



**Food and Agriculture Organization
of the United Nations**

**Biosecurity situation assessment for livestock,
plant and food areas in Bhutan**
Online meeting report



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Required citation:

FAO. 2020. *Biosecurity situation assessment for livestock, plant and food areas in Bhutan. Online meeting report.* Bangkok.

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Abstract

The Biosecurity Policy of the Kingdom of Bhutan 2010 recognizes the importance of an integrated approach to maintaining Bhutan's biosecurity. Therefore, it identifies the need to develop a Biosecurity Strategy to guide the implementation of further activities to enhance biosecurity and food safety. While a significant amount of work to improve biosecurity has been undertaken since 2010, there is a clear and urgent need for the Bhutan Agriculture and Food Regulatory Authority (BAFRA) to develop a set of effective and prioritized, yet feasible, strategies and action plans to guide its activities over the next 8 years (i.e. a part of the 12th Five Year Plan (July 2021 – June 2023) and the 13th Five Year Plan (July 2023 – June 2028)).

In order for the Food and Agriculture Organization of the United Nations (FAO) to assist BAFRA to develop a Biosecurity Strategy and Action Plan for the period 2021-2028, it is necessary to re-assess the current situation to understand the current capacity and practices, needs, gaps and opportunities. Following an internal survey of BAFRA officials in both head and field offices aimed at understanding their needs and priorities, FAO together with a biosecurity expert, in collaboration with the BAFRA officers, conducted three video conference meetings for 1) livestock 2) food and 3) plant sectors to understand the current situation in further detail so that a better strategy and relevant action plans can be proposed.

This report sets out the key information obtained from the three virtual meetings, which used a mix of hypothetical and real scenarios to ask questions to the participants designed to obtain information about the current situation.

Keywords:

Biosecurity, plant health, animal health, food safety, One Health, national food control system, assessment, situation analysis, capacity development, Codex Alimentarius, regulations, communication, Bhutan

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Acknowledgments

Food and Agriculture Organization of the United Nations (FAO) would like to express its appreciation to the many people who contributed to the report. This report was prepared for FAO by Hugh Millar, an international consultant in biosecurity, and the development process was coordinated by Masami Takeuchi, Food Safety Officer (FAO). The drafting process involved various officials from Bhutan Agriculture and Food Regulatory Authority (BAFRA), namely Chador Wangdi, Kinley Penjor and Sonam Dorji N. Report editing was provided by Masami Takeuchi (FAO), with contribution from Yoenten Phuentshok (FAO) and Kinley Penjor (BAFRA). Technical contributions from several FAO colleagues are also herewith gratefully acknowledged.

Abbreviations and acronyms

ARDC	Agriculture and Research Development Center
BAFRA	Bhutan Agriculture and Food Regulatory Authority
DoA	Department of Agriculture
DoL	Department of Livestock
DRC	Department of Revenue and Customs
FAO	Food and Agriculture Organization of the United Nations
FMD	Foot and mouth disease
ICP	Integrated Check Point
IPPC	International Plant Protection Convention
MRL	Maximum Residue Limit
MoAF	Ministry of Agriculture and Forests
NPPC	National Plant Protection Centre
NFTL	National Food Testing Laboratory
RBP	Royal Bhutan Police
OIE	World Organisation for Animal Health
SOP	Standard Operating Procedure
WHO	World Health Organization

1 Introduction

1.1 Background

The Biosecurity Policy of the Kingdom of Bhutan 2010 recognizes the importance of an integrated approach to maintaining Bhutan's biosecurity through partnership and coordination amongst multiple stakeholders. The policy mentions the need to develop a biosecurity strategy to clearly detail the specific roles of the multiple stakeholders along with the development of strategies to achieve biosecurity and food safety. Currently, biosecurity activities are generally being undertaken on *ad hoc* basis, depending on emerging biosecurity and food issues, the availability of budgets/donors and are also dependent on the varying technical knowledge and vision of the implementing agencies and stakeholders.

While a significant amount of work to improve biosecurity has been undertaken since the development of the Biosecurity Policy 2010, there is an urgent need for the Bhutan Agriculture and Food Regulatory Authority (BAFRA) to develop a set of effective and prioritized, yet feasible, strategies and action plans to guide its activities over the next eight years.

1.2 Overview of the meetings

In order for the Food and Agriculture Organization of the United Nations (FAO) to support BAFRA to develop a Biosecurity Strategy and Action Plan for the period 2021-2028, it is necessary to re-assess the current situation to understand the current capacity, practices, needs, gaps and opportunities. As a first step in assessing the current situation, in July 2020 an internal survey was administered to understand the needs and priorities from BAFRA officers from both head and field offices. FAO together with a biosecurity expert, in collaboration with the BAFRA officers, conducted three virtual meetings for 1) livestock 2) food and 3) plant sectors to understand the current situation in further detail so that a better strategy and relevant action plans can be proposed.

The livestock sector meeting was held on 3 August 2020, and the food and plant sector meetings were held on 10 August 2020. In total, the meetings were attended by [82] participants. The list of participants is attached in Annex 1, and the agenda for the meetings is attached in Annex 2. Each session lasted for 90 minutes. The meeting used hypothetical scenarios for livestock and plant sectors as the basis to ask a range of questions, each designed to obtain information from BAFRA officers about the current situation. For the food sector, some real scenarios were used to obtain similar information. All scenarios and questions are attached in Annex 3.

