, olosirikon/Sholinke, Dalalaekutut,ildamat, Purko),
- ii) Rift valley fever (kenyewa/poka, Entonet/Lenkism, Matapapato south, matapato North, loodokilani).

The exercise will be carried out by three teams in 12 days .Before rolling out the vaccination exercise, there will be proper briefing to staff participating in the activity prior to its commencement. The staff involved have undergone IPM safeguards sensitization and will wear protective gear during the period of vaccination. The vaccination equipment will be provided by the project and County Director of Veterinary Services, Kajiado County.

The exercise will start with publicity that will take 4 days. The community will be mobilized using County administrators, chiefs, local leaders in form of barazas and telephone calls , Posters will also be used which will be distributed to shopping centers, notice boards, schools and churches. About 28 crushes are to be covered names of which are to be provided by the community during publicity and

community mobilization. The status of the crushes will be verified and repairs will be done to prime it for the exercise. The County has a limited number of crushes and as such makeshift crushes are usually constructed for vaccination exercises. The entire Blue Tongue and rift valley disease vaccination exercise will take at least 16 days (4 days for publicity, 12 days actual vaccination process ).

**d) Logistics & Cold chain management**

A team comprising of Four (4) staff, Including public health officer and a driver and designated vehicle will be in-charge of cold chain supervision and distribution of additional ice blocks. The team will be composed of the following.

	<b>Responsible officer</b>	<b>Department</b>
1	CDVS /Stores manager	Veterinary
2	Procurement officer	KCSAP
3	County Disease Surveillance Officer	Veterinary
4	Public Health Officer	Health
5	Driver	

**e) Disposal and waste management**

NEMA will oversee waste collection and disposal at the licensed incinerator at Athi River. Waste will be segregated and put in well labeled Biohazard bags and sharps containers which will be provided to the field teams and a schedule for collection given to them. The waste will then be deposited at the County headquarters and later, be disposed in accordance with waste management best practices.

The Waste Disposal team will include:

<b>Responsible officer</b>	<b>Department</b>
CDSO (County disease Surveillance )	Veterinary
County Director- NEMA ( <b>Supervisor</b> )	NEMA
M&E/ ESSO	KCSAP
Driver	

**f) Monitoring**

This will be a continuous exercise throughout the implementation process. It will be participatory by CTAC representative, CDVS, M&E/ ESSO, CPC, & CPSC representative and a driver. The team will oversee implementation at community level by visiting teams and meeting community committees formed to oversee the exercise. It team will address technical, Environmental, social and welfare issues during the exercise.

### **g) Grievance Redress Mechanism**

Complaints/ grievances received from communities before, during and after vaccination campaign will be channeled to the CDVS and escalated to County Grievance Redress committee for redress. The community will be given the contacts of the CDVS to forward their complaints and compliments. A Grievance log register for the sub project will be opened to launch all complaints.

### **h) Reporting**

During the preparation and actual vaccination exercise, the following reports will be generated. The reports will include information on:

a) Copy of livestock vaccination manifest detailing the Ward, Sub location, Crush site, Names of farmer, Number of cattle vaccinated and

b) Photographs during the exercise

The following reports will be generated:

<b>Report type</b>	<b>Frequency</b>	<b>Responsible</b>
Vaccine procurement	Once	CDVS/CPC/Procurement Assistant
Publicity report	Once	CDVS/M&E KCSAP
Cold Chain Management	Once	County Disease Surveillance Officer/ public Health Officer
Daily vaccination report	Daily	Vaccination team leaders
Monitoring report	Once	CDVS/M&E KCSAP
Safeguard report	Once	ESSO/NEMA/CDVS
Waste disposal report	Once	NEMA/CDVS/ESSO
Knowledge management report	Once	CPCU-M&E
Overall vaccination report	Once	CDVS/ CPCU-M&E

#### 4. POTENTIAL IMPACTS OF THE VACCINATION SUB PROJECT

The sub project is in category B and has potential to cause harm both to the environment and the social aspect of human life. It was subjected to screening so as to identify potential adverse impacts and propose necessary mitigation measures. Several partners were consulted during the screening exercise including County veterinary staff, NEMA, public health staff and a few community members representing the beneficiaries .

