

WOAH

**Socioeconomic Study: Transborder
Animal Value Chain Analysis**

December 2022

Phase 1 and phase 2 training report
and tutorship activities summary

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Phase 1 and phase 2 training report and tutorship activities summary

Project objectives

The project had the following overall objectives:

- a. Support WOAHA in building capacity on animal value chain analysis in targeted countries in South-East Asia through 'learning by doing', and
- b. Identify and analyse the cross-border animal and relevant animal products value chain incorporating sociological methods for four studies.

Background

This project aimed to assist the Veterinary Services of identified partner countries to develop capacity to conduct such value-chain analyses incorporating sociological methods as an extra tool to use to gather valuable data to help with decision making for reducing the risk of transboundary animal disease spread. As sociological methods are not commonly utilised in data collection in the field, a key component of the project focussed on the training of identified partner countries in sociological methodologies, which would be adaptable and fit-for-purpose.

The project commenced in 2021 with an initial five country Veterinary Services groups, with attendees from the Philippines, Timor-Leste, Malaysia, Papua New Guinea, and Indonesia. They participated in phase one of the project which was an online training component. Of these, four Veterinary Services teams: Philippines, Timor-Leste, Sarawak-Malaysia, and Sabah-Malaysia, continued onto phase two, the field activity component in 2022.

Part 1: Online modular training

Part 1 of the project entailed the development and facilitation of five training modules (plus supportive material), centred around value chain analysis and utilising sociological methods. The training was conducted over five weeks online (due to Covid-19 restrictions). The five modules included:

- Module 1: What is value chain analysis and how is it relevant to cross-border animal disease control?
- Module 2: What diseases are we concerned about? How can they spread?
- Module 3: Ways to investigate, map and present value chains and risk pathways using a sociological approach.
- Module 4: Practical qualitative risk analysis for animal diseases.
- Module 5: Using value chain analysis results for cross-border animal disease risk reduction.

See Annex 4 for the full workbook which was developed and accompanied Part 1 of the training.

Part 2: In-depth fieldwork training in Kuching, Malaysia

Part 2 focussed on more in-depth, face-to-face training across 4 days in Kuching, Malaysia with 28 staff from the Veterinary Services from Sarawak and Sabah.

Day 1 Overview

Day one focussed on introductions to each other, the project aims, the sociological approach and value chain risk analysis. Dr Homan laid out the importance of understanding the social and human component for understanding human-facilitated movement in livestock and products for coming to understand risk pathways. The practical component centred on participants practicing one-on-one in-depth interviews, in preparation for real interviews with Key informants (defined as having technical expertise, such as veterinary officers) and community informants (defined as those having knowledge of some point in the value chain of livestock and product movement).

Key learnings included:

- Value chains are descriptions of the movement of animals or animal products along the production chain
- Sociological methods can help to understand human assisted movement (or knowledge of movement) of animals and animal products
- This can help understand the risk pathways for FMD and help design strategies to reduce risk.
- Interviews are less formal than survey questionnaires but beneficial for getting more in-depth information
- This method is adding knowledge for animal disease management; it doesn't replace existing methods – it enriches them.

Day 2 Overview

On Day Two, Dr Homan introduced focus group discussions (FGDs). FGDs are participatory methods, often conducted at the community level, with the intention to understand a particular issue, in this case, on the movement of livestock and products at the community level. While more planning and time is needed, the interactivity of the method is part of what makes it so successful, as community participants are co-collaborating with interviewers to achieve the outcome. This activity employed an activity called 'social mapping', whereby facilitators and community members collectively draw a map on paper, to illustrate the movement of animals and products. Overall, DVS participants, found the new method to be an exciting and innovative way to collect information.

Key learnings included:

- FGDs are an excellent way to get multiple views from a key group of people.
- The 'social map' is not the most important output; the most important part is the conversation *facilitated* by doing an activity (e.g., social mapping).
- FGDs can be time consuming but get good results if facilitated well.
- FGDs can be repeated with different groups and in different locations to collect different information and build the whole picture.
- FGDs with one group may provide information that is relevant along the whole border.

Day 3 Overview

Day Three capitalised on the opportunity to run FGDs with the participants (all veterinary and technical staff of DVS) using real maps of Sabah and Sarawak, to collectively draw on the wisdom sitting in the room. The regional teams were given maps and the FGD tool to discuss and record their knowledge of movement of animals and products and discuss potential risks and pathways. This activity was followed up by Dr Anderson explaining how to arrive at particular risk assessments and potential actions to mitigate risk (**see Annex 1 Risk analysis training outline**). The day culminated in discussions on the field trip to Serikin (where FGDs were to be conducted with community members) and awarding certificates of participation.

Key learnings included:

- How to assess risk using a risk assessment matrix
- How to plan fieldwork using sociological methods.

Day 4 Field trip to Serikin

Day four entailed putting the learnings around FGDs into practice with community members in Serikin, close to the border with Kalimantan. The Serikin based team with DVS staff organised 20 community members to attend the FGDs, and four simultaneous FGDs/social mapping exercises were conducted, with facilitators and notetakers putting into practice skills gained in the workshop. The community FGDs were a great success (see final report for findings). The feedback from both community participants and DVS facilitators was that the method was successful due to it being a novel, participatory and collaborative approach.

Evaluation of Part 2 training

For the purposes of feedback and evaluation of the in-country workshop, Dr Homan conducted a light touch evaluation of the increase in knowledge for the DVS Sarawak and Sabah staff, as well as collected feedback on workshop participants' thoughts on the workshop.

The pre- and post-workshop surveys measured the change in DVS participants' confidence in their understanding of a) value chain analysis for animal diseases and b) understanding sociological methods for collecting data about animal diseases, before and after the workshop. The results showed that prior to the workshop, most participants felt little to no confidence in both areas. The only participants who had some confidence levels were those who had attended Part 1: online trainings in 2021 conducted by Dr Anderson and Dr Homan¹ or had some experience of it in their current role. However, by Day 3 all the participants felt an improvement in their confidence levels (see Annex 2 for results of the pre- and post-training survey).

A post-workshop survey collected feedback and testimonials from DVS workshop participants and was distributed via email. The form was anonymous and voluntary and completed by 13 participants (not all questions were mandatory). Overall, the feedback was positive, and participants expressed a wish for more trainings on risk assessment and sociological methods in the future (see Annex 3 for results).

¹ Six participants had attended prior training (Part 1), the rest of the participants had no prior exposure to the workshop material.

Accompaniment model of mentorship

Throughout the project Drs Anderson and Homan adopted an accompaniment model of mentorship with the Veterinary Services of identified partner countries who went on to complete fieldwork (Part 2). As well as the online and in-person workshops on fieldwork methodology and planning, regular meetings on risk assessment, validating findings and feedback were conducted with the individual Veterinary Services teams.

This approach is useful in capacity development, especially with diverse mentee groups who may all have different capacities, needs and be at different stages of progress and learning (as was the case in this project). This flexible and adaptable approach meant that throughout the whole process (pre-, during and post-fieldwork) the partner countries (Timor Leste, Philippines, Malaysia Sabah, and Malaysia Sarawak) 'learned by doing' and that accompaniment activities were fit-for-purpose, depending on the needs of the individual country teams.

The accompaniment/mentorship activities varied depending on the needs and eventual outcomes of the teams. Individual activities per identified partner country included:

Philippines:

- Additional Zoom meetings were arranged pre-fieldwork to refresh the methodology and planning for the core team in Manila and their regional counterparts, who assisted with the fieldwork in Abra and Mountain Provinces. (9th-10th February 2022).
- Post-fieldwork Zoom meeting to discuss fieldwork and validate the findings. These were attended by the core Veterinary Services team from Manila and their regional partners (31st March; 12th April).
- Further assistance provided on data and risk assessment via email.

Sabah, Malaysia

- As well as the in-person training, Dr Anderson met with the Sabah team in-person in Kuching (12th August 2022) to provide tailored advice on their risk assessment and provide feedback on their completed fieldwork.
- Regular email updates were provided.

Sarawak, Malaysia

- The most extensive mentorship component for Sarawak, Malaysia took place during the in-person training in Kuching, 8th-12th August 2022.
- An additional 2-day, online workshop between DVS Sarawak and Dr Anderson took place 30th Nov – 1st Dec to validate their fieldwork findings in line with the risk assessment methodology presented by Dr Anderson in the workshop. This helped further consolidate learnings of the methodology and cemented outcomes going forward.

Timor Leste

- Refresher training was conducted with the Veterinary Services team 23rd-24th February 2022.
- On 23rd March 2022, a post-KII validation and check in meeting occurred via Zoom.
- The Timor Leste team were unable to complete the activities due to competing priorities (see outcomes in Final report).

All teams were invited to a final “wrap up” Zoom meeting on the 8th November, 2022. This allowed countries to present summaries of their experiences and learnings of the project.

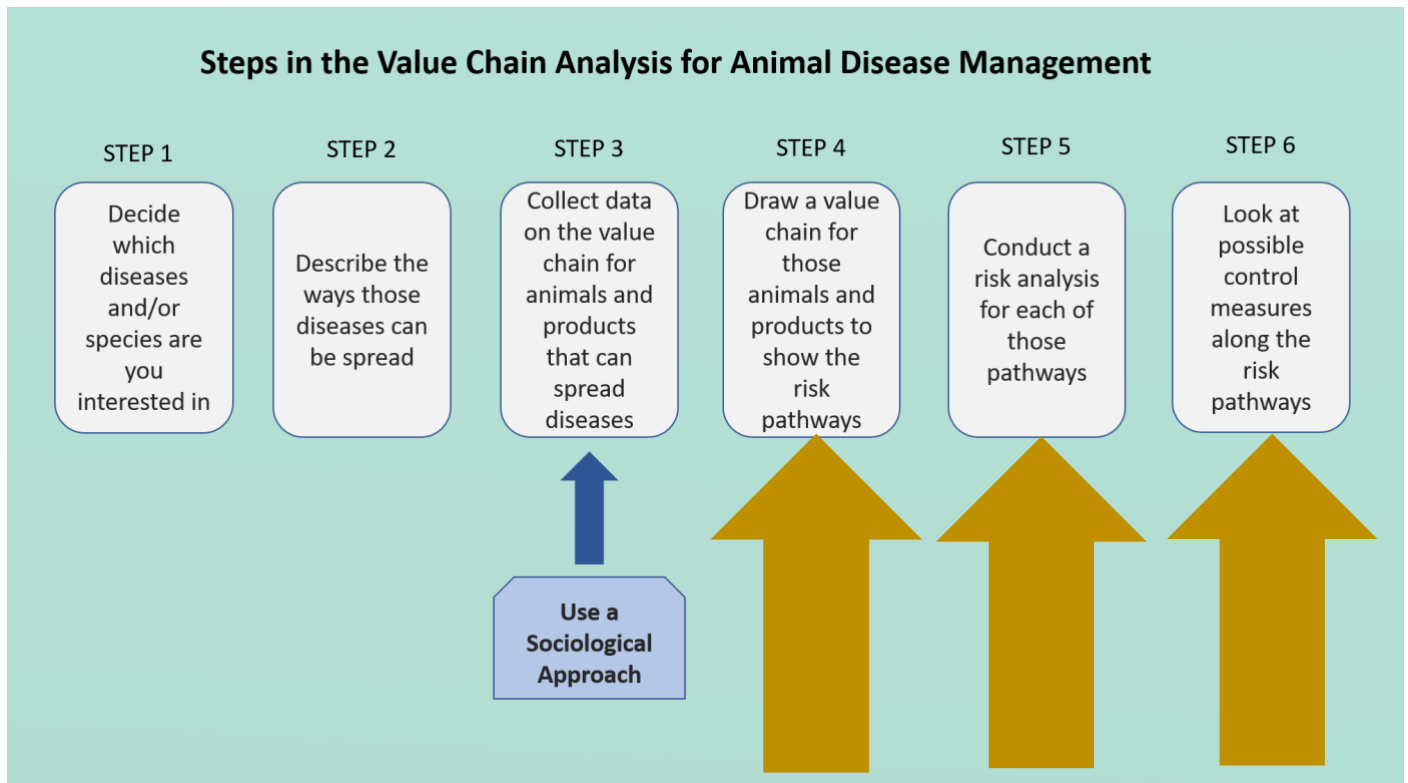
Annex 1: Value Chain Analysis for Transborder Animal Disease Spread using a Sociological Approach - Risk analysis training outline.