1.3 Objectives

The specific objectives of these situation assessment online meetings were:

1. to understand the real situations of BAFRA with the current capacity and procedures in terms of 1) prevention 2) preparedness and early detection and 3) response of both biosecurity and food safety risks;
2. to identify the reality-based challenges for BAFRA officers in conducting everyday tasks;
3. to identify BAFRA's currently understood roles and responsibilities when collaboration is needed with other partner agencies; and
4. to understand what types of actions are feasible and what are not (to develop the strategy and the action plan).

2 Highlights of the meetings

2.1 Livestock sector

2.1.1 Border regulation of people, goods and livestock

Currently the Bhutan border, with India in particular, provides a difficult border control environment to monitor and screen all incoming people and goods. Almost all of BAFRA's focus is on legal entry points, being the ten designated points along the border where people and products enter Bhutan legally. Given the remote and mountainous nature of the Bhutan-China border in the north of the country, the entry points for people and goods are all on the border with India, and most goods come from or through India. These border check points have a control gate with police, immigration, customs, BAFRA and other relevant agencies present to regulate the entry of people, livestock and products. The human resources of BAFRA at these entry points are limited both in terms of number and technical capacity. Mostly the various agencies work separately and there is much scope for better collaboration at these entry points.

There is a need for improved screening protocols and facilities to be made available at the border. In Samtse, Nganglam and Lhamoizingkha there is an Integrated Check Point (ICP) where all the regulatory agencies are housed together and they share their responsibilities and work in a coordinated way. This is found to be more effective and efficient both in delivery of responsibilities and timeliness. However, there are numerous entry points along the border with India where unregulated movement of people, animals and products into and out of the country occurs. There are insufficient BAFRA staff and facilities available to properly control these entry points, though other agencies are present.

The focus of the meeting was on the current situation, however some staff responded to questions with suggestions for improvements to border control arrangements. These included:

- Collaboration with other agencies such as police, forest rangers, army that are posted in the illegal entry points is suggested as a way to better monitor and address the risks of importation of livestock or livestock products of potential biosecurity risk.
- Stronger surveillance systems are needed for proper and accurate risk assessment.
- Control of import of livestock/livestock products of potential risk can be done by importing only healthy or safe animals / products, and this requires stronger collaboration and relationships with Indian government officials.
- Adopt the ICP model for other entry points.

2.1.2 Border screening for passenger luggage

Border screening of passengers and their luggage is done manually with no use of equipment or physical aids, except for the Paro International airport. The human resource strength is not adequate for BAFRA to engage staff to do routine check of passenger's luggage daily.

For luggage that comes through the airport, usually it is assumed that imported products are safe and free of disease as it is already verified and certified by the countries from where it is being imported. Suggestions for improvement of the effectiveness of luggage screening included the use of machine-assisted technology (for example X Ray) and compulsory declaration forms for all routes of entry with penalties to offenders. In addition, it was suggested that access to testing kits for rapid diagnosis of pathogens from consignment samples would be ideal.

2.1.3 Current arrangements on importation of livestock and livestock products

A decision about whether to ban the import of meat products, based on risk of introduction/spread of livestock or zoonotic disease pathogens, is made by the government. This decision is based on a technical review /import risk assessment jointly conducted by BAFRA and the Department of Livestock

(DoL) and options are recommended to government for consideration. Products that are passed to be imported by BAFRA officials at the entry points are cross-checked for valid documents once they reach Thimphu or other inner districts by the respective BAFRA offices.

For the import of livestock and livestock products, an import permit is requested online by the importer, which is approved or rejected by focal officers at BAFRA head office. Once approved, the importation is authorized and arrangements are made for transport of the livestock and livestock products. Livestock and livestock products must be accompanied with zoo sanitary or animal health certificate issued by a competent authority in the source country. After the animals reach Bhutan, they are quarantined in designated quarantine stations for 15 days and observed for any abnormal signs. Samples are taken and sent to the National Centre for Animal Health laboratory (operated by the Department of Livestock) for disease screening. The list of diseases tested for is not extensive. After the results are obtained, animals are released into the country if there is no obvious biosecurity risk. It has proved to be very difficult to send animals back to source after they have entered Bhutan and test positive to an exotic pathogen during screening. A need for proper screening of animals at source is recommended, which would require better arrangements and collaboration with Indian officials.

2.1.4 Monitoring of feeding of meat products/meat waste to livestock

The Livestock Act (2001) and the Livestock Rules and regulations (2017) authorize BAFRA and DoL to restrict the feeding of food wastes to animals. The Livestock Biosecurity Guidelines place restrictions on the feeding of 'swill' (food wastes) to animals. Accordingly BAFRA and DoL can advise livestock owners on the risks and suggest mitigation measures like proper disposal of kitchen waste, or cooking of the kitchen waste before feeding. Most farms have basic biosecurity measures in place but feeding of pigs with kitchen waste and meat products from the kitchen is common as the farmers are not aware of the risk associated with such practices. Outbreaks of FMD have occurred in the past due to the feeding of food wastes to pigs.