##### a) Positive impacts of vaccination

- Vaccination improves animal health hence improved productivity. This will lead to increased availability and accessibility of livestock products; milk and meat which will enhance household nutrition.
- Increased livestock productivity will lead to increased household income through sale of livestock products e.g meat and milk.
- Vaccination will also ensure stability of markets. Since rift valley fever is a notifiable disease, its occurrence calls for imposing of quarantine as a measure to contain the disease and avoid its spread to other regions. This disruption, leads to reduced income as farmers cannot access market for their livestock. In addition, women will be deprived of income as they supply to these markets other products like vegetables, eggs, chicken, cereals and other wares.
- Healthy human population. Since rift valley fever is a zoonotic disease, it is crucial to prevent its occurrence in livestock as it may otherwise spread to human beings leading to reduced human capital and thus reduced agricultural productivity. Its prevention through vaccination will ensure a healthy and productive population
- Reduced cost of production as farmers will not spend money on disease treatment which is a threat in absence of vaccination. This will lead to increased investment in agriculture as farmers will plough back the profit accrued leading to increased agricultural productivity.



**b.) Potential Negative environmental and social risks of the vaccination subproject and recommended mitigation measures.**

In line with World Bank Environmental and Social Safeguard Policies, an agricultural development project which uses pesticides in a wide scale such as this will trigger **World Bank's Operational Policy OP 4.09** (Pest Management Plan-PMP). This policy supports safe use, effective, and environmentally sound pest management and promotes the use of biological and environmental control methods. This PMP covers the existing national and international legislations, current practices on the use of pesticides for pest management. It has identified a number of Pest handling, storage vaccination, transportation, environmental and health and disposal risks that may be encountered through in Kajiado county and how to mitigate against each one of them. Each specific risk or impact issue has mitigation measures as proposed which have been captured through the earlier held consultation conducted under the PMP preparation. Major groups consulted and trained on IPM included all county veterinary staff, NEMA, cold chain store managers, and private veterinary practitioners, public health staff and Country waste disposal staff. The key risks and impact areas in the county were identified in procurement, on transit to county, in the county cold stores, on transit to vaccination sites, during actual vaccination, post vaccination and disposal. General mitigation practices have been outlined to be carried out.

**i) Environmental**

**a) Unsightly filthy veterinary waste around vaccination sites**

Vaccination team usually throw or leave all waste in the field creating unsightly scenes and livestock owners pick the containers and reuse them oblivious of the danger. The disposal team will ensure that waste collected at the crush sites is sorted out, grouped and effectively disposed according to set waste disposal regulations. Waste disposal containers shall be handled by licensed waste handlers, documentation of volume or quantity done.

## **b) Soil contamination**

Waste materials left on the ground by the vaccination team will also contaminate the soil through wash-off or run-off into soil. Proper care will be taken by qualified personnel in delivering the vaccines to the animals and effective waste preventing spillage on the ground. In case of contamination through spills the team will ensure decontamination of the soils and disposal by licensed waste handlers.

## **c.) Surface and Groundwater Contamination**

Rainwater surface runoff may transport pesticides to streams, rivers, and other surface-water bodies. Groundwater contamination may also occur from pesticide residue in surface water, such as drainages, streams, and municipal wastewater. There are four major routes through which pesticides reach the water: they may drift outside of the intended area when sprayed, may percolate, or leach, through soil, may be carried to the water as runoff, or may be spilled.

*Proper care will be taken by qualified personnel in delivering the vaccines to the animals, therefore effectively preventing spillage on the surface and ground water. Location of the crushes will be strategic avoiding marshy and those areas with stagnant water or run-offs . NEMA inspectors shall advise on site specific EMPs depending on the location and specific measures put in place.*

## **d) Air Pollution**

Though most of the Pesticides the project is procuring are not to be sprayed, accompanying supportive pesticides procured by counties or other stakeholders may be released into the air, and if the chemical compound is very stable, vapor may travel beyond the project site. Whether pesticides are applied by spraying or by surface application, air is the usual medium through which the chemicals move to their intended and unintended targets. Reliable data on how pesticides behave in air, such as distance travelled, are lacking, because adequate monitoring is unavailable.