STEP 4 - Developing Risk Pathways

STEP 5 - Risk Analysis

STEP 6 - Risk Mitigation

Diagram 1. Steps in the project.



A. Step 4 - Developing risk pathways from the data

Following discussions on the construction and analysis of risk pathways, the team can now use the data from Sarah to write all the risk pathways that they can identify from that data for possible disease spread across the borders. These pathways need to describe how disease could be spread from animals at one side of the border and establish in animals on the other. They need to be quite precisely defined so that targeted risk mitigation measures can be applied to each. An example of a risk pathway is:

“An infected live domestic pig from town x is transported by vehicle and sold in Province A and mixes with local smallholder pigs”.

A risk pathway can be quite specific between sites (such as *“Infected pigs brought from Town z to x for fattening and those introduced pigs have close contact with local backyard pigs”*) or a general pathway between provinces (such as *“Infected live domestic piglets are carried between provinces, slaughtered and swill-fed to local backyard pigs”*).

Make a table (as per the template in Table 1 below) listing the risk pathways based on the data and our discussions. These can be modified and added to by the team involved with the data collection. Later in Step 5 the risk ratings for each will be assessed and added into this table. These can then be ranked in order of risk rating with the highest ratings shown on top to help prioritize actions.

Table 1. Template for cross-border risk pathways.

RISK PATHWAY
<i>General Pathways Identified</i>
<i>More Specific Pathways</i>
Other?

B. Step 5 – Conducting a risk analysis for each risk pathway

Once the different risk pathways for possible disease spread across borders have been listed, a risk analysis process is conducted on each of these.

The simple qualitative risk analysis method we will use combines the **consequence** of disease entry and establishment with the **likelihood** of that happening to give a **risk rating** for that pathway. It is appropriate to use “expert opinion” to determine both consequence and likelihood ratings, ideally using a group of people with good relevant knowledge to reach a consensus.

Remember that the exact classification arrived at for each risk pathway is not critical. This is just a process to provide information to help with decision making. The risk ratings determined provide a structured way of prioritising risk mitigation disease control measures.

Determining consequence

Firstly, the consequence of disease establishing across the border needs to be estimated using the table below. For the introduction of a disease across a border this will probably remain the same for all the risk pathways. In that case, the factor that will determine the risk rating in this project will be the likelihood estimated for each pathway. You can use your own definitions or examples for each of the “consequence” categories.

Table 2. Consequence analysis tool.

CONSEQUENCE RATING	Description
Negligible	No general economic or social outcomes
Minor	Minor local economic or social outcomes, such as some losses or inconvenient trade or movement restrictions
Moderate	Significant localised economic or social outcomes, or moderate widespread issues such as some movement/ trade restrictions
Major	Considerable widespread economic or social outcomes, such as generalised income reduction, trade restrictions and/or food security issues
Catastrophic	Serious effect on the provincial/state economy and/or devastating social outcomes, such as widespread poverty/ loss of food security

Determining likelihood

Assessing the likelihood of the event described in each risk pathway happening requires consideration of a number of factors. These include:

- a) **The level of infection at the source: at the current time or the plausible level in the near future.** If there are zero cases at the start of the pathway now and probably will be in the near future, then the likelihood of that risk pathway resulting in spread of infection will be “negligible”.
- b) **The infectivity of the mode of spread.** For example, the movement of infected live animals may be more likely to spread infection than contaminated footwear.
- c) **All of the steps for disease spread are present.** For example, the movement of infected meat products will not spread some disease to animals at the source unless part of that product is swill fed to susceptible species (or there is chance for fomite transfer from the product to live animals). So, if the infected meat is treated sufficiently or not swill fed at the destination then one step in the pathway is missing and the likelihood of disease being spread is negligible.
- d) **The frequency of that pathway occurring.** Obviously the more a certain type of pathway occurs, the more likely it will result in disease transfer from the source to the destination. Measuring the frequency using the sociological methods may only give a qualitative estimate (for example: “often” or “rarely”). This is still valid to use, especially if it is validated by different people. In some cases, a more quantitative data may be available from a different source along the value chain. For example, an interview of a transporter or abattoir may give accurate figures for movements.
- e) **The quantity of animals or material moved by the pathway.** Similar to frequency, clearly the greater the number of animals or items moved by a certain type of pathway the more likely it will result in disease transfer. This may also only result in qualitative assessments (for example: “many/lots” or “very few/ little”). This is also valid to use, however for key pathways it may be worth trying to collect some more quantitative data.

Again, you can use your own definitions for each of the “likelihood” categories.

Table 3. Likelihood analysis tool.

LIKELIHOOD RATING	Description
Almost certain	The situation described in the risk pathway is almost certain to occur soon
Likely	The situation described in the risk pathway is likely to occur at some time
Possible	The situation described in the risk pathway could occur at some stage
Unlikely	The situation described in the risk pathway is unlikely to occur at any time
Negligible	The situation described in the risk pathway is almost certain not to occur except under exceptional circumstances

Once the “consequence” and “likelihood” ratings have been made, then table 4 below can be used to calculate the risk rating for each of the pathways. As mentioned, in this project it is likely that the consequence of a specific disease introduction will be the same for each pathway.

Table 4. Risk rating analysis tool.

		Consequence Rating				
		Negligible	Minor	Moderate	Major	Catastrophic
Likelihood Rating	Almost certain	Medium	Medium	High	Extreme	Extreme
	Likely	Low	Medium	Medium	High	Extreme
	Possible	Low	Low	Medium	High	High
	Unlikely	Negligible	Low	Medium	Medium	High
	Negligible	Negligible	Negligible	Low	Medium	Medium

This will result in a specific risk rating for each pathway as shown in table 5.

Table 5. Risk ratings.

RISK RATING
Extreme
High
Medium
Low
Negligible

C. Step 6 – Developing possible risk mitigation measures for each pathway based on their risk rating

Once we have listed and given a risk rating to all the different ways of possible disease spread across borders we can arrange them in priority order (based on their risk rating) and then consider appropriate risk mitigation measures for each. Having them risk rated gives us an idea of which risk pathways are the most important and urgent to do something about. The type of response indicated for each risk rating category is shown in Table 7. This priority approach helps ensure that we focus on the pathways that are the riskiest for the spread of a given disease across borders.

Table 6. The general type of response indicated by the risk rating classification.

RISK RATING	THE TYPE OF RESPONSE INDICATED
Extreme	Urgent attention
High	Action needed to reduce the risk
Medium	Active management: e.g. review current control measures
Low	Keep monitoring the risk
Negligible	Accept the risk – no action needed

It is ideal to use a group of people with good animal disease control knowledge combined with people (such as sociologists) who understand changing people’s behaviours to brain storm options for risk mitigation strategies for each pathway. There are a number of different types of methods we can use for risk mitigation disease spread control measures. These include regulatory actions but also importantly community and targeted education campaigns and activities.

Using a risk pathway example of “An infected live domestic pig from Town x is transported by vehicle and sold to a small holder in Province A with potential contact with local pigs”, depending on how the risk was rated, we could consider the following disease control measures to reduce this risk:

- a) Conduct community awareness campaigns along the border of the disease risks of bringing in pigs from the other province
- b) Conduct community awareness campaigns along the border about the regulations about bringing in pigs from the other province and the penalties for non-compliance
- c) Strengthen border road vehicle inspections for pigs plus pig products
- d) Broadcast if any non-compliance detections are found (without mentioning names) and what the consequences were
- e) Give biosecurity advice on keeping introduced animals in quarantine for a period prior to mixing with other animals
- f) Etc.

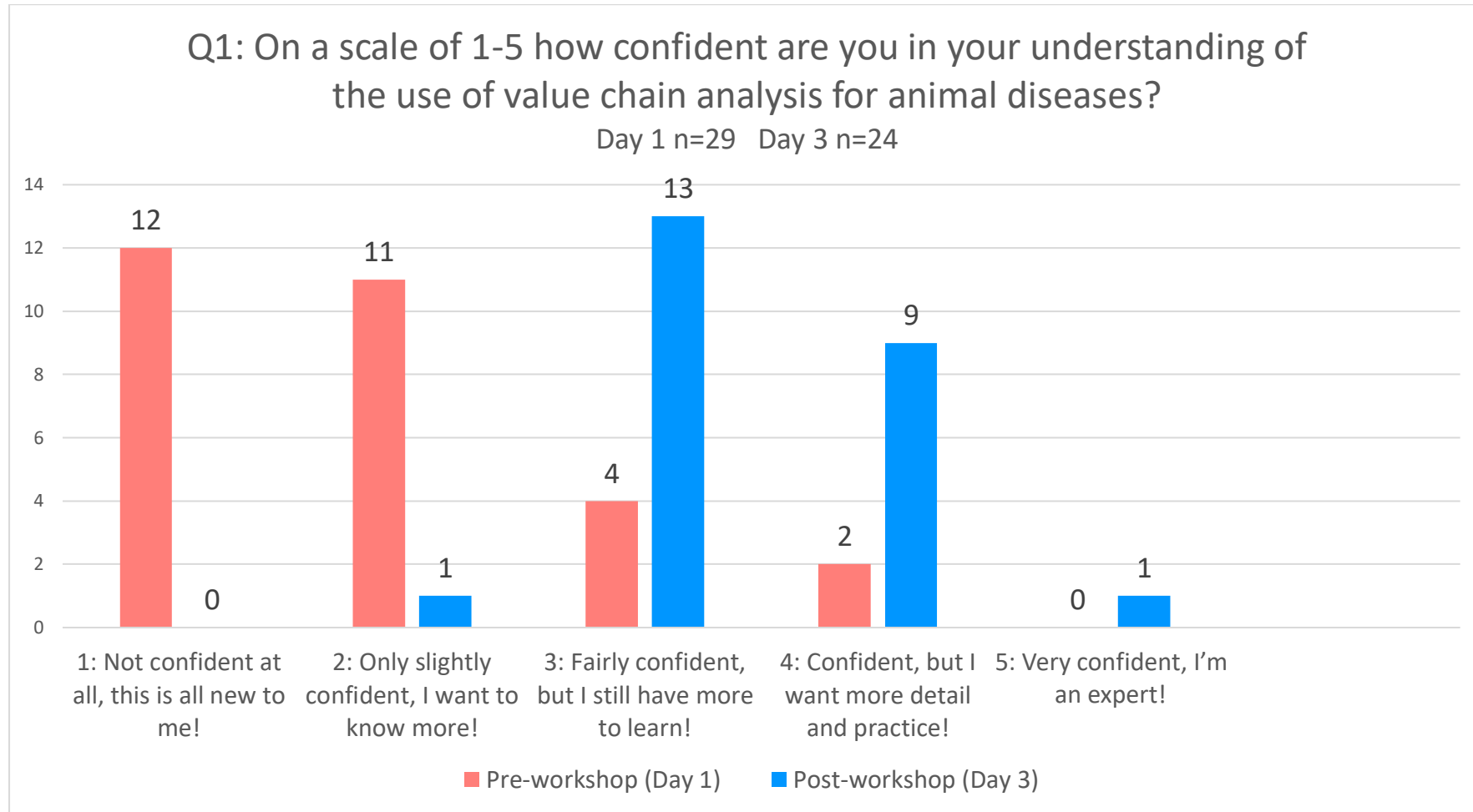
Table 7. Examples of a template for risk mitigation steps for different risk pathways with different risk ratings.