2.1.5 Vigilance for, and early detection of, new diseases that may enter Bhutan

Farmers report to the livestock extension officer at the sub- district or district level for any unusual signs observed in their animals. After confirmation of a disease, if regulatory or biosecurity measures are needed, BAFRA and DoL are involved with clear roles and responsibilities. DoL is the lead agency for responses to disease incursions or outbreaks.

Farm biosecurity is a reason for farm visits by BAFRA officers and this includes 'backyard' livestock, such as pigs, and large commercial farms. The latter tend to be very secure and have good awareness of biosecurity. When visiting farms, BAFRA officers advise animal owners of any new or changing disease threats.

The Border Vigilance Team consisting of BAFRA officials regularly check for illegal trade and entry of meat and meat products in border areas. Similarly, during outbreaks of livestock diseases, DoL forms Veterinary Vigilance Teams to observe for signs of sickness and screen suspected animals along the border.

2.1.6 Preparedness plans

Development and maintenance of response plans for disease outbreaks are the responsibility of the Department of Livestock. Preparedness plans for emerging diseases are prepared jointly with relevant stakeholders and submitted to the review committee at the Ministry of Agriculture and Forests (MoAF) level for their support / clearance or for further submission and approval by the Renewable Natural Resources – Gross National Happiness Commission. None of the meeting attendees were

aware of or had attended any simulation exercises to test the plans that have been prepared. This would normally be the responsibility of DoL to develop and undertake.

2.2 Food sector

2.2.1 Border regulation of food products

Currently, food consignments that arrive at the border are physically verified against the import permits (where applicable) that have been issued before-hand. Physical verification of goods by checking the labels and expiry date is done by BAFRA staff. In general there are no established facilities to do this physical verification for large consignments, and it takes time and causes inconveniences to other commuters (for example traffic jams, parking issues) when trucks are stopped for verification.

Products already expired or those found deteriorated are separated from the rest and disposed off by BAFRA as per the Standard Operating Procedure (SOP) on disposal. Products detected through physical (visual) checking that are banned by the government are seized and disposed of. Some of these products are subjected to tests, with results submitted to the BAFRA headquarters.

Some samples are referred to National Food Testing Laboratory (NFTL). Not all food items that come in have certificates of safety/compliance. High risk foods such as meat, fish and raw dairy products do require certification from the competent authority in exporting country, mostly India.). However for most food items they are only cross-checked against the invoice and the import information that was approved by the BAFRA Head Office. Not all food items are checked. Random samples of products from a batch are checked. A Free Trade Agreement with India serves to facilitate the importation of Indian goods.

2.2.2 Current arrangements on importation of higher risk food

Recognized high risk food such as meat and meat products, fish and fish products, raw dairy products have to be accompanied by certification issued by the exporting country (mostly India). For such high risk products there is an existing institutional collaboration and understanding between BAFRA and the Export Inspection Council of India which provides certification and carries out specific tests as per the requirements of BAFRA. In addition to these agreements, BAFRA currently relies on the compliance to international standards and protocols which are printed on the package of the imported commercially packaged foods. This practice has been followed since 2013.

2.2.3 Post border inspection and compliance

Routine checking of shops and markets is undertaken for compliance with BAFRA's requirements after the sellers/business operators and vendors have been made aware of the norms and requirements. Frequency of visits by Food Inspectors will depend on the compliance level of the food establishment. For first time offenders, BAFRA issues a notice. For repeated offenders, punishment/penalties as per the Food Act of Bhutan (2005) is imposed. Field offices inform the BAFRA head office about the incidence(s) of non-compliance, and where appropriate submit sample(s) to NFTL for testing. As an example, this was followed for a recent case of a foodborne illness outbreak with a bakery suspected as the common source.

2.2.4 National Food Testing Laboratory – sample transport

BAFRA officers at the border posts can refer the food samples to the NFTL for testing. However the laboratory is situated away from the border posts, and there are practical and logistical difficulties in making efficient use of the laboratory for testing of food, particularly food arriving at the border.

Currently, samples are shipped using a variety of methods including public transport, private cars and postal services. Turnaround time is lengthy (more than two weeks, for far flung districts). Erratic road conditions, road blockages due to weather conditions (snow, rain, landslides and flash floods) and no

proper system of sample transport contributes to this. No proper sample transport facilities also can lead to deterioration of perishable samples. Postal services are only twice a week and will not deliver to the lab. A standard operational sample shipment protocol / process is not in place and would assist to ensure better use of the laboratory to support border operations.

2.2.5 Challenges identified with the existing food import system

Imported food items come into Bhutan via various modes and routes – there are many entry points and people can bring in items in small personal quantities in their private cars, in backpacks etc. It is therefore likely that most of these items are not checked and verified. BAFRA is a small agency in terms of human resource strength and a lack of enabling facilities at border crossing points adds to the challenge – for instance there are no inspection docks or designated areas for holding and inspecting goods. (This applies to all goods of biosecurity risk, not just food per se.)