*Vaccines to be used will not lead to contamination of air since they will be delivered by way of Subcutaneous injection.*

#### e) **Harm to Non-target Species**

The environmental impact of pesticides consists of the effects of pesticides on non-target species. Runoff can carry pesticides into aquatic environments while wind can carry them to other fields, grazing areas, human settlements and undeveloped areas, potentially affecting other species. Other problems emerge from poor production, transport and storage practices. Over time, repeated application increases pest resistance, while its effects on other species can facilitate the pest's resurgence. *The project officers will ensure that vaccine will only be administered to target animals (cattle) hence no harm to non-target species.*

#### ii.) **Social Risks**

Failure by farmers to bring livestock, failure of some marginalized communities to avail animals for the vaccination, cultural factors that may hinder this vaccination, Social and/or professional misconduct by the vaccination Team, Handling of Grievances/Complaints arising out of the vaccination are some of the social risks foreseen with this sub project. *Proper publicity and mobilization of the community to agree on dates and sites of vaccination will be undertaken and a team of seven members headed by CPC is already in place as county grievances redress committee to handle complaints/ grievances received from communities before, during and after vaccination campaign. VMGs will also be identified and purposively targeted in the exercise.*

#### iii.) **Health & Safety**

- Pesticides can enter the body through inhalation of aerosols, accidental self-jabbing or pastoralists, dust and vapour that contain pesticides; through oral exposure by consuming food and water; and through skin exposure by direct contact or in some cases as reported from most counties drug abuse by use of pesticides as human drugs by pastoralists. The effects of pesticides on human health depend on the toxicity of the chemical and the length and magnitude of exposure. Farmers, vets, farm workers and their families experience the greatest exposure to pesticides through direct contact. *This will be mitigated through protective clothing.*

- Children are more susceptible and sensitive to pesticides, because they are still developing and have a weaker immune system than adults. Children may be more exposed due to their closer proximity to the ground and tendency to put unfamiliar objects in their mouth.. *PPEs will be used by all the vaccinators, therefore minimizing cases of injury and exposure to the vaccines. The supervisors will ensure proper sensitization of the community on potential exposure risk and ensure that children are kept away from vaccination crush sites.*
- Consumption of livestock products such as meat and milk from the vaccinated animals before the elapse of the chemical residual period may cause human health problems both within and outside the project area as the products may as well be sold by the beneficiaries. *The vaccination team will creation of awareness of the vaccination exercise and the side effect of such during the publicity barazas.*
- Injury of the vaccination team by the animals. *This will be mitigated through restraining the animals in crushes; worn out crushes will be repaired and new ones constructed in areas without. In addition, provision of first aid kits in case of injury*

#### **iv.) Economic**

Beneficiary households will be deprived of income from sale of livestock products (meat and milk during the vaccination period).

*This will be a short term effect that will be overcome through sensitization of the beneficiaries to have an alternative source of income during the vaccination period.*

#### **Conclusion after the Screening Exercise**

After the screening exercise, it was found out that the proposed vaccination subproject is socially, environmentally and technically feasible but has minimum adverse environmental and social impact during the implementation process. These negative impacts will be avoided/minimized through the proposed mitigation measures. Furthermore, a pest management plan is in place as a mitigation measure against all threats that may be posed by the vaccination exercise. It is broadly accepted as a development milestone by the beneficiaries and other relevant stakeholders as it will contribute to increased livestock productivity, increased resilience and reduced greenhouse gas emission. Implementation of this Sub project will be smooth and effective social and environmental unrest.

**ANNEX 1: PEST MANAGEMENT PLAN - Rift Valley Fever/Blue Tongue  
VACCINATION**

	IMPACT ISSUE/RISK	MITIGATION	INPUT	RESPONSIBLE PERSON
<b>A</b>	<b>At procurement</b>			
A.1	-Packaging of the wrong vaccine, Insufficient diluent	A team with S-12 will be responsible for confirming the packaging the expiry date at amounts	Night outs for the persons, vehicle, fuel	CDVS/CDSO
	-Packaging of poor quality vaccines	Checklist, check the expiry dates and quantities of the drugs.	S12 and any other relevant documents	CDVS/CDSO
	-Un-qualified personnel collecting the vaccines.	Qualified vet personnel to collect the vaccines.		
A.2	Accidents	Use well trained drivers		CDVS/CDSO
A.3	Leakages, less volumes and lack of labels.	Verification at dispatch of vaccine. Officer collecting the vaccines should a technical staff	Personnel	CDVS/CDSO
A.4	Absence of temperature monitors during transit.	Use temperature monitor	Temperature Monitors	CDVS/CDSO
A.2	Lack of communication and proper arrangement for vaccine collection and transport	Timely arrangement with vaccines supplier and communication with supplier and destination	Airtime and data bundles	CDVS/CDSO
<b>B</b>	<b>On transit</b>			
B.1	Poorly maintained and serviced vehicle	Use of hardtop carrier and reliable well maintained and serviced vehicle ,Rescue vehicle in case of breakdown.	Fuel	CPC/CDVS