Possible risk pathway	Risk rating	Possible mitigation step
	Extreme	<p>Community education on dangers of this movement and the regulations and penalties for non-compliance</p> <p>Risk communication on swill feeding-posters etc</p> <p>Ban swill feeding</p> <p>Legal notification</p>
	High	<p>Give advice to hunters on changing clothes/ hygiene/ biosecurity – Group discussions on this</p>

Summary

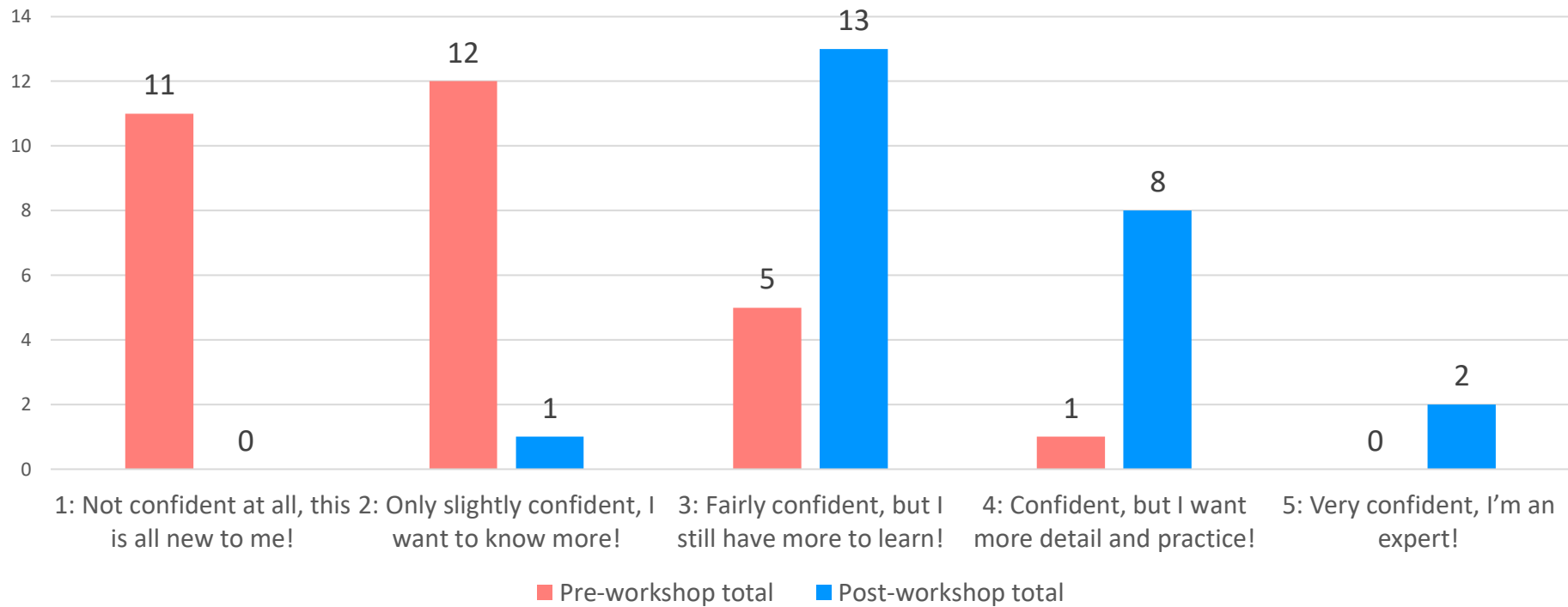
This document is aimed at giving guidance on using the risk analysis method described to help with decision making to reduce the risks of a selected disease spread across borders. The templates can be modified to suit the local situation and the data can be re-assessed, as well as added to from other qualitative or quantitative sources, to improve the accuracy and analysis of the risk pathways.

Annex 2: Pre- and post-training survey results



Q2: On a scale of 1-5 how confident are you in your understanding of conducting sociological methods, such as interviews or group interviews for collecting data about animal diseases?

(Day 1 n=29 Day 3 n=24)



Annex 3: Post-workshop feedback survey results

Q1: What did you find most useful and/or enjoyable about the workshop?

- I got new knowledge.
- The role play of FGD and of course the actual FGD in Serikin.
- The two ways communicating activities and the clear & interesting information given.
- Discussion with a group of villagers near the border to get more information about a movement livestock and livestock product.
- Practical content which are applicable to my daily works and experience trainers.
- The group activities after each topic. It challenged our understanding & capabilities in applying the knowledge we learned and identifying the area we need to improve.
- It's useful to gets more information and new relevant ideas. I really enjoyable about the workshop even though I'm not eloquent in English language.
- The social mapping is very useful to apply in field work and for sure will use it in the future
- The speakers' abilities to engage with the audience, excellent explanation, a very accommodative and leisure session.
- The proper way of using sociological approach in analysing disease risk and the risk analysis matrix
- the interaction among the participants and also learning new things throughout the workshop
- The practical in Serikin.
- Interactive group discussions.

Q2: Do you have any suggestions for improvement?

- It is necessary to increase exposure in the technique of interviewing participants.
- Everything was excellent.
- Nothing. Literally the best training attend before this.
- This is the first time we done the programme like this so there is no suggestion to share. This is something new to learn but verry useful.
- No
- The interview forms may need to be simplified in word usage. Perhaps can use table form or checklist but without neglecting the conversation process.
- My suggestion is we have to invite transborder authorities' officer for the next time to join our workshop because we need them to sharing information to us.
- No everything is great
- To involve more of DVS staffs as participants
- To know more about the risk analysis matrix. The how to.
- The workshop was great, and I don't think there need for improvement, it was fun and fruitful for me. Looking forward for more.
- Usage of breakout rooms to have smaller discussions, feedback from 'farmers' to interviewers on what could have gone better for the session in the hotel.

Q3: What other trainings and/or workshops would you be interested in receiving in the future?

- It doesn't matter as long as it is related to my current job field.
- How best to handle disease outbreak, maybe.
- Anything, as long as our HQ manage to arrange
- It is depends to our Departments of Veterinary Services to suggest another workshop.
- Risk assessment and analysis
- Training on how to response to the occurrence of new outbreak of disease such as FMD. What we need to do if it is happened? Activities such as simulation may be included in the training.

How to use the manpower or work as a team during this crisis. How process flow can be followed effectively.

- I hope that we can invite Indonesian and Malaysia authorities transborder officer together to join us for discussion about cooperation also work together to prevent FMD and other diseased.
- Another training regarding participatory method
- Any tools or means related to animal disease control and eradication
- Any will do. Because local approach might be different from overseas approach. Everything is new
- on how to avoid asking end questions [closed questions].
- Other types of participatory research methods, risk analysis, HACCP methods.
- Epidemiology. Emergency response, disease control planning and management.

Q4: Could you please provide us with a short testimonial about the workshop? (optional)

- Very nice and something learning that I never had this level.
- The art of asking question is greatly appreciated, I have learnt 1 or 2 things really useful throughout the workshop.
- It is a great workshop, many things new that I've learn during the workshop.
- Great trainers and love the 2-way communication during the training
- The notes, slides & the speakers in overall had delivered the information/message effectively to achieve the objective of the workshop. The activities for the participants also increase our understanding on how to apply the knowledge we learned. I enjoy the learning process so much.
- I don't think so
- Very happy got to join the workshop, so much to learn
- The speakers are very humble and accommodating. Their character and personality is very pleasant. The way they explain is entertaining, fresh, and easy to understand. I believe that this method or tools can bring about a positive impact to the countries. We'll never know if we never try
- This workshop did help me in understanding better regarding using sociological approach in spread of diseases. As well as the risk analysis matrix. But I still okay only with the risk analysis matrix.
- the workshop was an amazingly done workshop for me and i wish to attend more workshop in such and give us back the outcome. I am amazed by how interactive the speakers are and preparing demos for each exercise and the concerns throughout the process. Thank you.
- Loved the interactive workshop - it was a, though tiring, well-spent 4 days.
- A fun, interactive, effective, and practical workshop.

Q5. Do you have any other comments or feedback? (optional)

- I would understand better if every sentence that the speaker said could be translated in the language.
- Really grateful for the opportunity to learn from both experts. Tq [thank you] so much.
- Keep up the good work and attitude!
- Thank you very much for a best workshop.
- I just say thank you so much to teach me how to get correctly data or information.
- I would like to thank the speakers for coming and being so kind and humble to us Malaysians. Hope to see you all when I see you. Stay safe and take care.
- Thank you, Dr Malcolm and Dr Sarah!
- No, I would love to attend another one.



Annex 4: Full online training workbook (Part 1)

Transborder Animal Value Chain Analysis

Using a sociological approach to animal Value Chain Analysis for risk management

MODULES 1-5



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Transborder Animal Value Chain Analysis

About this study guide and the authors

This five module study guide is intended to be a brief introduction to the use of animal value chain analysis to help understand animal disease spread, risk pathways and methods to reduce the occurrence or effects of disease outbreaks. It describes the use of a sociological approach for information gathering to determine the value chains.

For a more detailed description of this topic refer to the Food and Agriculture Organization of the United Nations (FAO) Guidelines 2011 'A value chain approach to animal diseases risk management'. FAO has kindly given permission for components of their guidelines to be incorporated into this training.

About the authors

Dr Malcolm Anderson

Dr Anderson has worked in veterinary public health policy development and delivery over the last 20 years in Australia and SE Asia. He was previously the Chief Veterinary Officer for the Northern Territory jurisdiction in Australia from 2012-15. Prior to that he was Manager for Animal Disease Surveillance, South Australia. In recent years his main activities have been in animal disease surveillance and emergency response preparedness. This has included conducting an internal PVS evaluation of all eight Australian jurisdictions and delivering national training in risk assessment and animal disease response planning. He has a Masters in Veterinary Public Health Management and a Diploma in Biosecurity Emergency Response.

Dr Sarah Homan

Sarah has a PhD in Anthropology and Development Studies, and currently works as a gender specialist in the field of International Development. Her research interests include social norms change for prevention of violence against women and she has worked both as an academic and practitioner in International development, in Australia, Nepal, and Papua New Guinea. For this project, Sarah has applied the scientific principles and methods of studying human behaviour to investigate the drivers and actions of humans to the risks of the spread of transboundary animal diseases.



Transborder Animal Value Chain Analysis

Overview and schedule

March
2021

1. **Module 1**

Introduction to value chain analysis and a combined sociological/ veterinary approach to cross-border animal disease control, including 'priority diseases' and their mode of spread.

This module will explore how value chain analysis can be used to assess transborder animal disease risk pathways. Mapping these can help to evaluate disease spread risks in order to manage those risks. This project will introduce the use formal sociological processes to explore people's actions and reasons for moving animals and products across national borders, which can lead to the spread of priority animal diseases. It will give an overview of the OIE project for the participating countries' border field data collection activities.

Apr
2021

2. **Module 2.**

Using a sociological approach to investigate pathways: methods.

This module will introduce the methodologies and sociological approach and tools that will be used to investigate the pathways. It will include an outline of research protocols and ethics.

Apr
2021

3. **Module 3**

Analysis to construct value chains and risk pathways

This will describe the specific methods that will be used to identify where commercial levels of livestock are moving across identified borders and what are the drivers.

May
2021

4. **Module 4.**

Practical qualitative risk analysis for animal diseases. Participants are likely to be familiar with the concept and practice of risk assessment but this training will be on practical application linked to animal movement and risk pathways.

May
2021

5. **Module 5.**

Using value chain analysis results for cross-border animal disease risk reduction. This module will look at how the value chain analysis information gathered, from a sociological approach, on cross-border animal and product movements in each region can be used to help reduce the risks of animal disease spread. It will examine how each National Veterinary Services can use this data to plan practical and effective transboundary animal disease entry mitigation steps as well as targeted surveillance programs. The training aims to equip participants to combine the information to conduct, document and analyse similar cross-border value chain analyses and related qualitative disease spread risk assessments.



