

ROYAL GOVERNMENT OF BHUTAN Ministry of Agriculture and Forests Bhutan Agriculture and Food Regulatory Authority (BAFRA)



ANIMAL BIOSECURITY REPORT



Livestock Section | July 2019 – June 2020

Contributed by: Dr Kinley Penjor Sr. Regulatory & Quarantine Officer

Contents

Introduction and Situation Analysis:

BAFRA is responsible for implementing the National Animal Biosecurity measures in the country as mandated by the Biosecurity Policy of the Kingdom of Bhutan 2010, Livestock Act 2001, Livestock Rules and Regulations 2017 and other tertiary legislations developed under the Act. A robust Animal Biosecurity system across biosecurity continuum (Pre-border, border & post border) in the country is an integral part of any successful livestock production system in the country. Biosecurity means protecting the economy, environment and community from negative impacts of diseases that affect animal production system including animal welfare(FAO, 2007). Any Biosecurity incursions have the capacity to impact country's economy by increasing the costs of disease control for government and private sectors, disrupt export and domestic trade of livestock and its products, as well as affecting our unique biodiversity (fauna) and social amenity(Pandolfi et al., 2018). An effective biosecurity management underpins the country's reputation as a supplier of clean, safe, high-quality food, which enables access to markets and trade arrangements.

With increase in globalization of trade, movement of animals and their products across the border; increasing number of emerging pathogens and changing epidemiology of disease due to confluence of animals and people in intensive farming situations pose challenge of increasing biosecurity risk. To prevent and respond to the increasing biosecurity risk, BAFRA as the competent authority in strengthening the biosecurity system in the country, BAFRA should move toward an Integrated Biosecurity Approach considering the following limitations:

- o Outdate legislative support
- Limited resources
- o Poor inter-agency coordination resulting in scattered focus
- o Duplication of roles and mandates across the Ministry and sectors
- International Standard requirement (SPS)
- Shared responsibility

Based on the current structure of BAFRA and need to address the biosecurity risk following gaps are identified across the biosecurity continuums.

- The policies, procedures and regulations governing biosecurity regulatory activities, provision of scientific advice, risk profiling and priority setting, inspection and enforcement, diagnostic services quarantine and certification, biosecurity emergency, monitoring and surveillance and risk communication needs to be revisited and accordingly amended.
- The scope of biosecurity regulatory activities including standard setting and implementation, inspection, monitoring, certification and enforcement needs to be clearly defined.
- Need to develop operational principles and procedures guide for biosecurity regulatory activities, provision of scientific advice, risk profiling and priority setting, inspection and enforcement, diagnostic services quarantine and certification (independent, unbiased, etc.) and procedures (e.g. sampling protocols, analytical procedures, quality assurance, reporting and documentation, etc.), biosecurity emergency (no strategy or plan for control or containment), monitoring and surveillance and risk communication needs to be developed.
- The stakeholders responsible for biosecurity regulatory activities, scientific advice, inspection and enforcement, diagnostic services, quarantine and certification, biosecurity emergency, monitoring and surveillance and risk communication needs to be identified and their roles clearly identified.
- The resources (infrastructure, human, financial, information, equipment's, etc.) for biosecurity regulatory activities, inspection and enforcement, diagnostic services quarantine and certification, biosecurity emergency, monitoring and surveillance not provided adequately and allocated as required.
- The inspection and verification are not risk-based and competency of the biosecurity personnel needs to be improved.

