

Supply Chain Analysis for a Thermostable Peste des Petits Ruminants Vaccine in Karamoja, Uganda

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Introduction

- **Peste des Petits Ruminants (PPR)** is a highly infectious viral disease of small ruminants and wildlife in Africa and Asia.
- Morbidity & mortality rates can be up to 80-100%.
- Karamoja is a high risk area, with many pastoralist communities depending on small ruminants as a source of income and sustenance.
- Losses due to PPR are around 2 billion dollars a year, affecting the poorest of farmers in the world, increasing food insecurity.
- There is no market for PPR vaccines in Karamoja, the only time small ruminants get vaccinated is with government- or NGO-led programs.
- A supply chain are the processes involved in the production and distribution of a commodity, in this case the PPR thermostable vaccine.

Objectives

- **Assessment of the logistical perspective of the thermostable PPR vaccination strategy.** Provide a diagnostic of the logistical challenges and ways to improve them for future vaccination programs in the Karamoja.
- **Enhance understanding of the role of community animal health workers (CAHWs) in the vaccination program.** Determine the sustainability of CAHWs in low income settings where there are financial constraints.
- **Identify constraints in the supply chain.** Identify possible bottlenecks, measure lead-time in different levels of the supply chain, determine optimal inventory levels and economic order quantities.

Methodology

Research Location: Karamoja, Uganda

Data collection:

Production and Logistic Analysis	Number of Interviewees
Focus Group Discussions with CAHW	43
Focus Group Discussions with Livestock Keepers	41
Interview with Veterinary Shop Owner	3
Interview with Veterinary Officers	2
Interview with District Veterinary Officers	2
TOTAL	91



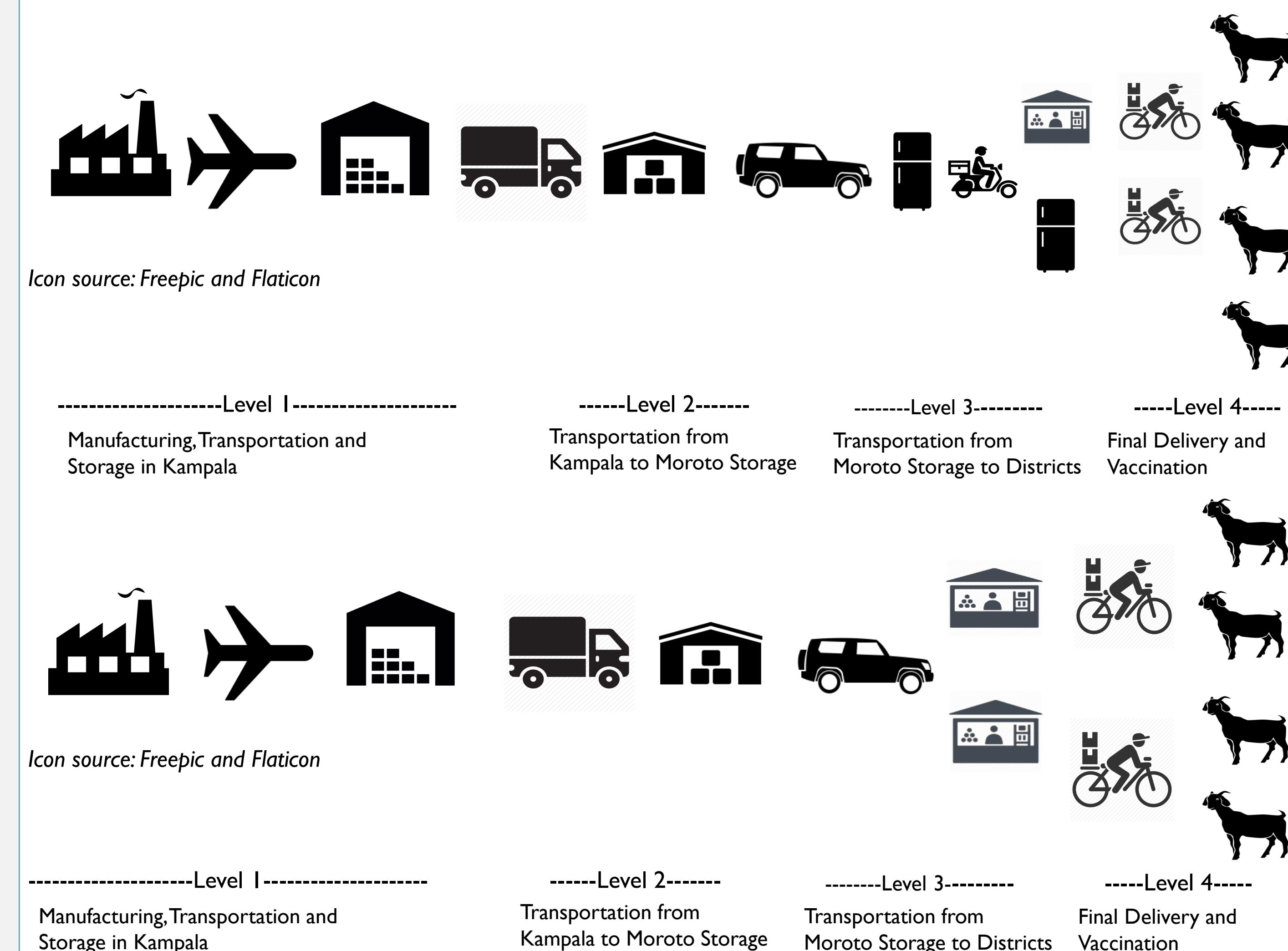
Focus group with CAHWs in Kaabong



Focus group with livestock owners in Amudat

Results

The scope of this research just takes into consideration the portion of the supply chain that starts in the production center of vaccines going downstream to the livestock keeper who buys the vaccine for their livestock.