Transborder Animal Value Chain Analysis

MODULE 1 - INTRODUCTION

This module will describe the principles of examining the behaviours of people to help understand and manage cross-border animal disease spread and give an outline of the pilot project.

Veterinarians apply their skills and methodologies to manage animal disease spread. Control programs have tended to focus primarily on the science of the diseases with less consideration of the human-related aspects of animal and animal-product movement. The animal value chain risk analysis approach requires joint veterinary–sociological considerations to help determine the cross-border movement patterns that are occurring and some of the reasons why. This project aims to include a sociological approach and tools to show how this can help to gain more understanding of transborder animal and products movements and disease risks.

‘Value chain analysis’ is the study of livestock production systems, how the stakeholders operate and the decisions they make within the livestock production systems. It can be used for ‘risk analysis’ in identifying transborder animal disease risk pathways and disease risks within the livestock production systems and the measures to reduce those risks.

Better animal disease management can be accomplished through better understanding of the reasons for the spread of animal diseases. Knowing the basic economic forces that drive regional animal and product movement can help inform this. However, if we also apply a process of investigating human actions to determine why and where animals and products are moving, we can get a fuller picture of what is occurring. This gives a more complete description of the pathways for, and the risks of, disease spread. The study of human behaviour is the field of sociology and this project aims to apply the principles and methodologies of a ‘sociological approach’ to gather data to help enable better management of transborder animal disease risks.

The purpose of this guide is to explain how elements of value chain analysis, risk analysis and sociological methodologies can be combined to form a practical and useful approach to planning for disease prevention and control measures. This pilot project will introduce the use of a ‘sociological approach’ in collecting data on both sides of international borders. The aim is to find out, and document, what is officially known about transborder animal and product movement as well as what is currently not known. This approach can be expanded to apply to any region. The process will produce overall animal disease risk pathways for the species included. It can be used to focus on specific diseases or for general species-specific animal disease spread. The sociological methods are resource intensive but can result in a much better and ‘richer’ understanding of what movements are occurring and why.

Value chains are made up of:

- Stakeholders
- Hotspots for disease amplification
- Trade networks
- High risk zones
- People’s behaviours
- Risky practices.



The key aspects to analyse are:

- What? – what species and products can be involved in spreading diseases
- Where? – where are the animals/ products originated and where is their destination (pathway)
- How much? – how many animals/products are moving along the pathways over time
- Why? – what are the drivers that are the motivations for these movements
- When? – are the movements seasonal or dependent on varying factors to occur
- How? – what are the practices that move these animals/ products.

Summary:

What are we trying to achieve?

To prevent or stop the spread of animal diseases across borders.

Which diseases?

Priority animal diseases.

How could they be spread?

Through the known routes of transmission for each disease.

Why use value chain analysis?

To identify and map the risk pathways for possible disease spread.

Why use a sociological approach?

To try to gather as much real information on the risk pathways and their drivers.

How does knowing the risk pathways help?

It provides up with a strategy to plan disease entry prevention actions.

How does qualitative risk analysis help?

It allows us to rate and prioritise disease spread pathways.

What is the final result?

We have a strategy for actions to prevent disease spread appropriate to risks.

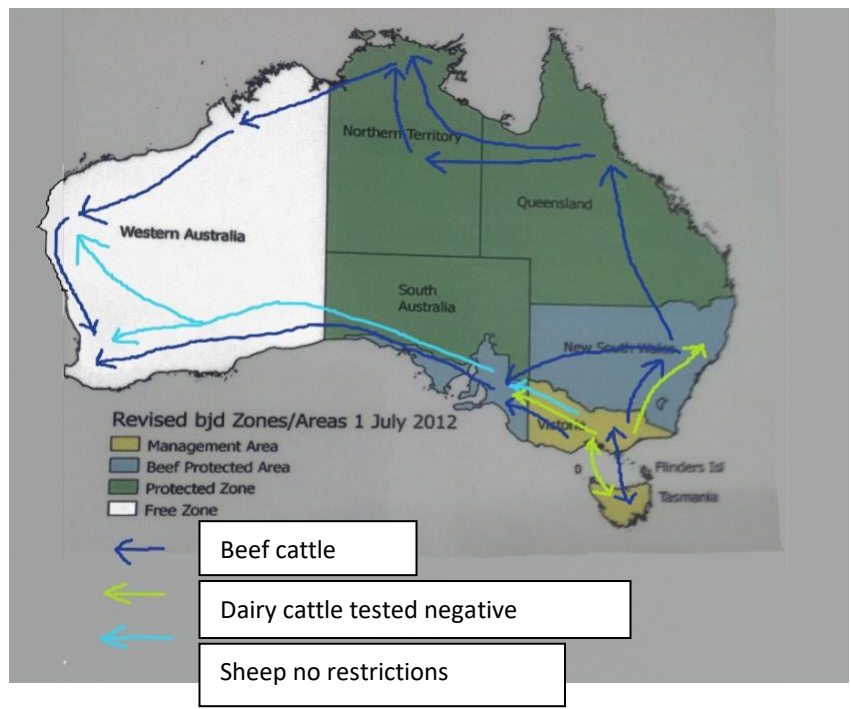
The tools which will be used to collect data include:

- Questionnaires (closed and open)
- Interviews (Various specific types of interviews)
- Community group workshops.



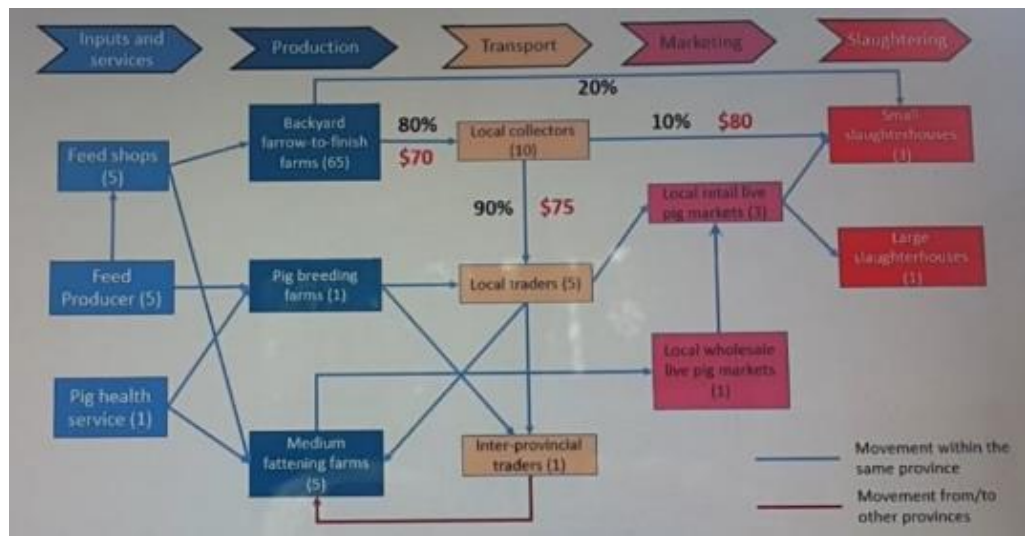
The outputs we aim to produce from our project in each border region are:

- Maps indicating animal value chain pathways (Bovine Johne’s Disease example below)



- Diagrammatic flow charts or process map

One key output of a value chain study is diagrammatic value chain flow chart or process maps consisting of boxes representing different people, groups or organizations and/or production/marketing sites in the chain with lines or arrows between these boxes indicating flows of livestock and animal products. Information on seasonal patterns and longer-term trends, product volumes and values, as well as numbers of enterprises or livelihoods supported at each point in the chain, can ideally be overlaid in the map.



(Example courtesy of FAO)

- Risk pathways for diseases.
- A risk management plan. Look at the big picture and then focus in on hotspots.

**STEPS in the Transborder Animal Value Chain and Risk Analyses process**

1. Use veterinary and sociology expertise to plan the program together from the start.
2. Define the area to examine animal and product cross-border movements.
3. Decide which animals and related products are to be included in the program, based on priority diseases.
4. Design a sociological approach to find information about what animal and product movements are occurring.
5. Choose the tools to use, then then participants and the locations to target.
6. Choose and assign field data collector teams to collect the information.
7. Data collectors to conduct the interviews and workshops in the planned order.
8. Use the plan and 'snowball techniques' to choose next participants and conduct those interviews.
9. Gather all the notes, audio recordings and other data.
10. Use someone familiar with sociological analysis to analyse the data.
11. From the results construct a value chain diagram for the movement of various animals under consideration and their products.
12. Conduct a separate quantitative risk analysis for each of the transborder movements of animals or products in the diagram, (in general or for specific disease). Use this to determine a risk rating for each of them.
13. Based on the risk ratings consider the options and need for controls. Use the sociological information gathered on the movements to formulate actions which take into account, or change, people's behaviours.
14. Develop a transboundary animal disease spread risk management plan.

Field component of Animal Value Chain Analysis

The aim of the field component of the Animal Value Chain Analysis pilot project is: to carry out a value chain analysis through identifying, quantifying & mapping the main human-assisted movements of commercial quantities of specified animals and their products across international borders between designated sites.

To achieve the aim, the value chains need to be understood and then taken into account in planning risk management strategies for disease prevention and control. It considers the ways that animal and animal product movement can spread animal diseases-of-concern, and combines this with understanding the behaviour and motivations of the people involved along the chains. The project will seek to answer one key question and three secondary questions. All the interviews and workshops will be designed to address these questions.



Key question for this value chain analysis study: *What are the main human-assisted movements of significant quantities of the specified animals and their products across each of the three international borders in both directions and the related linkage points?*

Secondary guiding study questions:

1. *What (legal and illegal) quantity of significant-level movements of the listed animals and products occur between the designated sites on either side of those borders and the main linkage points that drive them?*
2. *How frequently are those movements occurring, what main variables (such as seasonal variation) drive them and who and where are the main stakeholders/ businesses in the chains?*
3. *Taking into account known methods of disease transmission for specific diseases, what risk of disease spread do each of these movements pose and what measures can be implemented to prevent, or minimise the effect of, those animal diseases?*

The design of the field component of this Animal Value Chain Analysis pilot project is:

1. Conduct five online training modules in a sociological approach to value chain analysis for key country participants who can then train other participants and data collectors.
2. Hold a series of (virtual) workshops with key country participants and field data collectors to demonstrate the sociological data collection methodology and tools that will be used. A data collection plan will be designed.
3. Participants to use the tools to collect the data in the field, conducting the interviews and group workshops. The transborder value chain analyses will be conducted through studies across international borders: (1) West Timor, Indonesia and Timor Leste and (2) Kalimantan, Indonesia and Malaysia (Sarawak and Sabah). For each study, one site will be chosen for value chain analysis on either side of the border in consultation with the country participants. These will be selected to represent a zone where movement of animals and products are likely or known to be occurring between the two countries. It is envisaged that these sites will be towns with reasonable population levels, nearby livestock production and good road connection. One team from either side of the border will conduct a value chain analysis process on their side of the border, using qualitative methods as described in the next module. Completed information forms will be forwarded to the project managers as it is collected over a few months. Support will be provided by Dr Homan and Dr Anderson to participants throughout the process.
4. Dr Homan will analyse the data using a specific sociology data analysis program.
5. Hold a series of meetings in each transboundary region (or virtual) to complete the analysis and to apply the data for risk analysis and risk management plans.
6. Final country reports with recommendations will be delivered.

The timeline for this project are:

STEP 1. A group discussion on each of the 5 modules: one every 2 weeks March-May 2021.

STEP 2. The workshops on field work in June 2021.