• Limited understanding and knowledge about biosecurity

Based on the gaps identified, the strategies devised should focus on the following areas:

- Depending on the needs and the future goals of biosecurity, there is a need to revisit existing policies, legislation and associated strategies and programme in light of new and anticipated realities, and create a forward-looking system of policies geared towards current biosecurity goals and requirements.
- Involving concerned stakeholders from the outset can help to build awareness of biosecurity, increase acceptance of the need for coordinated action, and enhance the ownership and sustainability of future biosecurity related programme and activities
- Develop biosecurity information systems to promote nationwide access to biosecurity information and improve stakeholder awareness
- Import controls are primarily designed to prevent the introduction of hazards pathogenic to animals during trade in animals, animal genetic material, animal products, feedstuffs and biological products through adoption risk-based approach.
- Establish biosecurity advisory group on biosecurity
- Utilize risk analysis to prioritize risks and guide biosecurity decision-making to provide a
 powerful tool for carrying out science-based analysis and for reaching sound, consistent
 solutions to biosecurity problems and prioritize risks which helps to ensure that attention
 and resources are focused on the issues and areas of greatest importance to life and health
- Increasing availability of sophisticated diagnostic tools for epidemiological surveillance and attention to traceability systems.
- Greater focus on emergency preparedness and response
- Intensification of broader aspects of biosecurity (e.g. border inspection of people and products
- Strengthening adequate technical and scientific capability

- Recognition of international biosecurity obligations.
- Participation in international standard-setting organizations and bodies, and effective representation of national interest.

In order to strengthen the national animal biosecurity system, the identified gaps were properly studied and weighted and captured in the 12 Five Year Plan document under the programme "Food Self -Sufficiency and Nutrition Security Program" which is linked to National Key Result Areas (NKA) - "Food & Nutrition Security Ensured". The NKA is linked to Agency Key Result Areas - "National Food Self-Sufficiency Enhanced" which is further broken down to outcome level – "Plant and Animal Biosecurity and Biosafety level strengthened". To achieve the outcome, the numerous key Performance Indicators (KPIs) are established which are spread over 5-year plan setting targets and the baseline. The budgets are allocated for each KPI as per the targets and are released annually.

Animal Biosecurity Continuum

Animal biosecurity system is a continuum which mainly involves biosecurity measures at the preborder, border and post border. Accordingly, the two main KPI to achieve the outcome/output "Animal Biosecurity Strengthened" are:

- A. Exotic animal diseases and invasive species introduction prevented:
- B. Notifiable Animal diseases outbreak contained in the country:

A. INTRODUCTION OF EXOTIC ANIMAL DISEASES AND INVASIVE SPECIES PREVENTED:

The indicator measures the percentage of exotic animal pest and diseases (listing of exotic animal pest and diseases is beyond BAFRA's control) prevented from incursion into the country. It includes the Biosecurity prevention measures carried out to prevent the introduction of exotic animal disease through transboundary movement of animal diseases - be it exotic or notifiable animal diseases. To achieve this, following activities are carried out:

Intelligent surveillance on exotic and notifiable diseases in the neighboring countries:

The livestock section, BAFRA looks after the overall activities of the national animal biosecurity system in collaboration with the other relevant agencies. The key partner in implementing the national biosecurity measures is Department of Livestock (DoL). BAFRA closely work in collaboration and coordination with DoL in communicating and liaising with the neighboring countries in notifying the exotic and notifiable diseases listed in the OIE. As a part of disease surveillance intelligence, the Livestock Section, BAFRA keep close watch on the disease status in neighboring countries through regular checking of OIE, WAHIS portal system, subscribing to the Promed mail and South Asia Animal Disease Outbreaks and News Newsletter by FAO, Social media, and news channels.



Figure 1: Outbreak OIE listed disease in Asia Region

As per the disease's outbreaks newsletter from FAO, produced by FAO, ECTAD, there are about 1006 outbreaks of OIE listed outbreaks in the region from July 2019 to June 2020. These diseases are Nipah, Crimean Congo Hemorrhagic Fever (CCHF), African Swine Fever (ASF), Avian Influenza (AI), Japanese Encephalitis (JE), Brucellosis, Lumpy Skin Disease (LSD), and West