Most of the checking and verification of incoming goods is currently by people using visual means. The current staffing capacity and laboratory capacity at the Biosecurity offices are not adequate to handle the various samples. There are no lab facilities to test plant samples and seeds for instance for pathogens or genetic materials. Information sharing and management between agencies dealing with import of commodities is not adequate and transparent at the moment. The information/data that Department of Revenue and Customs (DRC) maintains on all imported goods including food is not accessible to BAFRA, and even when some information is made available through direct requests, the information held by DRC is often not adequate to assist fulfilling BAFRA requirements. A joint information management system and strengthening of collaboration between the two agencies would greatly strengthen the system.

Considering the current capacity of NFTL and its accessible for testing food products at the border points, even if Bhutan implements food import control fully in future, BAFRA still has to depend on evidences of certification and testing by the exporting country for the import decisions. This means that we need to have effective mutual understanding with the exporting countries. BAFRA may also have to equip entry points with basic testing facilities to assist the import decisions.

2.2.6 Other food safety issues discussed

More Bhutanese are now aware of BAFRA's mandate and whom to report to. Increasingly food business operators and business owners are coming forward to voluntarily dispose of unsafe food and expired goods. There is a growing sense of taking ownership to produce, manufacture and retail safe foods. Creating an enabling environment for a stronger food safety culture as a long-term goal may be considered for the strategy plan.

As a way forward, since the small-scale producers (cottage and small industries) including home-based processors often lack adequate facilities and knowledge on safe food production, BAFRA can prioritize this sector to educate the producers on food safety and enable them to take ownership of the safety of food they produce.

BAFRA is also contributing to the MoAF's recently drafted strategy plan, in which BAFRA's strategic plans are also reflected. It will be good to ensure the proposed biosecurity strategy plan in development can be aligned with the Ministry's plan. A suggestion was to consider the provision or development of a methodology to measure or quantify a food safety index and biosecurity index as an action in the strategy plan.

2.2.7 Bhutan Agriculture and Food Regulatory Authority priorities for food safety

Meeting participants were asked to indicate which of the following four categories of food safety problems has been the biggest priority for them:

- 1) Banned, non-compliant, or expired food items.
- 2) Food with chemical residues above Codex Maximum Residue Limit (MRL).
- 3) Food with microbiological pathogen contaminations, or
- 4) Genetically Modified Organisms (GMOs) - not Living Modified Organisms (LMOs).

Food with microbiological pathogen contaminations (9 votes) and Food with chemical residues above Codex MRLs (8 votes) were identified by participants as the priority for BAFRA according to its mandate. However, of interest is that most of the BAFRA staff spend most of their time doing routine inspections of food items for the first category – banned, expired, or other non-compliant items. These are the ‘easier’ functions to carry out and can mostly be done through visual inspection, both at the border and at markets and shops within the country. Detection of pathogens and chemical contaminants which are generally ‘invisible’ requires access to laboratory support facilities, sampling materials and skills, sample preparation facilities, and effective sample transport systems which are currently not always available.

2.3 Plant sector

2.3.1 Border regulation of plant products and live plants/seeds

BAFRA depend on documents accompanying plants and plant products. In the documents (import permit), the reason for import and conditions, quantity, source of the plant/seed are set out. BAFRA officers verify the export certificates such as phyto-sanitary certificate, treatment certificate issued by the exporting country and import permit issued by the importing country. If the purpose of importation is for research, BAFRA regulate and ensure only a small quantity is imported as per the phytosanitary regulations, however there is no proper monitoring system after importations at the moment. BAFRA facilitate import of seeds/seedlings notified by the Varietal Release Committee wherein BAFRA is also the member. Information on pest and disease status and current outbreaks or events in the neighboring states of Bhutan is very helpful to assess risks, though it is difficult to reliably receive such information in real time.

If there is an outbreak in the region, the normal procedure is that the MoAF or the local government issues a notification to this effect. Following the notification, BAFRA initiates domestic quarantine and issuance of movement permits shall be implemented for movement of high risk products from the outbreak zone.

At the point of entry, if there is an increased risk of entry of a disease or pest the government bans the entry of risk goods. If there is a ban order from the headquarters on certain species (seed or saplings), field staff will regulate this and not allow such goods to enter the country. Currently for instance there is a ban on entry of citrus plants and seeds, but not citrus fruits for consumption. If detected, banned material is re-exported or seized and destroyed

BAFRA has a poor diagnostic capacity for plant pests at the border (and inside Bhutan). There is a lack of physical facilities to allow more effective inspection of goods at entry points - particularly for large trucks and when there is busy traffic. This includes a lack of inspection aids such as a set aside area for a simple ‘laboratory’ with magnifiers and low power microscopes for searching for and identifying plant pests infesting goods.

Currently, exporters/importers use the quarantine facility that India has established for trade between India and Nepal for plant quarantine and it is far from the Bhutanese border. There have been talks between Bhutan and India regarding building another plant quarantine station to support trade with Bhutan.

2.3.2 Border screening for passenger luggage

At the points of entry by land, vehicles are stopped and checked randomly at the designated entry points where BAFRA is located and luggage is physically checked for certain products. No technical equipment or machines are available to assist officers in scanning/checking the luggage at points of entry by land.