STEP 3. Data collection, between June and the end of August 2021, sending the completed information forms to us as it is collected.

STEP 4. Dr Homan will conduct the data analysis using a sociology data analysis program.

STEP 5. Meetings in each participatory country (or virtual) to complete the analysis and to apply the data for risk analysis and risk management plans in Nov 2021.

STEP 6. Final country reports with recommendations will be delivered in Dec 2021.

**Key concepts:**

- Animal diseases are spread by movements of inputs, animals and animal products and also by fomites, people, equipment and during transport.
- Movements of inputs, animals and products within the value chains are driven and controlled by people.
- Value chains describe the processes through which livestock and other inputs pass during the production process. Value chains also describe the places where each process occurs and the people involved.
- Value chain descriptions provide a good starting point for risk analysis and can be used as part of a stakeholder consultation process to create useful discussions about risk issues and therefore promote good risk communication.
- Value chain mapping and analysis provides a systematic framework for determining how people manage domestic livestock populations and their products. Risk analysis provides a system for assessing disease risk within the livestock population. Together they provide a basis for studying disease risk and risk mitigation in livestock value chains.
- Livestock sectors are constantly evolving in order to meet the changing needs of globalized society. This process can bring new and changing disease risks. Networks and linkages in value chains that link production systems, markets and consumers constitute a contact network, which provides opportunities for the transmission of contagious diseases within and between sectors. It follows that these chains (networks) must be understood and taken into account in planning risk management strategies for disease prevention and control.
- Risk-based management of animal disease should be people-centred. This means identifying the people involved (stakeholders) in the livestock sector and examining how they operate, how they perceive risk and what determines their risk profiles. It also means determining their resource bases, the profitability of their business and their alternative opportunities, as well as their constraints in terms of regulations, investment in human capital and infrastructure.
- The principles of risk analysis can be applied to disease management in value chains. Value chain risk analysis adopts the same principles and tools as those used in standard risk analysis. Qualitative risk analysis provides a logical and uniform framework for decision-making. It can be used to support decisions that allow certain activities under certain conditions or, alternatively, that prohibit activities because no practical risk reduction measures are identified.



Transborder Animal Value Chain Analysis

MODULE 2 – Sociological Approach

Using a sociological approach to investigate pathways: methods.

This module will introduce the methodologies and sociological approach and tools that will be used to investigate the pathways. It will include an outline of research protocols and ethics.

Key principles:

Value chain descriptions provide a good starting point for risk analysis and can be used as part of a stakeholder consultation process to create useful discussions about risk issues and therefore promote good risk communication.

An active strategy to reduce disease risk in value chains must necessarily involve changes in the behaviour of the people involved in the value chain (modification of risky practices, introduction of new behaviours). If such a strategy is to be effective, the different people involved will have to be convinced of its necessity and validity. To achieve “buy-in” it is necessary that the scientific basis (evidence) for the strategy is understandable (transparent) to all. An important basis for transparent and evidence-based planning and decision-making is “systematic thinking”, which requires formal methodological and analytical frameworks.

If not had any experience before, what makes you curious about the sociological method?

Introduction to the study

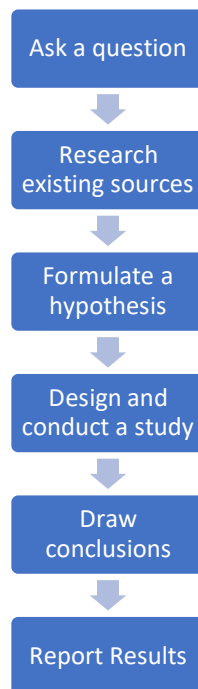
The **aim** of this study is to build capacity and carry out a value chain analysis through identifying, quantifying & mapping the main human-assisted movements of commercial quantities of specified animals and their products across three national borders between designated sites.

What is sociology?

Sociology is a systematic approach to thinking about, studying, and understanding human social behaviour in different societies and social groups. It looks at the social processes that influence people’s thoughts, perceptions, and actions. When we use sociology, we can begin to understand the different forces that affect human behaviour and use this understanding to improve a situation that affects people’s lives.

What are sociological methods?

Sociology uses systematic, scientific methods to reliably collect and analyse data in order to interpret, describe and understand different social phenomena. The scientific method allows us to apply as much objectivity, focus, and consistency as possible in a particular study. The scientific method offers the following basic framework:



Methods of data collection can vary, but all have a part to play in the scientific method. The two overarching types of data collection are **Quantitative** and **Qualitative** methods.

Quantitative methods are:

- Used to quantify, or **measure**, the issue/problem.
- Use **numbers** and generate **statistics**.
- Can generalize results from a **larger, randomly** selected sample population.
- Quantitative data collection methods are **much more structured** than Qualitative data collection methods.
- **Methods include:** Surveys

Qualitative methods are:

- Used to explore and deepen our understanding of a topic.
- Asks '**why?**' Asks '**how?**'
- Data collection methods are **less structured**.
- Sample sizes are usually **small**, and respondents are selected to fulfil a given criteria.
- **Methods include:** one-on-one/individual interviews, Focus groups (group discussions), and participation/observations.

This project is utilising qualitative research methods only.

Qualitative methods and tools for this study

A **method** is the form or style of procedure used for collecting data (information). For example, qualitative data collection is the type of method we will employ in this study.



The **tools** are the specific devices or instruments used within a method. For example, an interview questionnaire is a tool we use to collect information in qualitative methods.

The methods and tools to analyse the animal and product value chains will be identical in each of the three studies. The process will employ a range of qualitative methods, for which we will design specific tools, namely Key Informant Interviews (KIIs), regional site Focus Group Discussions (FGDs) and 'In-depth Interviews' (IDIs).

Interviewing: Overview

Interviewing is the most popular method of acquiring qualitative data. The person conducting the interview is called the 'interviewer' and the person being interviewed is called the 'informant' (can also be called interviewee or respondent). Interviews can be conducted one on one, (such as an in-depth interview or Key informant interview) or they can be conducted in groups (focus-group discussions). While the format for these differs, the principles are largely the same.

One way to think of interviews is as "special conversations". The literal meaning of 'interview' is exactly that; "inter-view" – an exchange of views between two or more individuals discussing a common interest. Primarily we conduct interviews to answer our research questions. They also offer us 'authoritative' information, as we choose to interview people who are experts in a particular topic. Please note, this doesn't mean they need to be 'academic' experts or have formal training. They just need to hold the knowledge we as interviewers want to know about. For example, if we want to know what measures are taken on a farm to protect animals from disease, we might ask a veterinarian who has formal training, but we might also ask the farmer what practices they undertake (or don't undertake) as well. Both hold different types of 'expert' knowledge that we want to know about.

Once we build up a body of interviews we can compare and contrast similarities and differences in themes between what the informants tell us. When we start to see similarities and differences, this tells us about societal patterns of interest, which we can then analyse, and draw conclusions about.

There are many advantages and disadvantages to interviewing.

Advantages	Disadvantages
<ul style="list-style-type: none"> • Personal • Detailed • Data rich: text, body language, emotions • Meaning, feeling, experience • Revelatory: on topic/off topic • Cover numerous topics • Interesting 	<ul style="list-style-type: none"> • Informants can misinform or lie • Difficult to do interviews well • Informants may not wish to speak to you/show up • Access difficult: difficult to build trust and rapport • Misinterpretation of respondents • Data may not reveal much



	<ul style="list-style-type: none">• Respondents may be disingenuous/provide socially acceptable answers, honour and shame play a factor• Researcher alters the setting
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Conducting interviews

There are many different ways to conduct an interview:

Unstructured interview

- Few, loosely defined topics
- Open-ended questions to allow free response
- Conversational style

Semi-structured interview

- List of specific topics to cover (interview guide/tool)
- Flexible question order and phrasing

Structured interview

- Set questions (questionnaire)
- Less flexibility

This project will use semi-structured interviews.

Interview preparation

It is important that time and effort are spent on preparing for an interview. Some tips include:

- Pre-interview research – read, watch, listen, learn about the topic you will speak about.
- Have a logical but flexible order of topics
- Focus on your research questions: ‘what do I need to know?’
- Make sure language is easy to understand.
- Record ‘cover sheet’ information (name, age, gender, position etc) – this will give backgrounds and contexts to the people you interview, as well as provide help with quantitative material.
- Use good quality equipment.
- Find an appropriate space for the interview (quiet, no interruptions).
- Make yourself familiar with the interviewee’s world, so that you will be able to understand their remarks.
 - E.g. I’m sending you to interview the technical advisor on epidemiology at **OIE**, who talks to you about their **white paper** on strategies to prevent **zoonoses**.



- E.g. I'm sending you to interview the technical advisor on epidemiology at OIE, *the world organisation for animal health*, who talks to you about their white paper (*an authoritative document intended to fully inform*) on strategies to prevent zoonoses, *the types of disease that pass from an animal or insect to a human*.

As veterinarians you will likely understand the terms in the above examples, however, don't assume that your informants or research assistants will understand jargon. Alternatively, you may need to make yourself familiar with the cultural and social worlds of informants, to understand their remarks. *Importantly, if you don't understand something, (or your informant doesn't understand something) follow it up and clarify.*

Setting up the interview

It is also important to approach the interview in a calm, professional and confident way. Some tips include:

- Build rapport – don't just dive straight into tough questions. Before you start make some small talk and establish some relationship. This will set respondent at ease and make it more likely they will talk openly with you.
- Reinforce anonymity and confidentiality and obtain consent to interview and record the interview *every time*.
- Stress the voluntary nature of participating. Informants should not feel they have to be interviewed and they can stop the interview at any time.
- Answer any questions they have about the study/article and how the data will be used.
- Make sure the setting is comfortable – This can change according to the needs of people involved.
- Remember to press record on your audio recorder! This is so we can return to the audio later and no information is lost.

Ways of asking questions

What is an 'open-ended question'?

There are two types of questions: Closed questions and open-ended questions.

Closed questions have 'yes' or 'no' as the answer. For example:

- Did you have breakfast this morning? (Yes)
- Do you enjoy football? (No)
- Is Timor Leste a beautiful country? (Yes)

Open-ended questions are questions which can have many different responses and are likely to be lengthier and gain more information.



- What did you have for breakfast this morning?
- How do you play football?
- Why do you think Timor Leste is beautiful?

It is best to avoid closed questions and ask open-ended ones in order to get more detail. If you accidentally ask a closed question, don't worry. Follow it up with an open-ended one. For example:

Interviewer: Is Timor Leste a beautiful country?

Informant: Yes.

Interviewer: **Why** do you think it's a beautiful country?

Informant: Because there are lots of beautiful beaches.

Probing questions

Probing questions are basic follow up questions to ask if an informant doesn't give you enough information or clarity on something. Probing questions can include questions like:

- Can you give me an example?
- What do you mean by that?
- Can you explain further?

Framing an interview

Because an interview is a 'special conversation' that involves finding out specific information, it is important you don't go off topic, and that you get the information you need. If you aren't careful, interviews can wander into different topics that aren't useful to you. As such there are different ways of framing or approaching parts of the interview. (Note: this will be discussed in the training in more detail).

- **Introductory/opening** ("Tell me about...")
- **Follow-up** *don't just let something go. E.g. What happens now?*
- **Probing** (*Can you explain further?" "Can you give me an example?"*)
- **Specifying** ("What happened next?")
- **Direct** (*What do you think about...?"*)
- **Indirect** ("What do most people think about...?"")
- **Structuring** ("Let's move on to...")
- **Silence** – they're important so don't fill them!
- **Interpreting** ("Do you mean that...?"")