Nile Virus (WNV). These diseases are listed as the exotic diseases for Bhutan as it has never reported in the country, or these diseases are reported sporadically in the country. Any incursion and establishment of above listed diseases can have huge consequences on human health (zoonotic nature of the diseases), environmental preservation (the diseases have the potential to cause diseases outbreaks in wildlife) and huge economic loss (production loss and disease containment and elimination costs). The aim of the Bhutan Animal Biosecurity system is to prevent the introduction, establishment and spread of this disease in the country by implementing the required measures (import conditions). Theses disease can enter into the country through import of animals and animal products including the biologicals. As per the Livestock Act 2001, any notifiable and exotic diseases listed in the annexure must be reported and prevention and control measures need to be implemented immediately. Accordingly, series of prevention measures are taken up by BAFRA in close collaboration with DoL. The preventive measures are listed below.

In line, Bhutan has never reported single cases of exotic diseases into the country thereby achieving 100% prevention of introduction, establishment and spread of exotic and invasive diseases circulating in the region into the country.

Conduct Import Risk Analysis for animal and animal products

The import of animals, animal products (dairy, meats etc.), animal feed, and biological (semen, fertilized eggs, specimens, etc.) are associated with biosecurity risk which has the potential to import any transboundary diseases and exotic diseases. To reduce the biosecurity risk to an appropriate level of protection (ALOP), the imports these good musts be regulated. As a part of biosecurity risk reduction, BAFRA carry out risk analysis for every good imported. Based on the risk assessment, the decision is made. The decisions could be approval for import with well-defined import conditions which must be fulfilled by the importers for import or rejection for import if the biosecurity risk cannot be reduced below ALOP. The main information used for any risk assessment process is the disease situation/epidemiology in the origin of import.

From July 2019 to June 2020, 73 cattle are imported from India for dairy purpose, 13 dogs and 2 cats imported from India, Bangkok and Nepal, and 3 Million live fish and 1.6 million Day old chick imported into the country as per the Bhutan Biosecurity System report. These animals were

let into the country after reducing the biosecurity risk at ALOP thorough risk assessment, meeting import conditions (figure 2), quarantine at the border and post monitoring within the country.

Similarly, for the same fiscal year, the main livestock good imported into the country were fresh beef, frozen chicken, chevon, pork, fresh fish and animal feeds. In total, the import was highest for beef (3400MT) followed by frozen chicken, animal feed and pork. In order to prevent introduction of exotic diseases into the country, the import of these products was allowed after reducing the biosecurity risk below ALOP.