The field staff at the border gates have also not received any specialized training on this. Inadequate facilities for checking of luggage and shortage of manpower are key challenges. Further, Bhutan's long and porous border with India means there are many routes and entry points where goods including people's luggage are not checked by BAFRA. However, at the point of entry by Air at International Airport, Paro, beside physical inspection, luggage is also screened by X-Ray machines to assist detection of regulated / prohibited items.

2.3.3 Relationships with other border agencies

The working relationships between Bhutanese agencies at the border (Forestry, police, customs) are good but the agencies tend to work independently. There are ICP at some crossings where all relevant agencies work more closely together, but relationships between the agencies vary.

Better collaboration and integration would be very useful, starting with making the data on imports maintained by customs accessible to BAFRA. Ideally a joint information management system would be implemented to ensure not just sharing of data but also that data necessary for BAFRA's work is collected in the shared system.

The relationship and collaboration with the national biosecurity departments/agencies in India needs to be strengthened. BAFRA has already proposed a memorandum of understanding with India and annual meetings to discuss cross-border issues on biosecurity which currently do not regularly happen. BAFRA has also requested India's support in testing of samples for pesticide residues. Through such discussions, India has agreed to build another plant quarantine station in India near Phuentsholing.

2.3.4 Farm biosecurity; early detection of new plant pests/diseases that may enter Bhutan

Awareness and education of growers on farm biosecurity is led by the Department of Agriculture (DoA) while BAFRA checks that the biosecurity plans are implemented by the growers. Extension is mainly the role of DoA and BAFRA is the regulator. Generally, there is a good and symbiotic working relationship between BAFRA and the line Departments and their staff.

The seed business is allowed to both private and government entities. Based on the approval and technical clearance of relevant departments, they have to be registered with BAFRA for inspection and certification. Currently, citrus greening is declared as quarantine pests and damaged the citrus industry in the country. Citrus greening is a major concern for citrus growing and production.

Thus the National Seed Center (NSC), under DoA is only authorized agency for supply of citrus seedlings in Bhutan. NSC have branch office and identified location at Trashiyangtse and Bhur in Sarpang which produces citrus seedlings in protected environment and distributes to the growers. BAFRA inspects the registered nurseries to make sure biosecurity plans are followed and seeds and plants are grown in compliance to the minimum standards.

It is important to note that these days, many online businesses sell seeds and plants and by-pass the official controls. In efforts to curb this, BAFRA has established branch office at Bhutan Postal Corporation Ltd. at Thimphu mainly to check the illegal import and export of plant/plant products.

Although, agencies like DRC and Department of Trade are working together but lack of clear terms of reference and strong support is a challenge which should be considered in the Strategy Plan. BAFRA acts on notifications of pest/disease problems – field officers follow the notifications/ban orders, SOP, received from the government.

Most of such reports of unusual disease/pest in plants will be provided by DoA, agriculture extension office in the sub-district levels. BAFRA staff will get involved in the joint investigation (if needed) with the DoA and has responsibility for implementation of bans or restrictions as per the decision of the government after receiving reports from the field.

BAFRA directly collaborates with the National Plant Protection Center (NPPC) within DoA on plant health and biosecurity.

Once a serious insect pest or plant disease enters Bhutan it is very difficult to detect and manage with current resources and systems.

2.3.5 Preparedness planning to ensure effective response

A preparedness plan for BAFRA does not exist currently. BAFRA maintains a 'biosecurity checklist' and SOP for inspection and for education of the growers. Any documents related to pest and diseases containment is developed by NPPC under DoA in consultative with the relevant department and BAFRA as regulatory body to implement agreed restrictions. NPPC is the apex institution responsible for plant protection programme in the country.

In an event of pest outbreak, technical departments and units form a working group who come up with a SOP to guide response. A national Preparedness Plan for Plant Pest Outbreaks is an important need. BAFRA, as the National Plant Protection Office of the country, should have contingency preparedness plans to prevent the entry, spread and establishment of exotic pests and diseases and also to fulfil the obligation of International Plant Protection Commission (IPPC) and trade facilitation.

2.3.6 Plant pests and disease diagnostic laboratory

BAFRA had a seed testing lab which was handed over to DoA in 2010 following government's recommendation. Since then, BAFRA has been referring seed sample for test to Agriculture and Research Development Center (ARDC), at Bajo, Wangdue which is identified by DoA. However, all the seed health parameters could not be tested at ARDC testing laboratory and currently samples are referred to India and Thailand in emergency situations.

It was considered essential for BAFRA to have a laboratory for plant and seed testing to ensure timely decisions. To fulfill mandate, and in line with the obligation of being signatory to the IPPC.

It is desirable that BAFRA have its own central plant diagnostic laboratory with good network and collaboration with other reference laboratories in other countries.

3 Conclusions and recommendations

The video conference meetings with BAFRA staff in the three sectors of animal biosecurity, plant biosecurity and food safety provided a useful means for staff to provide information about the current situation and to a lesser extent, areas for improvement. This will directly assist the preparation of a Biosecurity Situation Assessment, which in turn will inform the development of a Biosecurity strategy plan for BAFRA. It is clear BAFRA has come a long way in the past 20 years, particularly over the past decade during which a number of activities have been carried out to strengthen the national biosecurity system. Many of the required elements for effective biosecurity are present, and BAFRA officers are doing a good job within the resource constraints which exist, but BAFRA needs to further

develop capability and capacity in a number of areas. Importantly, given the many activities which could ideally be undertaken, there is a need to strategize activities based on priorities and risks.