Golden rules of Successful interviewing

1. *Knowledgeable: familiar with the focus of the interview.*
2. *Structuring: gives purpose for interview; rounds it off.*
3. *Clear: asks simple, easy, short questions; no jargon.*
4. *Gentle: lets people finish; gives them time to think.*
5. *Sensitive: listens to what is said and how it is said.*
6. *Open: responds to what is important to interviewee.*
7. *Steering: knows what he or she wants to find out.*
8. *Critical: is prepared to challenge what is said.*
9. *Remembering: relates what is said to what has previously been said.*
10. *Interpreting: clarifies and extends meanings of interviewees' statements.*

Other important points...

- Avoid talking too much – the interview is not about you, the interviewer, it is about the informant. Let them do the talking.
- Avoid leading questions. These are questions that encourage the informant to answer in a way you want them to.
 - E.g. “Don’t you think smoking is bad?”
 - Try – “How do you feel about smoking in today’s society?”
- Try to avoid questions with ‘Why?’ This is not always possible but sometimes it can imply judgement and make informants uneasy.
 - Instead of – “why did you argue with your boss?”
 - Try – “Can you tell me about the argument with your boss?” Alternatively, “how come you argued with your boss?”
- Active listening. This shows the informant you are really listening to them. Includes reaffirming comments informants say, eye contact, positive body language like nodding etc.
- Ending the interview. It is always good to have a clear ending to the interview that asks finally if there is anything else important the informant wants to say, that they didn’t get to say already – Always ask: “Is there anything else you would like to tell me today?”

Note taking

Taking notes is a very important step for interviewing. However, it can be rude and disruptive to stop and take notes in the middle of an interview. Therefore, it is best to take only minimal notes during



the interview and make more notes as soon as the informant leaves (this will be detailed and practiced in your training workshop). Furthermore, for this project we will not be making full transcripts of interviews (where the interviewer types out word-for-word what the informant says). As such, it will be important that you play back the interview and take some notes on the key points made.

Notes to make after the interview

- How did the interview go (was the informant talkative, cooperative, nervous, well-dressed/scruffy, etc.?)
- Where did the interview take place?
- Did the interview open up new points of interest that you hadn't thought of before?
- What was the setting like (busy/quiet, many/few other people in the vicinity, new/old buildings)?

Ethics and Safety

It is extremely important that all research is conducted ethically and safely, for everyone involved. This includes, the informants, the interviewer (and wider team), but also the wider community.

Key principles of ethical research:

- *Do no harm* – No one should experience harm as a result of research participation
- *Always act in the best interests of the informant* – do everything you can to make them feel comfortable.
- *Voluntary + informed consent* – Enable research participants to be free to make their own decisions on participation – they don't have to participate if they don't want to (see consent form in Appendix 1)
- *Be non-judgmental*. Sometimes we won't agree with the information or opinions of our informants. However, we want them to tell us what they *truly* think and know. People are much more likely to do that if they don't feel like they will be judged badly.
- *Safety* – theirs and yours. Think about the information you are discussing – is it sensitive or likely to get anyone in trouble? Think about the space you are interviewing in – is it safe and private?

These principles need to inform all aspects of the research project.

Methods and Tools for this study

The following section covers the different methods and tools used for this study. More detail and practice with these tools will take place in the training workshop.

Key informant interviews (KIIs)

Key informant interviews (KIIs) are simply one-on-one interviews conducted with an informant who is identified as holding 'key' information. For the purposes of this study, these key informants will be **purposely selected** (in consultation) for their expertise and 'higher-up' role in the value-chain. These



‘experts’ will have a broad overview of the regional animal industries; such as central or regional Veterinary Service animal health or industry staff, veterinarians, community leaders, regulatory officers, wildlife experts or industry leaders.

Purposive selection is where interviewers choose the informants based on who they think would be appropriate for the study. This is used primarily when there is a limited number of people that have expertise in the area being studied, or when the interest of the study is on a specific field or a small group.

In-depth interviews (IDIs)

IDIs will be those interviews conducted with informants in the field – i.e. farmers, market management, trading personnel, transporters, and other people identified in the value-chain. The method for identifying IDI informants will be using a **snowball sampling technique**. Following the informants/information will ideally mirror the value-chain itself (i.e. following the information through the same value-chains that goods/animals flow, to obtain an understanding of how value-chains operate). The first informant in the chain will be purposely selected starting with a key role in the community or the identified ‘first’ position in the value chain.

Snowball sampling is a technique where existing study subjects recruit future subjects from among their acquaintances. This sampling technique is often used in hidden or unknown populations, which are difficult for interviewers to access. Such samples can be biased because they give people with more social connections an unknown but higher chance of selection, but the technique can lead to higher response rates. Furthermore, for this project, which is determining pathways in a value-chain, the various pathways animals/goods are passed through are unknown to outsiders, and therefore cannot be purposively selected from the outset.

Focus group discussions (FGDs)

FGDs are useful for exploring particular issues, with many people ‘problem solving’. This method will be conducted by two facilitators (one primary facilitator, one note taker who can swap roles) with local farmer/ community groups not only to explore themes at the starting point for animal and product movements in the value chain, but also around incoming animal and products. Groups should be no larger than eight people. Refreshments should be provided partly as incentives and because FGDs are a considerable time commitment for participants.

Activities are a good way to facilitate discussion and are excellent for ‘breaking the ice’ between participants and facilitators and then understanding particular problems or movements of animals/products etc.

Two proposed activities:

Community mapping – whereby participants map the trajectory of animals/goods, identify the drivers for movement and linkage points, problematise issues along the way and include some context of volumes and seasonal (or other) variations. The group participates in physically drawing a separate map/chain for all relevant animal types on butcher’s paper (or similar) and discussions are facilitated throughout the activity to understand people’s perspectives.



Free-listing – Guided by a key question, participants are asked to (freely) list certain topics and components of the processes and rank them in order of perceived priority/importance. Useful in understanding stakeholders' perspectives on importance of issues. In this instance, it would be used to quantify which types of animals and products are heading across the international border, which are coming in from across the border and what linkage points exist to drive those movements (such as livestock raising areas, abattoirs, breeding centres, live markets, fattening areas, etc). It may potentially also include to gauge perceptions on disease problems related to transborder movement.



Transborder Animal Value Chain Analysis

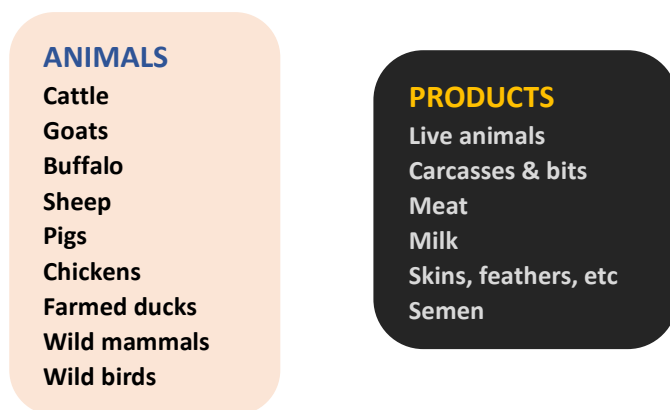
What experience have you had with using risk pathways in your work?

MODULE 3 - Analysis to construct value chains and risk pathways

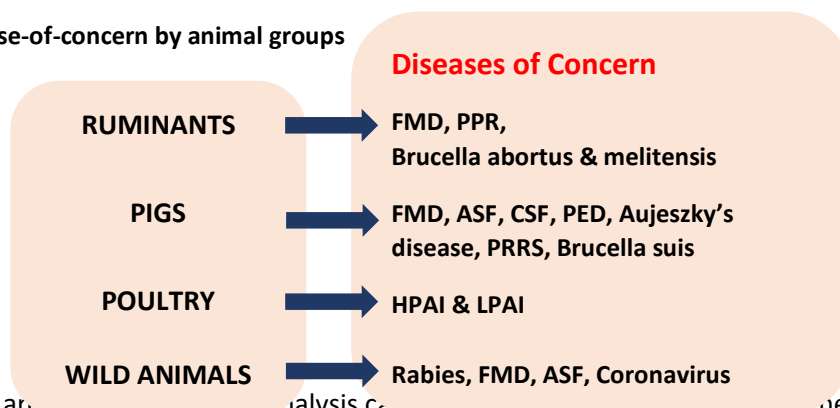
This module describes the specific methods to identify where significant amounts of livestock and products are moving across specified borders and what the drivers are.

WHAT: The aim of value chain analysis is to identify, quantify and map the main human-assisted movements of specified animals and their products across national borders between designated sites. A series of sociological methods can be used to investigate the chains that link production systems, markets and consumers and other causes of animal and products (Diagram 1) transborder movement. A list of products to include in the analysis can be developed by looking at modes of spread of specific diseases-of-concern for the animal species of interest. The diseases-of-concern list (Diagram 2) for this project was made up of GFTAD Asia and Pacific regional priority diseases (FMD, PPR, 'Swine Diseases', HPAI & LPAI, Rabies), to which was added Brucellosis and Coronavirus, based on past and current issues. A product list could be developed for any disease or group of diseases using this approach.

Diagram 1. Animals and their products to include in the analysis



Diag. 2. Disease-of-concern by animal groups



WHERE: The area of analysis can be defined by the risk of animal disease transborder introduction. It can be conducted for an entire border or for a specific region.



The actual sites for conducting the regional activities can be decided beforehand but may be selected through conducting the initial activities such as from the Key Informant Interviews. The collection of sociological data to construct a value chain can be quite time and resource intensive but the benefit is having high quality information to base decisions and actions on.

WHAT: The questions used in the study are based on the ways that animal and animal product movement can spread the diseases as discussed above. We are trying to determine:

1. What (legal and illegal) amount of movements of the listed animals and products occur between the designated sites on either side of those borders and the main linkage points that drive them?
2. How frequently are those movements occurring and what main variables (such as seasonal variation) drive them?

The sociological methods can be chosen as appropriate. Sociologists can be used to oversee this process and to analyse the results. For this study, we will be using some of the tools mentioned in Module 2:

Key informant interviews (KIIs)

Interviews will be conducted with selected key informants with expertise in the value-chain. This sample will be chosen from pools of 'experts' with a broad overview of the regional animal industries; such as central or regional Veterinary Service animal health or industry staff, veterinarians, community leaders, regulatory officers or industry leaders. This will give an overview of the regional livestock sector including all the main livestock products in the region. The next tools will be refined according to the information gathered and gaps identified at this stage. The number of key informants to be interviewed will vary. KIIs will generally be conducted for 1 hour or less for each participant, will be audio-recorded with informant consent and detailed notes taken for analysis. Participants will have a prepared list of questions.

Focus-Group Discussions/activities (FGDs)

FGDs are useful for exploring particular issues, with many people 'problem solving'. These can be conducted concurrently to IDIs (i.e. in the same week of fieldwork) so that points raised in either method, can be raised and discussed (verified) in the other. This method can be conducted by two facilitators (one primary facilitator, one note taker who can swap roles) with local farmer/ community groups not only to explore themes at the starting point for animal and product movements in the value chain, but also around incoming animal and products. Groups should be no larger than eight people. Refreshments should be provided partly as incentives and because FGDs are a considerable time commitment for participants.

Activities are a good way to facilitate discussion and are excellent for 'breaking the ice' between participants and facilitators and then understanding particular problems or movements of animals/products etc.

Two examples of group activities:

1. Community mapping – whereby participants map the trajectory of animals/goods, identify the drivers for movement and linkage points, investigate issues along the way and include some context of volumes and seasonal (or other) variations. The group



participates in physically drawing a separate map/chain for all relevant animal types on butcher's paper (or similar) and discussions are facilitated throughout the activity to understand people's perspectives.

2. Free-listing – Guided by a key question, participants are asked to (freely) list certain topics and components of the processes and rank them in order of perceived priority/importance. This is useful in understanding stakeholders' perspectives on importance of issues. In this instance, it would be used to quantify which types of animals and products are heading across the international border, which are coming in from across the border and what linkage points exist to drive those movements (such as livestock raising areas, abattoirs, breeding centres, live markets, fattening areas, etc). It may potentially also include to gauge perceptions on disease problems related to transborder movement.