Figure 3: Import of Livestock Goods between July 2019 – June 2020

1941-194	Bhutan A	বিষ্ণান্থ বিষ্ণান্থ বিষ্ণান্থ বিষ্ণান্থ ROYAL GOVERNI Ministry of Agric griculture and Food	સુવાળતુલ્ય માઝેજ સુવૃષ્યવા જોકાલ દ્વે વ્યુવસ્ય વસેલ્યુ MENT OF BHUTAN wilture and Forests Regulatory Authority (J	RAFRA)
41.0	-	Tashichodzong, 7	himphu: Bhutan	DAPRA)
No. HO	Q/LIVESTOCK/IMPOR	T/9937		10.003.0000
IMPOI	RT PERMIT FOR FRE	SH LIVESTOCK PRODU	TTS AND ANDALL PROPERTY	10/02/2020
		BHU	TAN	INTO THE KINGDOM OF
Permission	n is hereby granted to Bh	akta Bdr Subba, M/s Karn	aling Meat Shop.	
, Salyr Da	cour, Inimphu bearing (Citizenship ID Card No. / L	icense No. 1007749 to import	t into the Kingdom of Bhutan.
SL.	Type of products	Quantity Unit	Source / Origin	Country of Ostain
1	Fresh Beef	7000 Kgs	India	Ladia
I. The beel I. The see Contagiou 2. The bee	D THAT the following cc f/pork/mutton/milk are accore a of origin of milmals meant for a Bovine Pleuro Pneumenia, Pe f/pork/mutton have been proce	reditions are met: spanied by an approved certificate slaughter is free from Rinderpest, ste des Petits Ruminents, Sheep P sseed in a hygienically operated ge	completed by the Govennment Veterine Front and Mouth Disease, Authmas, Har or, Swine Fever etc. werniment approved slaughter bouse.	arian attesting that: emorthagic Septicaentia, Black Quarter,
I, The beel I, The beel I. The seel Contagiou 2. The beel 3. The only II. The beel consumpti- III. During diseases m	D THAT the following oc (/ pork / mutter / milk are access of origin of animals messes (for a blowine Plearo Pneumenia, Pe (/ pork / mutter have been prese in / source of milk are thee from et / pork / mutter / milk are ac in the transportation of beef / port entering in condition no.1 (s)	preditions are met: upsnied by an approved certificate alaughter in five from Rinderpear, ate des Petits Rumineuts, Shaep P seend in a hygienically operated go diseases like Borine Tuberculouis companied with inspection certi- k / mutton into the Kingdon inte	completed by the Government Veterin Foot and Mouth Disease, Authons, Har or, Swine Fever etc. wernment reproved slaughter house. , BraceDoris etc. ficate carrilysing that the heart / pork / comignament does not pass through an	oran amosting that: emorthing to Septiezensia. Black Quarter, / mutton / milk / fish is fit for human area where there is active outbreak of
I, The beel I, The beel I. The new Contagiou 2. The beel 3. The orig II. The beel consumption III. During diseases m IV. All infigures	D THAT the following cc (7) pok/ mution / milk are accord a of origin of milmals means for a bovine Plearo Presumenta, Pe a bovine Plearo Presumenta, Pe of / york / mution have been prece- din / storece of milk are thee from af / pork / mution / milk are are on.	preditions are met: upsnied by an approved certificate ataughter in five from Rinderpeer, see des Petrs Rumineuts, Sheep P weed in a hygienically operator ge disenses like Borine Tubercaloris ecompanied with inspection certi- k / mutton into the Kingdom the usetted by the BAFRA Officials o	completed by the Government Veterin Foot not Mouth Disease, Authons, Har or, Swine Fever etc. Wernment reproved slaugher house. BraceDosis etc. Floate corrilying that the heart / pork / consignment does not pass through an Fibe Ministry of Agriculture and Force	orign amosting that: emorthing to Septiezentia. Black Quarter, / matters / ttills / fish is fit for human area where there is active outbroak of ris as to their ownership and content is
I. The beef I. The seef Contagiou 2. The beef J. The beef consumption III. During diseases in IV. All infl provided. Special con	D'THAT the following oc (*) pok/ mution / mills are accord at of origin of milling means for a bovine Plearo Preumenta, Pe 1 / pok/ mution have been prece- dit / source of milk are then from dir / source of milk are then from dir / source of milk are ac one. the transportation of beef / pol- remetioned in condition no.1 (a), remetioned and occumentation req ditions if any: N/I	preditions are met: upsnied by an approved centificate ataughter in five from Rinderpost, see dea Feith Ruminents, Sheep P wood an etypicatically operated go diseases like Bowne Tubercolotis ecompanied with inspection certi- k / mutton into the Kingdom the usered by the BAFRA Officials o	completed by the Government Veterin Foot not Mouth Disease, Authons, Har or, Swine Fever etc. Wernment reproved slaughner house. Bracefbesis etc. Fiscate certifying that the heart / pork / consignment does not pass through an Fishe Ministry of Agriculture and Force	orign amosting that: emorthogic Septiezentia, Black Quarter, / muttees / mills /, fish is fit for hortun area where there is active outbreak of nts as to their ownership and content is
 The beel The beel The area Contagiou The beel <li< td=""><td>D'HAT the following oc (*) pok/ mution / milk are accord a of origin of milmals means for a bovine Plearo Preumenia, Pe 1 / york / mution have been prece- din / source of milk are thee from et/ york / mution / milk are ac on. the transportation of beer / port emitioned in condition on a.1. (a) permittion and documentation req ditions if any: NR address of the exporter: Jan</td><td>preditions are met: upanied by an approved centificate staughter in free from Rinderpost, ste des Petits Ruminents, Sheep P sovid in a hygienically operator pe diseases like Bortne Tuberalouis companied with inspection certi- k / mutton into the Kingdom the usered by the BAFRA Officials of mgter alarm mitya, Jaironne</td><td>completed by the Government Veterin Foot ned Mouth Disease, Authous, Har 50, Swine Fever etc. wernment