B.2	Unnecessary police check and stoppage	Provision of labeled stickers urgent, don't delay on the cool boxes and vehicle.	Emergency stickers.	CPC/CDVS
B.3	Inadequate storage facilities(freezer, plastic tubing)	Purchase of more freezers and plastic tubing	Funds	CPC/CDVS
B.4	Diversion of the co-duty.	-Work ticket should be specific. -Avoid double duty	car tracker	CPC/CDVS
B-5	Using of inappropriate tools to transport vaccines(cartons, instead of cool boxes)	Ensure the vehicle carries cool boxes with ice packs	Cool boxes, icepacks and motorized cool boxes	M&E/CDSO
	Lack of gadgets to monitor vaccines temperatures	Transport and storage temperature monitors to be in the cool boxes and fridges.	Temperature monitors	M&E/CDSO
B.1	Lack of communication on transit	Prior communication between the person delivering and the store ETA(Expected time of arrival);	Airtime	M&E/CDSO
<b>C</b>	<b>In KAJIADO Cold store</b>			
C.1	Inadequate staff at the store to offload and count the vaccine	Staff mobilization in good time both casuals and regulars.	personnel	M&E/CDSO
C.2	Lack of firefighting equipment.	Ensuring proper firefighting facilities are available, liaise with County department responsible for fire fighting	Firefighting equipment	CPC/CDVS
C.2	Inadequate store space & equipment	Ensure there is adequate well ventilated space & equipment	Adequate store	CDVS/CDSO

C.2	Power disconnection and blackout.	Timely payment of electricity bills.	Automatic standby generator.	CDVS/CDSO
C.3	Failing of Cooling system	Ready ice cube for emergency, well maintained fridges, training of technical staff on basic maintenance of fridges and provision of fridge guards.	Funds , personnel	CDVS/CDSO
C.4	Lack of gadgets to monitor vaccines temperatures	Transport and storage temperature monitors to be in the cool boxes and fridges.	Temperature monitors	CDVS/CDSO
C.5	Danger of infection from some vaccines while handling by the officers.	Knowledge of proper handling of vaccines and management of contamination.	Funds for training for staff	CDVS/CDSO
			Provision of PPE	
C.4	Faulty deep freezer/fridges	1) Frequent checks of the freezers and fridges	1) A developed check list	CDVS/CDSO
			2) Funds for repairs	
		2) Have a backup freezer	3) Airtime to communicate to KEPI	
		3) KEPI(Kenya Expanded Program on Immunization)		
C.5	Inadequate adherence to the protocol of acquisition of vaccines from the stores	All officers including VO should be sensitized on the need to follow the protocols	Memo produced and circulated to all relevant persons	CO/CDVS
C.6	Inadequate labeling especially of vaccines returned from the field,	The VO from the field should clearly inform the cold chain manager of the vaccines , the batch	Water proof stickers clearly labeled with the details of vaccine	Team Leaders

		numbers and expiry dates of the vaccines returning from the field before receiving them for storage	details	
C.7	Inadequate cold chain materials	1) Procure polythene enough tubing for making ice packs	Polythene tubing Dry ice/frozen Carbon dioxide	CDSO/Stores man
		2) Or alternatively dry ice		
C.8	Inadequate monitoring of temperature	Regular monitoring of the temperature of the freezers using a temperature tracking sheet and a thermometer	Temperature tracing sheet. thermometer	CDSO/Stores man
C.10	Bio safety problems	1) Provision of Personal protective clothing to the store man	PPEs	CDVS
		2) Provision of clean water at the store	Water supply tank	CDVS
		3) Receptacles for disposal	Receptacles for waste	CDVS
<b>D</b>	<b>Transit to the Vaccination sites</b>			
D.1	Inadequate/missing vaccination equipment	Ensure availability of extra equipment	Funds for extra equipment	CPC/CDVS
		Confirm availability of all equipment via checklist during loading		
		3) Ensure availability of all required vaccination equipment during planning process		CDVS/CDSO
D.2	Failure to collect essential equipment	1) Prepare a detailed checklist	Detailed Checklist	Team Leader
		2) Assign task to specific officer to tick the checklist during loading		