For FGDs allow 2 – 2.5 hours for completion. Audio recordings can be taken with participants' consent to provide a backup of the group discussions. Detailed notes will be taken by one of the two facilitators. Any maps and lists produced in the FGDs should be collected for the final analysis.

In-depth interviews (IDIs) – Chosen using the 'snowballing' technique.

IDIs will be those interviews conducted with informants in the field – i.e. farmers, market management, trading personnel, transporters, and other people identified in the value-chain. The method for identifying IDI informants will be using a snowballing technique, (based on leads from the FGDs and potentially also the KIIs). Following the informants/information will ideally mirror the value-chain itself (i.e. following the information through the same value-chains that goods/animals flow, to obtain an understanding of how value-chains operate). The first informant in the chain will be purposely selected starting with a key role in the community or the identified 'first' position in the value chain.

A chosen number of in-depth interview informants will be engaged across the whole project. IDIs will be conducted for 1 hour or less, audio-recorded with informant's permission and comprehensive notes translated and transcribed into English for analysis using NVivo qualitative analysis software.

An IDI information collection template with questions will be provided for participants to use as checklists and for recording notes.

Analysis

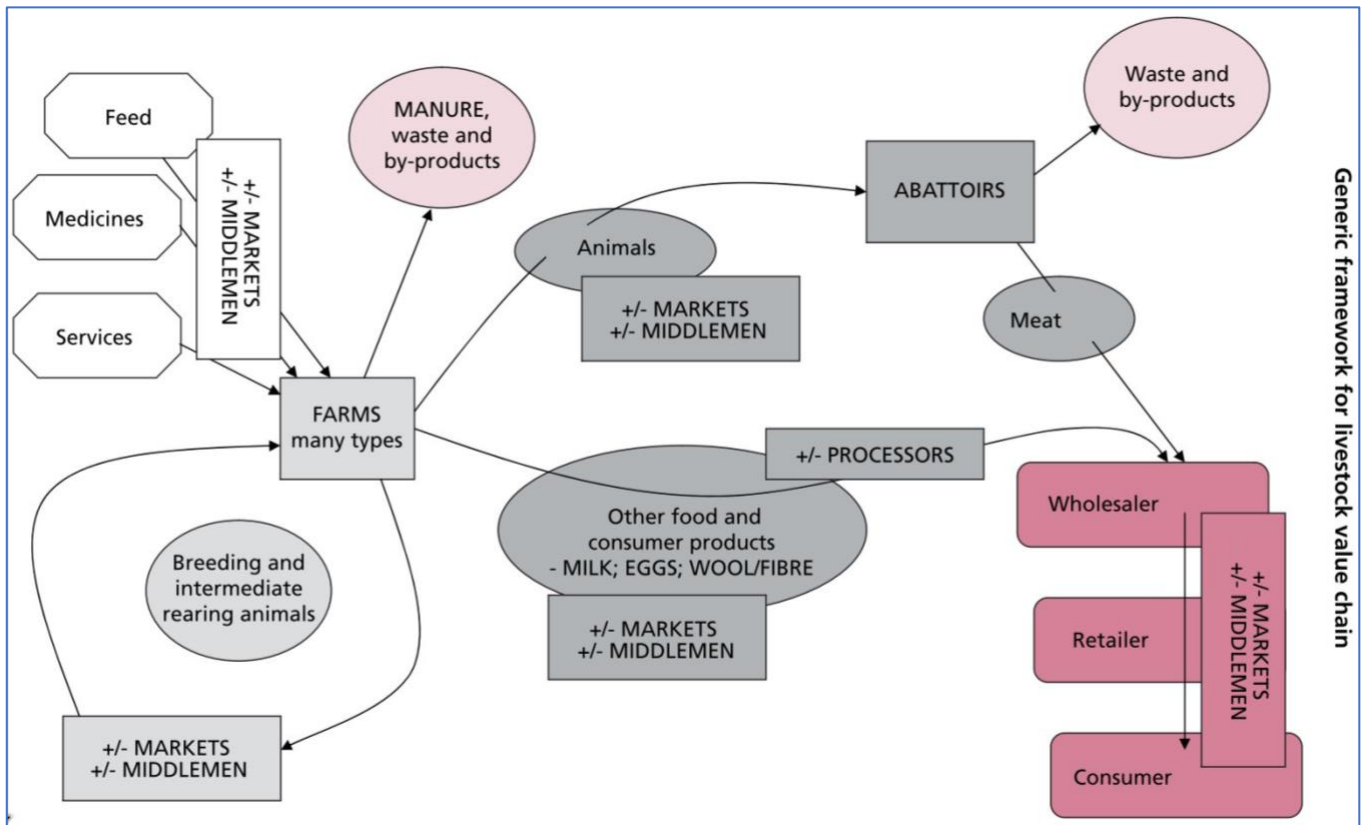
Dr Homan will analyse all the data collected from the questionnaires, notes and recordings, using a specific sociology data analysis program. From this will be generated:

1. *A description of the animal value chain (value chain mapping and diagrammatic flow chart);*
2. *An identification of the important routes, people, groups and organisations involved in the chain;*
3. *An assessment of the profitability, power and institutional environment of the key people, groups and organizations involved in the chain.*



The value chains that are constructed will be the basis for conducting risk analysis on the movement of animals and products. This will focus on the likelihood of the spread of animal diseases across borders to develop a priority list of risks which can then be used to generate risk reduction actions. These actions will have the benefit of greater understanding of why the movements are occurring.

Diag. Generic framework for livestock value chain (courtesy FAO)





Transborder Animal Value Chain Analysis

What experience have you had with risk analysis for animal diseases: qualitative and quantitative?

MODULE 4 - Practical qualitative risk analysis for animal diseases

This module describes the concept and practice the practical application of risk assessment linked to animal movement and based on risk pathways described through value chain analysis.

One of the biggest advantages of conducting risk analysis is actually the process of taking the time to stop and think about what foreseeable events could happen, rather than just reacting when they do occur.

There are many different ways of conducting risk analysis, which may all be useful in different situations. The basic purpose of conducting risk analysis is to see what could go wrong and how those things can be prevented from happening. This process does not need to be quantitative to be useful. It does not always need to be highly technical and driven by mathematical probability. It needs to use methods that (a) highlight the possibilities of events occurring and (b) rank those risks, so that appropriate preventative actions can be taken. Qualitative risk analysis is a useful method of doing this for the management of transborder animal disease spread.

This module focuses on how the principles of formal qualitative risk analysis can be applied to disease management in transborder value chains. Value chain risk analysis can use the same principles and tools as standard risk analysis. This section provides a revision of the principles of qualitative risk analysis and a guide to applying them to value chain analysis results.

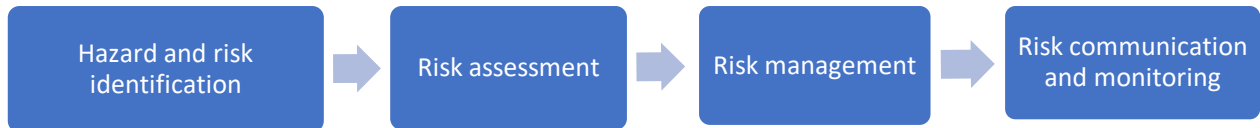
Once a quantified assessment of transborder movements of animals and animal products has been established, the risk of each of these pathways can be considered. It is completely appropriate to use a **qualitative risk analysis** process for this to provide a logical and uniform framework for decision-making. Qualitative risk analysis can be used to support decisions on managing certain activities or, alternatively, to prohibit activities because no practical risk reduction measures are identified.

Risk analysis is looking for the predictable surprises: the disasters you should have seen coming.



Risk analysis framework

For a value chain qualitative risk analysis, the following framework is suggested. The specific risk process can be modified to fit with existing national guidelines and the parameters can vary in line with local requirements. The steps in the process are:



STEP 1. Hazard identification and risk identification

It is essential to define the risks that you are analysing. This should start by defining each specific risk stated in a whole sentence, not just by a category or a vague statement.

For value chain risk analysis, the hazards are the specific animal diseases that can be spread along the chain. The risks to analyse are the risks that animal diseases are introduced from point along the chain to another point and spreads. For this project, these will be considered as the risks of a specific animal disease being spread along a specific value chain pathway across an international border. A list of these risks will be identified through the process of interviews and workshops. One risk will be related to each of the animal species and movements identified through this process.

The specific risks to be analysed should be stated as a sentence, such as: *“The risk is that disease X could spread to Country B from Country A by a specific animal movement or animal product movement pathway identified.”* The definition of ‘spread to’ for this project will be that the disease agent is introduced into a second country and it transfers locally to a susceptible species.

For example: One risk to analyse is the risk that “FMD could be introduced into Country B from Country A through the illegal movement of live goats from a certain region in Country A to the village market in a town in Country B”.

STEP 2. Risk assessment

Each risk identified needs to be assessed. This involves an assessment of both the likelihood of an animal disease incursion through the specific pathway and the consequence of that incursion through that pathway. These are combined using a table to calculate a rating of the risk of that disease. The risk ratings can be used to prioritise risk management decisions.

- a. **Likelihood.** Use a list of defined rating categories (see example table below) to rate the likelihood of the spread of the animal disease occurring via that specific pathway. Use expert opinion to assign the likelihood rating values.

	Likelihood rating
A	Almost certain
B	Likely
C	Possible
D	Unlikely
E	Rarely if ever would occur



- b. **Consequence.** Use a list of defined consequence categories (see example in the table below) to rate the consequence of the spread of the animal disease occurring via that specific pathway. Use expert opinion to assign the consequence rating values from 1-5.

Rating	Consequence	Consequence Description
1	Insignificant	Negligible commercial impact, single property or contained, low financial loss
2	Minor	Plant pest on a few properties, medium financial loss
3	Moderate	Widespread pest, high economic loss, high financial loss, limited public health risk
4	Major	Major public health risk; high economic implications / trade risk to region/state
5	Catastrophic	Major national economic implications; significant public health risk and/or human deaths

- c. **Risk rating and indication of the response needed.** Use a table like the one below to calculate the risk rating by combining the likelihood rating and the consequence rating.

		C – Consequence Rating				
		1	2	3	4	5
L-Likelihood Rating	A	M	M	H	X	X
	B	L	M	M	H	X
	C	L	L	M	H	H
	D	N	L	M	M	H
	E	N	N	L	M	H

This will give a level of risk rating from 'X' to 'N' as follows:

Level of Risk Rating
X - Extreme
H - High
M - Medium
L - Low
N - Negligible

A rating of the type of response indicated for each specific risk based on its risk rating can be evaluated using a response table such as the following:

Level of Risk Rating	Response
X - Extreme	Urgent attention
H - High	Intervention required
M - Medium	Active management
L - Low	Ongoing monitoring
N - Negligible	Acceptable risk



STEP 3. Risk management is the identification and implementation of risk reduction measures. This can involve:

- a. risk appraisal;
- b. possible options;
- c. implementation of chosen risk reduction measures.