It is apparent that the culture and social structure in Bhutan provides the country with advantages when it comes to general compliance with rules and regulations, and respect for others in the community. Bhutan is a small nation with a tight knit community. This is an advantage; ‘everyone knows everyone’ and official activities can happen through personal communication and linkages, based on good personal relationships. Culturally Bhutanese people are quite selfless (not selfish) and tend to be compliant with what is asked of them by government. There is a good social structure making it easier to introduce new requirements and get compliance. In addition, the majority of the population are Buddhist, a religion which engenders respect for one another. These social, cultural and religious aspects to Bhutanese life do influence (lower) biosecurity risks.

Key high-level findings from the meetings include:

- A more effective relationship with major trading partners, including India, would significantly enhance BAFRA’s ability to better understand and manage regional biosecurity risks.
- The numerous crossing points along the border with India without a BAFRA presence limits Bhutan’s ability to effectively prevent or minimize the risks of entry of unwanted pests and diseases and unsafe or non-compliant food products.
- Improved physical facilities at BAFRA border posts, including diagnostic aids for plant pest identification, would allow more effective inspection and clearance of goods at entry points.
- There are difficulties in requiring pre-import checking and phytosanitary certification of plant material in India – currently the only plant certification facility is a long way from the Bhutan/India border crossings manned by BAFRA.
- There is no effective plant pest/disease diagnostic laboratory in Bhutan to support the BAFRA functions.
- There are logistical difficulties and long transport times for samples of imported food to get to the National Food Testing Laboratory from border inspection points.
- Enhancing collaboration between agencies at the border is essential to improving the effectiveness of the border screening and control function. A joint information management system with Customs would be of significant benefit. Collaboration through formal inter-agency agreements that delegate some biosecurity functions to agencies such as Customs would assist to address the clear risks of pests and disease entry at the numerous crossing points along Indian border where BAFRA is not present.
- BAFRA’s biosecurity responsibilities at the border are clear, however there is a need for better clarity on respective roles and responsibilities of BAFRA and the DoL and DoA, particularly with respect to preparedness planning, early detection of disease/pest incursions, and some aspects of response arrangements once a serious pest or disease is detected.

Annex 1. List of participants

1a. Livestock sector

#	Name and designation	Office	Sector
A. Animal Quarantine Office			
1	Jigme, Sr. RQO	Paro	Livestock
2	Sonam Tshering, Sr. RQI	Paro	Livestock
3	Kunzang , Sr. RQO	Phuentsholing	Livestock
4	Ranjit Rai, RQO	Phuentsholing	Livestock
5	Nima Tshering Lepcha, Sr. RQI	Gomtu	Livestock
6	Kezang Tashi, Sr. RQI	Samtse	Livestock
7	Sonam Dendup, Sr. RQI	Sarpang	Livestock
8	Kinley Rabgay, RQO	Gelephu	Livestock
9	Sherub Phuntsho, Sr. RQO	Samdrup Jongkhar	Livestock
10	Sonam Gyeltshen, Sr. RQI	Samdrup Jongkhar	Livestock
11	Yoezer Dema, RQI	Samdrup Jongkhar	Livestock
12	Bijey Kumar, RQI		
13	Madhan Kumar Ghalley, RQO	Nganglam	Livestock
14	Thinley Penjor, RQO	Nganglam	Plant
B. District offices			
15	Kaling Dorji, Dy. CRQO	Thimphu	Livestock
16	Sonam Choki, Sr. RQI	Thimphu	Livestock
17	Jigme Choden, RQI	Thimphu	Livestock
18	Tashi, Sr. RQI	Thimphu	Livestock
19	Dorji La, Sr. RQO	Punakha	Livestock
20	Damcho Norbu, Sr. RQI	Mongar	Livestock
21	Ugyen Peljor, RQI	Trashigang	Livestock
22	K B Mongar, Sr. RQI	Tsirang	Livestock
23	Gem Gyeltshen Sr. RQO	Wangdue	Livestock
C. BAFRA Headquarters			
24	Sonam Dorji, Sr. RQO	BAFRA HQ	Plant
25	Kinley Penjor, Sr. RQO	BAFRA HQ	Livestock
26	Mr Prakash Tamang	BAFRA HQ	Livestock

1b. Food sector

#	Name and designation	Office	Sector
A. BAFRA headquarters			
1	Gyem Bidha, Offtg. Chief, Food Quality and Safety Division (FQSD)	Headquarters	Food
2	Kubir N. Bhattarai, Dy. Chief, FQSD	Headquarters	Food
3	Tashi Yangzom, Senior RQO, Certification Services (CS)	Headquarters	Food
4	Dechen Choki, Sr. RQO, CS	Headquarters	Food
5	Jambay Dorji, Sr. RQO, Biosafety Section	Headquarters	Food
6	Chador Wangdi, Chief, Plant and Animal Biosecurity Division (PABD)	Headquarters	Livestock and Food
7	Kinley Penjor, Sr. RQO	Headquarters	Livestock
B. National Food Testing Laboratory (NFTL)			