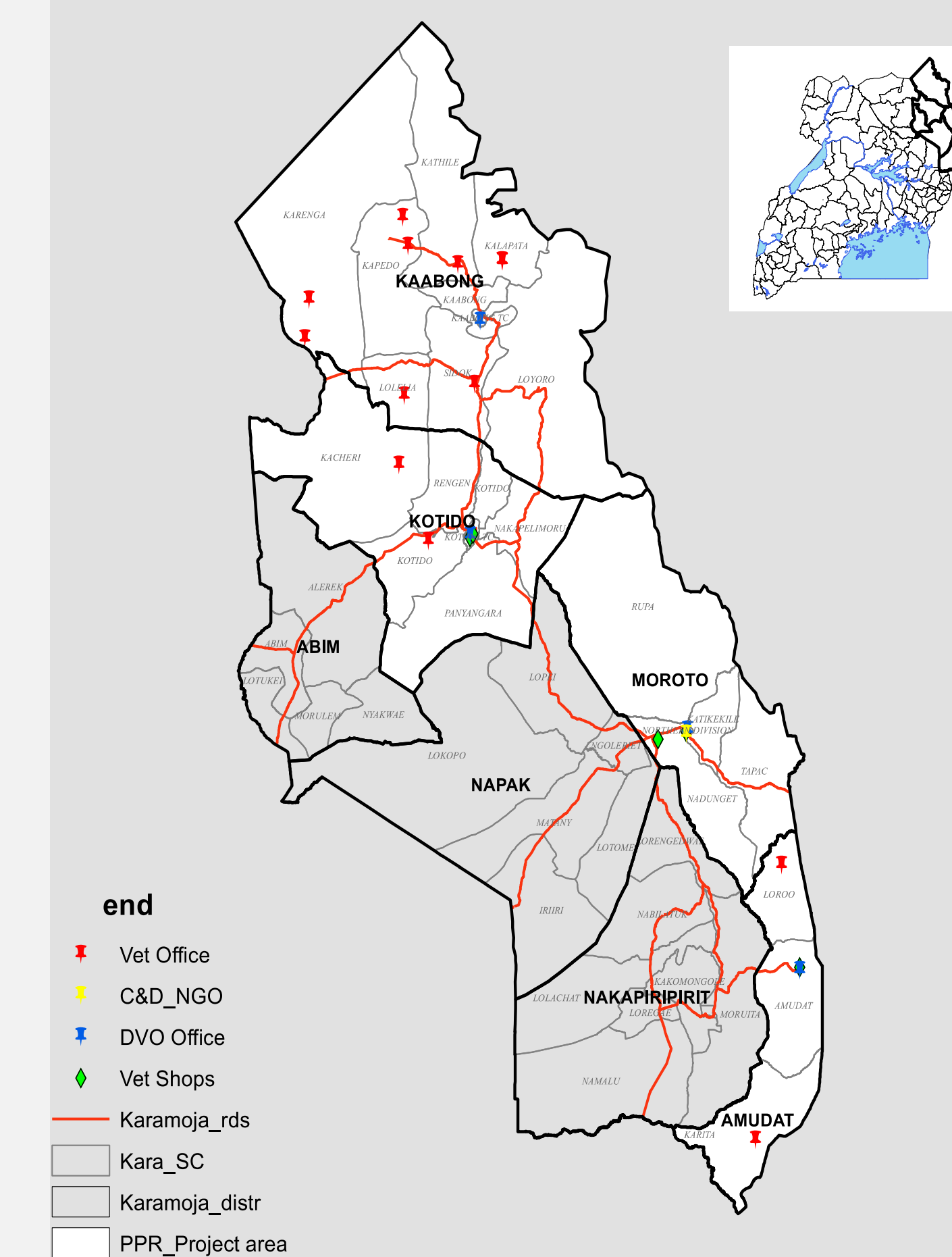
Constraint and indicators of the supply chain:

- Bottlenecks due to the limited number of CAHWs and suitable places for vaccine storage.
- Lead time variation dependent on season, from 2-3 days up to 7-10 days.
- The percentage of logistical cost is 34.337% of total cost using the proposed model with a thermostable vaccine.
- Total cost is \$0.3046 USD/Vaccine, production cost is \$0.20 USD/Vaccine.

Challenges and Opportunities with CAHWs:

1. Positive perception towards having vaccines available for sale in veterinary shops.
2. Strong link with CAHW owned veterinary shops in Kotido and Kaabong, not in Amudat.
3. Distance from veterinary shops directly affects their performance and motivation.
4. Protective gear use varies greatly, some reported not having gumboots and coveralls.
5. Education is needed for livestock keepers on the purpose of vaccines – prevention vs. treatment.

Cold chain and road infrastructure in the selected districts of Karamoja



Road to Moroto after heavy rain



Discussion

- This supply chain strategy relies heavily on community participation in the last levels, which are usually the most challenging.
- Thermostability of the vaccine makes this distribution model possible.
- Approximately 78% of the logistical costs go to veterinary drug shop owners and to CAHWs.
- A business model approach may reduce the dependency on government- and NGO-led interventions for livestock vaccination.
- The new model with a thermostable vaccine eliminates the need of refrigeration after level 3.
- Lead time is dependent on weather and road conditions (making careful planning of the intervention crucial). Lead times from Kampala is 2-3 days, but during the rainy season, it goes up to 7-10 days. Planning accordingly is crucial.
- Inventory policies and order quantities should be tailored to each region. For Kotido and Amudat a weekly re-order policy maintaining inventory above weekly target average vaccination is recommended.

Research Team

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Partners: Mercy Corps, Ministry of Agriculture, Animal Industry and Fisheries (MAAIF), and Tufts University