reproved slaughter bouse. Bracebosis etc. Fronte certifying that the head / pork / consignment does not pass through an f the Ministry of Agriculture and Fore</td><td>orign encesting that: encorribugio Septiezentia, Black Quarter, / muttee, / milh /, fish is fit for burnars area where there is active outbreak of ns as to their ownership and content is</td></li<>	D'HAT the following oc (*) pok/ mution / milk are accord a of origin of milmals means for a bovine Plearo Preumenia, Pe 1 / york / mution have been prece- din / source of milk are thee from et/ york / mution / milk are ac on. the transportation of beer / port emitioned in condition on a.1. (a) permittion and documentation req ditions if any: NR address of the exporter: Jan	preditions are met: upanied by an approved centificate staughter in free from Rinderpost, ste des Petits Ruminents, Sheep P sovid in a hygienically operator pe diseases like Bortne Tuberalouis companied with inspection certi- k / mutton into the Kingdom the usered by the BAFRA Officials of mgter alarm mitya, Jaironne	completed by the Government Veterin Foot ned Mouth Disease, Authous, Har 50, Swine Fever etc. wernment reproved slaughter bouse. Bracebosis etc. Fronte certifying that the head / pork / consignment does not pass through an f the Ministry of Agriculture and Fore	orign encesting that: encorribugio Septiezentia, Black Quarter, / muttee, / milh /, fish is fit for burnars area where there is active outbreak of ns as to their ownership and content is
I. The beel I. The beel I. The are Cortagiou 2. The beel 3. The ony II. The beel consumption III. During diseases in IV. All inft provided. Special con- fame and A the constignise	D'HAT the following ec (7) pok/ mution / milk are accord a of origin of milmals means for a blowine Pletro Preumonia, Pe a blowine Pletro Preumonia, Pe (1) / york / mution have been prece- tion / success of milk are the form of / york / mution / milk are are on. (1) / the transportation of beef / port entitioned in condition no.1 (a) permution and documentation req ditions if any: Nit eddress of the exporter: Jan matent enters Bhutan at J	preditions are met: upsnied by an approved certificate alaughter in five from Rinderpeer, ale des Petits Rumineuts, Sheep P weed in a hygienically operated go disenses like Borine Tubercaloris ecompanied with inspection certi- k / mutton into the Kingdom the usested by the BAFRA Officials o prgir alam milyra, Jaigong PLQO, Phuentsholing an	completed by the Government Veterin Foot and Mouth Disease, Authons, Har or, Swine Fever etc. BraceDoris etc. Frocto carifysing that the heart / pork / comiganent does not pass through an i'the Ministry of Agriculture and Fore d immundiately presented to C	orign amosting that: emorthing to Septiezentia. Black Quarter, / mutten / mills / fish is fit for human area where there is active outbreak of sits as to their ownership and content is Officer Incharge, BAFRA for
I. The beel I. The beel I. The area Contagion 2. The beel 3. The orig II. During diseases in IV. All inft provided. Special con- fame and A the consign spection, This permit	D'HAT the following ec (/ pork/munior/milli are account of origin of animals masses for a flowing Plearo Pneumonin, Po (/ pork/munion have been proce- din/source of milli are thee from eff / pork / munion / milli are are one. the transportation of beef / port entitioned in containson on, (sc) premation and documentation req ditions if any: Nill cidatess of the exporter: Journment enters Bhutan at J (is valid upto J0/03.)	preditions are met: upanied by an approved centificate shughter is five from Rindergas, ste des Petirs Ruminents, Shaep P seed an hygionically operatol go diseases like Boron Tubercolosis companied with inspection carri k / mutton into the Kingdom the usered by the BAFRA Officiale of prior alam milya, Jaigong PLQO, Phuentsholing an 2020	completed by the Government Veterin Foot and Mouth Disease, Authons, Har 60, Swine Fever etc. Wernment reproved shugher house. Foreclosels etc. Forecomment does not pass through an the Ministry of Agriculture and Foren I immediately presented to O MEDIMENT OF BUILD	orien anesting that: encorthagio Septicaentia, Black Quarter, / mutteet / milk /, fish is fit for hormen area where three is active outbreak of ns as to their owneenhip and content is Difficer Incharge, BAFRA for
I. The beek I. The be	D'HAT the following oc (*) pok/ mution / milk are accord a of origin of milmals means for a bovine Plearo Preumenta, Pe 1 / pok/ mution have been prece- dir / source of milk are then from at / source of milk are then from at / pok/ mution / milk are ac mution / milk are ac the transportation of beef / porter in transportation of beef / porter diftions if any: N/I control on and documentation req diftions if any: N/I control on and Signature of Area Stame and Signature of Area according to the second of the second of the second of the second second of the second of the se	preditions are met: upsnied by an approved certificate ataughter is five from Rinderpeer, see des Petits Rumineuts, Sheep P weed is a hygienically operated ge diseases like Borne Tuberaloitis ecompanied with inspection certi k / mutton into the Kingdom the usered by the BAFRA Officiale o mg/r alam milya, Jaigong PLQO, Phuentscholing an 2020 athorized Officer	completed by the Government Veterin Foot red Mouth Disease, Authons, Har or, Swine Fever etc. BraceDosis	orian amening that: emorthagic Septiezentia, Black Quartar, a mattern / mills / fish is fit for human area where there is active outbroak of nit as to their ownership and content is Officer Incharge, BAFRA for