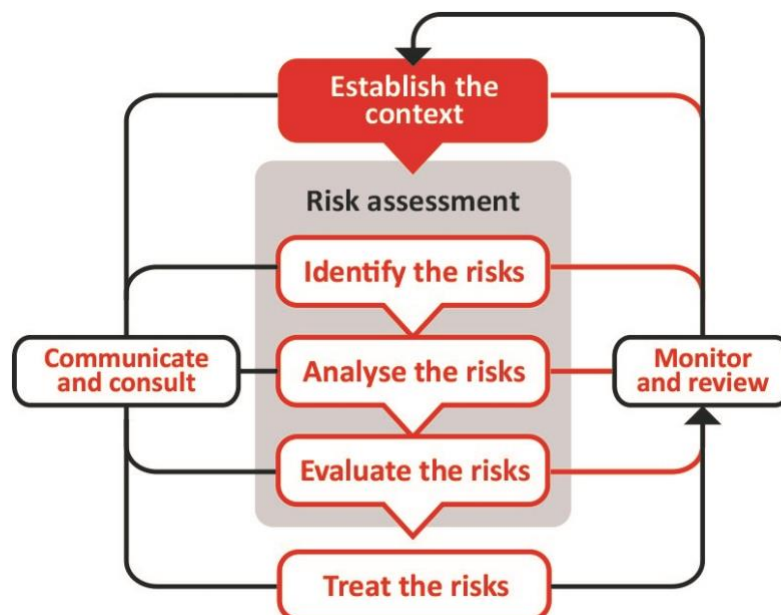
We can use the information learned through the sociological approach about why risks are occurring and what human behaviours are driving them to construct better risk reduction measures. This may involve aiming measures at the cause of the activities rather than only trying to use regulation as the only tool. For certain risks the addition of specific public information campaigns may be useful tools to include.

STEP 4.

Risk communication. Once the various disease risks and risk reduction measures have been identified it is essential to make sure that everyone who needs to know the risks and the control measures have been adequately informed.

Risk monitoring. It is important to monitor risks over time to see if the pathways identified are still valid, if there have been significant changes in the risks over time, and to see whether risk reduction measures have been successful.

Diag. A similar way of looking at the risk analysis process.



Next session we will conduct a risk analysis process using a hypothetical situation. You will be asked to assess the risks and to think about applying the information gathered to develop risk reduction measures.



Transborder Animal Value Chain Analysis

What experience have you had with applying risk reduction methods?

MODULE 5 – Using value chain analysis results for cross-border animal disease risk reduction.

This module reinforces that the purpose of conducting value chain analysis is to find better ways to prevent or manage transborder animal disease spread. By using sociological tools to better understand the risks of transborder disease spread it is easier to design a risk management plan for preventing transboundary animal disease incursions.

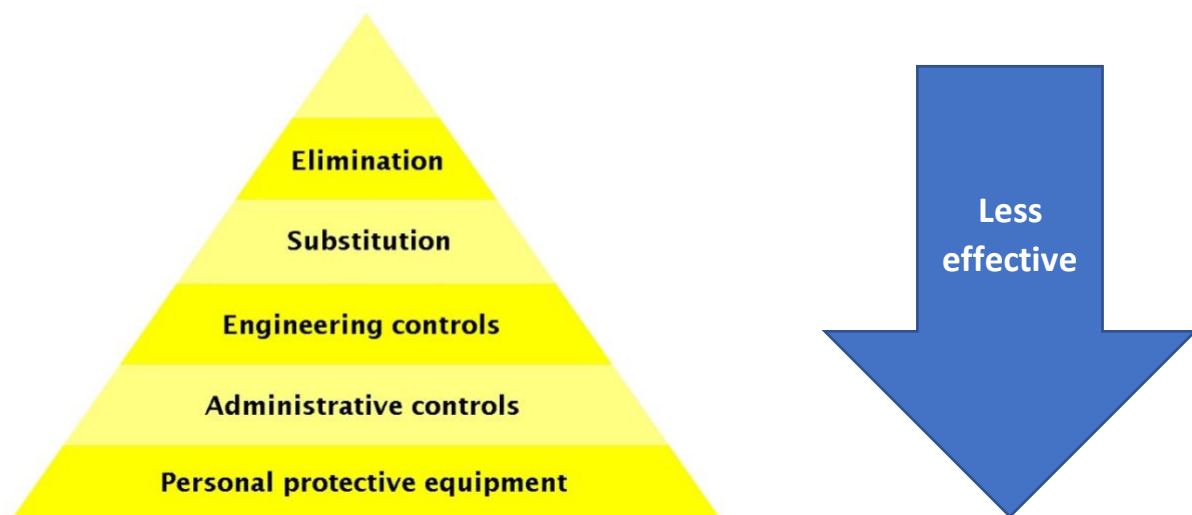
Solutions

The outputs from value chain analyses are maps of the border areas and diagrams showing cross-border animal and product movements for the region. These can be used to show the risk pathways for diseases for the various species. Risk analysis of the value chain pathways will give a risk rating for each of these pathways, allowing for the design of appropriate risk reduction methods. This can enable each of the country National Veterinary Services to plan practical and effective transboundary animal disease entry mitigation steps as well as targeted surveillance programs.

Risk reduction measures

Once the specific pathways for animal disease spread have been identified and the risks of each have been rated, we can consider the most appropriate risk reduction measures that could be applied. These may largely rely on regulations and compliance but from the information we have generated through the sociological approach, we may have other options. By understanding the drivers for the human behaviours that are causing each of the risks we can try to develop some risk reduction measures that are aimed at the reason for the activities. Controls can be combined as needed. We can also consider the principle of the 'Hierarchy of controls' which looks at which types of risk reduction approaches are likely to be most successful.

'Hierarchy of controls' for risks





The 'Hierarchy of controls' is a list of the type of controls that are rated from the most successful in controlling risks through to those that are generally the least effective. While this is not an exact science it can be a useful tool in helping to decide on which controls to use.

For the specific risks that are identified, risk reduction controls can be implemented at each of those levels.

1. **Elimination.** The best controls are those that totally eliminate a risk. Elimination can mean implementing major change and is not always possible to achieve.
2. **Substitution.** A process can be used that replaces the process that produces the risk. For example, if moving livestock creates a risk, then moving frozen meat products may be a substitute.
3. **Engineering controls.** An example of engineering is designing systems to improve control. For reducing the likelihood of animal disease spread, this could be using quarantine pens to isolate introduced animals for a period of disease monitoring.
4. **Administration.** This refers to the rules that are put in place to reduce risk. For example, legislation is an administrative control. As we know, making something illegal does not always stop it happening so it is not the most effective tool on its own. Clear communication of the rules and rigorous law enforcement obviously helps ensure compliance with the laws.
5. **PPE.** Note that PPE is in generally actually the least effective type of disease control to implement. However sometimes it may be the only practical option.

Selecting risk reduction measures

Disease risk controls need to be implemented in line with the level of the risk rating for each of the identified risks. (See Module 4).

Level of Risk Rating	Response
X - Extreme	Urgent attention
H - High	Intervention required
M - Medium	Active management
L - Low	Ongoing monitoring
N - Negligible	Acceptable risk

It is useful to list in a table the risks that were identified by their level of risk rating. Then possible actions to control each of those risks can also be listed.

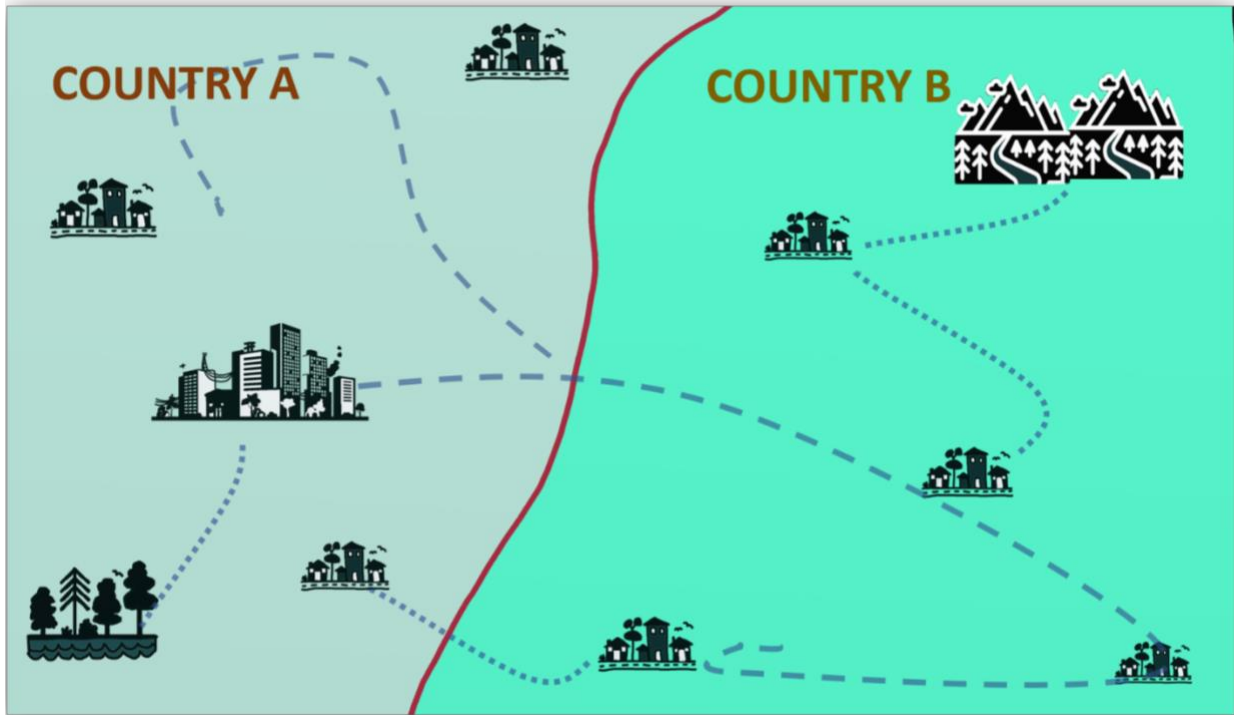
Types of disease spread tools available

There are a range of types of policy options and actions available to prevent or stop animal disease spread. The selection of the best one, or more likely, best combination will vary for each disease and the situation. These can include movement controls and regulations as well as education. Using the sociological investigation as to the reasons for risky activity helps us to be able to implement actions which also target the drivers of the risks.



Hypothetical Exercise

We will work through a hypothetical scenario to develop an understanding of risk pathways and disease spread control actions that may be implemented. This will be based on a border between Country A and Country B as below.



Conclusion

Animal health professionals have many roles in value chains. They facilitate operation of the value chain by supplying advice and services aimed at improving livestock health and production; they also control the actions of people in the value chain by regulating livestock movements and marketing and by enforcing measures in response to disease outbreaks. The function of providing advice or instruction is important in order to influence and/or change behaviour. Understanding the motivations (economic and others) of people in value chains is important to be able to develop good animal health policies and to deliver effective communication messages.



Appendix 1: Interview consent forms template

Key Informant Interview (KII)/ In-Depth Interview (IDI) Tool Consent form (adapted for FGDs).

TO BE READ BY FACILITATOR AT START OF THE INTERVIEW

Hello, my name is _____ and I am an independent study project participator working with _____ to help them learn about the community. If you don't mind, I would like to ask you some questions about a study we are conducting into the different ways people sell or move animals and animal products across borders to help us understand how we can reduce risk of diseases being spread. There are no right or wrong answers.

Should you choose to participate, the interview will take approximately one hour.

You can choose to stop the interview at any time, or to skip any questions if you like. I want to assure you that all of your answers will be kept strictly confidential. I will not keep a record of your name or address. The information you give will be presented in a way that does not identify you.

Your participation is completely voluntary. There will be no negative consequences if you chose not to participate in the study. But your experiences could be very helpful to other people in ___[site name] ____. We will use the information that you provide to improve the ways we assist livestock farming, manage animal disease and protect health in the community.

We will audio record the interview to make sure that we remember what is said. **[Show people the recorder]**. These recordings will be destroyed once we have taken notes. Is that ok with you?

Questions

Do you have any questions for us? If you have any questions about your participation in this study at any time, you can contact: **Central National Veterinary Service contact** [TO BE INSERTED]

Age Restriction

To participate in this study you must be over 18 years of age. Are you over 18 years old?

1. Authorization to be marked by facilitator:	Yes	No
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Consent

By responding "yes", you are indicating that you fully understand the information I just read to you and agree to participate in this interview.

2. Authorization to be marked by facilitator:	Yes	No
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