8	Dechen Wangmo, OIC	NFTL	Food
9	Kinley Dorji, Asst. LO	NFTL	Food
10	Kanjur Wangdi, Asst. LO	NFTL	Food
11	Anil Rai, Sr. LO	NFTL	Food
12	Lethro Tshering, Sr. LO	NFTL	Food
13	Norbu Jamtsho, Asst. LO	NFTL	Food

C. Field Offices

14	Sonam Tenzin, Asst. RQO	Bumthang	Food
15	Kinley Lhamo,	Phuentsholing	Food
16	K B Tamang, Sr. RQI	Dagana	Food
17	Tashi Zangmo, Sr. RQI	Haa	Food
18	Yeshi Nidup, OIC	Lhuntse	Food
19	Tashi Samdrup, Sr. RQI	Paro	Food
20	Damchoe Norbu, OIC	Mongar	Food
21	Sonam Tshering, OIC	Punakha	Food
22	Thinley Zangmo, Asst. RQO	Nganglam	Food
23	Tashi Lhendup, OIC	Samtse	Food
24	Kinzang, Sr. RQI	Samdrup Jongkhar	Food
25	Subash Rai, RQI	Gelephu	Food
26	Sonam Dolma, Sr. RQI	Thimphu	Food
27	Rinzin Wangdi Sherpa, Sr. RQI	Tsirang	Food
28	Lham Dorji, Sr. RQI	Gelephu	Food
29	Pema Jamtsho, Sr. RQI	Trashigang	Food

1c. Plant sector

#	Name and designation	Office	Sector
1	Barsha Gurung, Dy. CRQO	Paro	Plant
2	Karma Namgyel, Sr. RQI	Paro	Plant
3	Tandin Wangdi, Sr. RQI	Paro	Plant
4	Sangay Lhamo, Sr RQI	Paro	Plant
5	Yeshi Wangchuk, Sr. RQI	Phuentsholing	Plant
6	Namgyal, Sr. RQI	Tashicholing	Plant
7	Suraj Tamang, RQO	Samtse	Plant
8	Kul B Blon, Sr. RQI	Gelephu	Plant
9	Singye Wangdi, Sr. RQI	Samdrup Jongkhar	Plant
10	Thinley Penjor, RQO	Nganglam	Plant
11	Tashi Dorji, Sr. RQI	Thimphu	Plant
12	Wangdi, Sr. RQO	Wangdue	Plant
13	Lalit Kumar Orari, Sr. RQI	Punakha	Plant
14	Chador Gyeltshen, Sr. RQI	Trongsa	Plant
15	Norbu Chogyel, Sr. RQI	Bumthang	Plant
16	Rinchen Wangmo, Sr. RQI	Lhuntse	Plant
17	Chojay Lhendup, Sr. RQI	Trashigang	Plant
18	Rinzin Norbu, Sr. RQI	Tsirang	Plant
19	Dzeko Dukpa, Sr. RQO	Dagana	Plant
20	Sangay Darjay, Sr. RQO	Lhamoyzongkha	Plant
21	Panchaman Rai Sr. RQI	Gyelposhing	Plant
22	Sonam Dorji N, Sr. RQO	HQ	Plant

23	Sonam Yonten, Sr. RQI	HQ	Plant
24	Yeshe Lhamo, Sr. RQO	HQ	Plant
25	Jambay Dorji, Sr. RQO,	HQ	Plant
26	Chador Wangdi, Chief, PABD	HQ	Plant
27	Kinley Penjor, Sr. RQO,	HQ	Plant

Annex 2. Meeting agenda

2a. Livestock sector (3 August 2020)

#	Time (BST)	Item	Note
1.	10.00 – 10.10	Welcome + introduction of the organizer team	Chador Wangdi
2.	10.10 – 10.20	Background and objectives of the project	Kinley Penjor
3.	10.20 – 10.25	Tips for the meeting and introduction of the biosecurity expert, Dr Hugh Millar	Masami Takeuchi
4.	10.25 – 10.35	Introduction to the meeting and introduction to the scenario to move to the structured discussions	Hugh Millar
5.	10.35 – 11.00	Structured discussions: - Questions from Hugh and Masami - Responses from the participants	Moderated by Masami and Hugh
6.	11.00 – 11.10	Q&As - Questions from the participants - Responses from Hugh, Masami and Kinley	All
7.	11.10 – 11.25	Structured discussions, cont. (as needed) - Questions from Hugh and Masami - Responses from the participants	Moderated by Masami and Hugh
8.	11.25 – 11.28	Next steps	Masami Takeuchi
9.	11.28 – 11.30	Closing	Chador Wangdi

2b. Food sector (10 August 2020)

#	Time (BST)	Item	Note
1.	09.30 – 09.40	Welcome, background and the objectives	Kinley Penjor
2.	09.40 – 09.50	Introduction to Zoom functions	Masami Takeuchi
3.	09.50 – 09.55	Tips for the meeting and introduction of the biosecurity expert, Dr Hugh Millar	Masami Takeuchi
4.	09.55 – 10.05	Introduction to the meeting and introduction to the scenario to move to the structured discussions	Hugh Millar
5.	10.05 – 10.35	Structured discussions: - Questions from Hugh and Masami - Responses from the participants	Moderated by Masami and Hugh
6.	10.35 – 10.45	Q&As - Questions from the participants - Responses from Hugh, Masami and Kinley	All
7.	10.45 – 10.55	Structured discussions, cont. (as needed) - Questions from Hugh and Masami - Responses from the participants	Moderated by Masami and Hugh
8.	10.55 – 10.58	Next steps	Masami Takeuchi
9.	10.58 – 11.00	Closing	Kinley Penjor