Figure 2: Import Conditions

Inspection, certification, treatment and quarantine measures at the Border

Bhutan has six official entry points in the southern border through which most of the trading takes place. The border points have check points manned by BAFRA field officials and equipped with quarantine facilities which function as the first line of defense in keeping away the diseases. All animals entering (with prior import permit) Bhutan must be mandatorily quarantined for 15 days at the border quarantine facility. During the quarantine period, the animals are observed for any clinical signs and samples collected and tested for any exotic diseases. As per the Animal Health code 2018 for import of animals, the decisions are made. For any endemic diseases detected at the quarantine, the animals are treated, vaccinated and released into the country. For the exotic diseases detected at the quarantine facility, the animals are humanely destroyed or returned back to the origin of import. From July 2019-June 2020, a total of 73 cattle was quarantined at the border quarantine facility. The samples were collected and tested at National Centre for animal health, NCAH for notifiable and exotic diseases (figure 4). All animals came negative/ clean to the exotic diseases and are therefore released inside the country. Post release, the animals are monitored for

any signs and symptoms. For pet animals such as dogs and cats, the animals are quarantined at the owner facility. However, the random monitoring and inspection are conducted to check the compliance.

INTERIM/FINAL VETERINARY LABORATORY REPORT Sender Ref. No: BAFRA/MOAE/PHD Animal ID: 1-17 m s 17 m OLOGY FINDING

Figure 4: Animal Quarantine

For the import of livestock products, and inputs (semen, feeds, etc.), the consignment were declared at the entry points along with the required documents reflected in the import permit. The consignments are inspected and released into the country if all import conditions are met. Based on risk, the samples were drawn and sent for analysis to National Food Testing Laboratory, NFTL. The samples were put on hold until the results are out. Based on the result, the decision was taken to allow inside or reject.

Activation of Border Vigilance border

Based on the temporal patterns of the disease such as avian influenza, ASF etc. the border vigilance team comprising of BAFRA livestock officials were activated at the border. The main purpose is:

- Maintain stringent border vigilance and surveillance
- Keep strict vigilance along the Bhutan India border to curb illegal movements of animal and animal products
- Effective targeted surveillance at the commercial and government farms including the migratory herds.