D.3	Inadequate vaccination equipment	Proper planning between CPTL and CDVS to procure all required equipment prior to start of vaccination	Joint planning Meetings	CPC/CDVS
		Forgetting some vaccination equipment and vaccines	Detailed procurement list;	Team Leaders
			Automatic syringes,	
			Needles, Vaccines, disposal	
			syringes, Markers, spare	
			glass barrels, repair kits,	
			First aid kit, vaccine diluent,	
			syringe lubricants, vaccine	
			temperature monitors, cool	
			boxes, ice packs, pliers, PPE	
			(overalls, gumboots, Musk,	
			caps, T-shirts, gloves),	
			disposal equipment (sharps	
			containers, biohazard bags),	
			camping equipment(Tents,	
		beds, table, mattress, chair,		

			Nets, bed sheets, basin,	
			water containers, torches,	
			Gas cooker, solar lamp,	
			sufurias, utensils, Panga,	
			knife, metallic box)	
			detergents, stationery (pens,	
			books, vaccination manifests).	
<b>E</b>		<b>Actual Vaccination</b>		
E.1	Mechanical breakdown during vaccination (including punctures and tyre bursts) mobile pressure machines Driver to ensure spare tyre is in good condition	Provision for stand by vehicle (if available) Provision for hire of vehicle Purchase of tyres, repair kits and	Vehicle Funds Funds	CPC/CDVS
	Provision of vehicle dislodging equipment (Panga, Spade, winch)		Funds	CPC/Driver
E.1	Lack of gadgets to monitor vaccines temperatures	2) Transport and storage temperature monitors to be in the cool boxes and Fridges.	Temperature monitors to be in place.	CDSO
E.2	Inadequate vaccination personnel ie due to staff shortage, sickness/	1) Have standby personnel	Stand by personnel	SCVO

	emergency commitment			
		2) Co-opt from private practitioners	Provide for emergency per diems	
		3) Co-opt technical staff from neighboring Project County		
E.3	Shortage of fuel in the field	Provide extra fuel in jericans (200Ltr)	4Fuel Containers Fuel	CDVS
		Stand by vehicle to deliver fuel		CDVS
E.4	Delay in replenishment of cold chain (ice.)	Cool boxes to be in good condition		CDVS/CDSO
E.5	High turnover of animals	Proper planning		Vaccination Team
		Set targets with community prior to vaccination		Team leader
E.6	Sick animals left at bomas	Provide for transport to move and take samples	Vehicle	Vaccination Team leader
E.7	High temperatures restricting use of protective clothing(above 37 degrees celcius)	Timing of vaccination to start early and end before noon. Resume vaccination at evening		Vaccination Team leader
E.8	Accidents / injury/	Provide first aid kits	Kits	CDVS

## ANNEX II: STAKEHOLDER MAPPING

S/N	STAKEHOLDER	ROLE
1	Farmers/Pastoralists/beneficiary	<ul style="list-style-type: none"> <li>-Own the project and take their animals for vaccination</li> <li>-Construction and repair of crushes</li> <li>-Provide and prepare the venue where vaccination will take place</li> <li>-Cooperate with the vaccination team</li> <li>-Participatory monitoring</li> </ul>
2	Min. of Interior and Coordination (Chiefs)	<ul style="list-style-type: none"> <li>-Publicity</li> <li>-Monitor the Vaccination exercise</li> <li>-Reporting</li> </ul>
3	County technical department of Veterinary Services	<ul style="list-style-type: none"> <li>-Provide the technical teams to undertake the vaccination exercise</li> <li>-Provide technical expertise</li> <li>-Ensure the vaccine cold chain is properly maintained</li> <li>-Prepare the program for the vaccination exercise</li> <li>-Procurement of vaccines and equipment</li> <li>-Reporting</li> <li>-Participate in monitoring</li> </ul>
4	NEMA	<ul style="list-style-type: none"> <li>-Ensure environmental safeguard issues are taken care of in the exercise</li> <li>-Supervise waste management</li> <li>-Reporting</li> </ul>
6	GRM Committees( at the county and subproject level)	Receive and handle all complaints and conflicts that may arise during the implementation process
7	County Government (Office of the Chief Officer)	<ul style="list-style-type: none"> <li>-Contribute 20% of the total cost of the vaccination sub project</li> <li>-Release officers to participate in the vaccination exercise</li> <li>-Provide means of transport to enhance mobility of officers during the exercise</li> <li>-Publicity (ward administrators)</li> <li>-Participate in monitoring</li> </ul>
10	KCSAP CPCU	<ul style="list-style-type: none"> <li>-Coordination of the subproject activities</li> <li>-Ensure safeguard issues are taken care of in the implementation process</li> <li>-Monitoring the implementation process</li> <li>-Reporting</li> <li>-Undertake an impact assessment of the subproject</li> </ul>