2c. Plant sector (10 August 2020)

#	Time (BST)	Item	Note
1.	14.00 – 14.10	Welcome, background and the objectives	Kinley Penjor
2.	14.10 – 14.20	Introduction to Zoom functions	Masami Takeuchi
3.	14.20 – 14.25	Tips for the meeting and introduction of the biosecurity expert, Dr Hugh Millar	Masami Takeuchi

4.	14.25 – 14.35	Introduction to the meeting and introduction to the scenario to move to the structured discussions	Hugh Millar
5.	14.35 – 15.05	Structured discussions: - Questions from Hugh and Masami - Responses from the participants	Moderated by Masami and Hugh
6.	15.05 – 15.15	Q&As - Questions from the participants - Responses from Hugh, Masami and Kinley	All
7.	15.15 – 15.25	Structured discussions, cont. (as needed) - Questions from Hugh and Masami - Responses from the participants	Moderated by Masami and Hugh
8.	15.25 – 15.28	Next steps	Masami Takeuchi
9.	15.28 – 15.30	Closing	Kinley Penjor

Annex 3. Biosecurity / food safety scenarios

3a. Livestock sector

Situation

A serious disease affecting cattle, sheep and pigs has emerged in the region particularly in India, where it is spreading rapidly. It appears likely that it is spread by infected animals but also possibly by the movement of meat and some dairy products.

Questions

1. Prevention (Pre-border):
 - How would the risk posed by the commercial importation of meat and other livestock products into Bhutan be assessed and if necessary changes made?
2. Prevention (Border):
 - How would the border screening process for passengers be assessed and changed to address this new threat?
 - Would the current arrangements at the border be sufficient to minimise the risk of entry of the disease? Why or why not?
 - What about livestock importation into Bhutan? What are the current arrangements to import livestock?
3. Prevention (Post border):
 - Are animal feed bans (for example, feeding of food/meat waste to pigs) adequate and complied with?
4. Early detection of incursions (post border)
 - How would livestock owners in Bhutan be advised to be vigilant for this new disease?
 - Is it clear who they should report to if they suspect a problem? What is the role of BAFRA field officers in this regard?
 - How are the efforts of BAFRA and Department of Livestock coordinated and duplication of effort minimized?
5. Planning and preparedness (Post border)
 - How would a Preparedness Plan that included surveillance, diagnosis and a disease response strategy be prepared? Who would be responsible to ensure there is access to a diagnostic test once available?

3b. Food sector

Real scenario

Let's say the following items are coming into Bhutan every day. You sometimes find them on the spot at the border and in the country at markets and in shops, but most of the time, they are not that obvious to be found.

- Banned, non-compliant or expired food items
- Food with chemical residues above Codex MRLs
- Food with microbiological pathogen contamination
- GMOs (not LMOs)

Questions

- 1.
2. Currently, what do you do to find/detect them?
3. Do you think you are finding/detecting them properly? Why or why not?
4. What procedures do you follow, if/once you have found them?

5. Among all the options, which one do you think is the highest priority for BAFRA mandate, in order to protect consumer health? And why?

3c. Plant sector

Situation

A serious pest/disease affecting mandarins and other citrus plants has emerged in the region particularly in India, where it is spreading rapidly. It appears likely that it is spread by infected plant propagative material, and possibly infected insects and contaminated fruit.

Questions

1. Pre-border/Prevention:
 - How would the risk posed by the commercial importation of plants and fruit products into Bhutan be assessed and if necessary changes made to import protocols?
 - Are there good relationships with biosecurity departments in India?
2. Border/ Prevention:
 - How would the border screening process for passengers and their luggage be assessed and changed to address this new threat?
 - Would the current arrangements at the border crossings be sufficient to minimise the risk of entry of this disease? Why or why not?
 - What about live plants importation into Bhutan? What are the current arrangements? Are there plant quarantine stations?
 - Are there good relationships with other border agencies, for example, Customs?
3. Post border /Prevention:
 - Are there farm biosecurity plans which growers can/must adopt to minimize the risks of entry and spread of diseases/pests on their farms?
 - How is farm biosecurity promoted and checked?
4. Post-border/ Early detection:
 - How would citrus growers in Bhutan be advised to be vigilant for this new pest/disease?
 - Is it clear who they should report to if they suspect a problem? What is the role of BAFRA field officers in this regard?
 - How are the efforts of BAFRA and the technical departments (DoA and Department of Forests and Park Services) coordinated and duplication of effort minimized?
5. Post border /Planning and preparedness
 - Would a Preparedness Plan that included surveillance, diagnosis and a disease response strategy be prepared? Who does this?
 - Are there response plans and manuals for known exotic plant diseases already in place?
 - Who would be responsible to ensure there is access to a diagnostic test once available?

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CB1429EN/1/10.20