Figure 5: Illegal Import data

The border vigilance team intercepted almost 3 MT of chicken, 1.8 MT of pork, 0.66 MT of fresh fish and 0.13 MT of beef at the border entry points. The goods are seized and destroyed humanly. The team also caught illegal import of 2 cattle at Pasakha, Phuentsholing and 340 numbers of DOC. The animals are quarantined for 15 days and screened against exotic and notifiable diseases. The defaulters are fined as per the livestock act 2001.



Figure 6: Disposal of livestock products

Advocacy on Animal Biosecurity measures

As the part of the disease incursion prevention measure, BAFRA also carry out advocacy to the livestock farmers and general public on the exotic, notifiable and zoonotic diseases prevailing in the neighboring countries. Considering the mass outbreaks of African Swine Fever in Asian region particularly in India and perceiving the high probability of introduction into the country through import of pigs and its product, BAFRA in consultation with DoL carry out following activities:

Awareness on ASF to general public:

The public notification on the ASF in India and good biosecurity practices to be followed by the public was sent on 7 May 2020. Following notification, the awareness was done in many social media forums such a BAFRA Facebook page. Subsequently, the panel discussion on ASF and its preparedness in Bhutan was done in BBS1 on 15 May 2020. In addition, the advocacy was carried out to key stakeholders (field officials of BAFRA, DoL and DoF&Ps) and piggery farmers.





Strengthening of On-farm Biosecurity in the pig commercial farms:

Farm Biosecurity is the implementation of a set of measures that reduce the risk of infection through segregation, cleaning and disinfection at the farms. For ASF, the on-farm biosecurity plays an important role in preventing the disease introduction into the farm in the absence of ASF vaccines. In fact, implementing good farm biosecurity measures at the farm is an investment and a cost-benefit ratio of 29 was reported in a small farmer in African countries.

Understanding the role of on-farm biosecurity measures in keeping ASF away from the pig farms and to assess the risk at farms, a well-structured questionnaire was administered to the pig farmers to understand the level of biosecurity at farms. In total, 4 dzongkhags with the highest pig population (as per livestock statistics, 2019) were selected. Using the line listing of pig farms maintained with the Dzongkhags, the pig farms are stratified based on the location, size of the farms, husbandry practices and farms were selected using random sampling. A total of 17 commercial pig farms were visited in 4 Dzongkhags.

For the assessment of farm biosecurity level of the pig farms, the biosecurity measures at the farms were grouped under 5 broad standards viz: facility, personal & documentation, feed and water, disease management, and cleaning and disinfection standards.

The facility standards describe the checklist such as perimeter fencing, disinfection point, signboards, hygiene facilities and farm clothes. These are necessary facilities the farms should have to prevent the entry of ASF through wild animals, people, and vehicles. As per the result, 100% of the pig farmers' facility standard level is below 2 on the scale of 0-5. This is evident as the majority of the farms do not have a biosecurity signboard to inform the visitors of the biosecurity. Furthermore, the majority of the farms do not have a perimeter fence to limit the wild boars coming in contact with the farm pigs. There was no sanitary facility such as hand wash, foot dip and specific farm cloths for the visitors coming in contact with the farm animals.

The personal and documentation standards cover aspects of personal (farm workers) conduct in the farms such as the use of farm clothes, hygienic practices and documentation of the farm inputs coming onto the farms and outputs going out of the farms. The assessment inferred that more than 75% of the farms have personal and documentation levels less than 2 from the scale of 0-5. From the traceability standpoint, the documentation on the biosecurity activities is very important especially in the event of disease outbreaks for forward and backward tracing to pin down the source of outbreaks and disease control measures.

The feed and water standards cover the risk associated with the feeds coming onto the farms and the management of feed and water in the farms. More than 25% of the pig farmers have feed and water standard levels above 2 meaning the majority of the pig farmers have clean and safe feed for the pig farmers.



Figure 7: Status of on-farm biosecurity measures

The disease management standards include the management of introduction of new animals, sick animals, dead animals in the farms and healthy animals in the farms. The cleaning and disinfection standards comprise of hygiene in the pig farms. During the assessment, we deduced that more than 75% of the pig farmers have disease management and cleaning and disinfection standards level less than 3. Overall, the 100% of the pig farmers have farm biosecurity level less than 2 on the scale of 0-5.



Figure 8: Pig Farm Biosecurity Inspection



Figure 9: Biosecurity Measures at Tshethar shelter

The following are the recommendation made to the ministry for immediate actions:

- 1. Qualitatively, the overall biosecurity level of the commercial pig farm in 4 dzongkhags is less than 2 on the scale of 0-5. The biosecurity level in the backyard pig farms will be worse than the commercial farms. The problem is further exacerbated with a large number of wild boars spotted near the pig farms (reported by forest and confirmed through camera trap) and the ASF status in wild boars ambiguous, there is a high risk of ASF introduction to the farms from wild boar. The only doable, scientific evidence to keep away the ASF introduction into the pig farms is by strengthening the farm biosecurity measures in the farms. Therefore, the team recommends BAFRA & DoL in respective high-risk dzongkhags to visit each pig farms and emphasize on strengthening the on-farm biosecurity as per the biosecurity checklist.
- 2. The team also identified the wild boars as the priority risk for the introduction of ASF to farm pigs. This was validated during the interrogation with DoFPS officials which sighted an abundance of wild pigs coming in contact with farm pigs. The camera traps also captured the sight of wild boars near the farms. The team recommends for the clinical and laboratory surveillance of ASF in wild boars with the help of DoFPS.
- 3. The team found that there were no biosecurity measures in the Tshethar pigs located at Ganglakha under the patronage of Lam Yeshey Phuenthoks. The pigs were also to graze freely in the forest during the day time. Further, the caretaker of the Tshethar animals also spotted wild boars mixing with the Tshethar pigs. In addition, there is evidence of breeding of Tsherthar pigs with the wild boars (piglets). If no drastic regulatory measures are not implemented especially from the biosecurity perspective, there is a high risk of disease introduction of ASF through the Tshethar animals.

Following the recommendation on need to improve the on-farm biosecurity in the country, vide notification No. **BAFRA/MoAF/5-89**/ dated 08 June 2020, the on-farm biosecurity survey and advocacy was carried out in high risk areas in the country. The high-risk areas for probable

introduction of ASF into the country are border entry points with high pig commercial farms. A questionnaire was designed in EPICOLLECT 5 targeting specifically on strengthening the on-farm biosecurity of pig farms was developed and pretested to the officials undertaking survey. The advocacy covered more than 400 plus pig farms in Chukha, Sarpang, Ngnanglam, SamdrupJongkhar and Samtse districts.

Development of ASF contingency Plan

Considering the high probability of ASF introduction as per the risk assessment carried out by DoL and BAFRA, the team recommended to prepare a contingency plan for ASF covering the activities to be carried out during the peace period and outbreak period. Accordingly, a workshop was conducted from 11-16 June 2020 at Wangdue to develop the contingency plan.

Conclusion:

As per the Livestock Act 2001, any notifiable and exotic diseases listed in the annexure must be reported and prevention and control measures need to be implemented immediately. Due to the preventive measures taken at the pre-border, border and post border as succinctly listed above, Bhutan has not reported single cases of exotic diseases into the country between July 2019 to June 2020 thereby achieving 100% prevention of introduction, establishment and spread of exotic and invasive diseases circulating in the region into the country.....

B. NOTIFIABLE ANIMAL DISEASES OUTBREAK CONTAINED IN THE COUNTRY:

The indicator measures the percentage of notifiable animal disease outbreaks (as listed in Livestock Rules and Regulation 2017) successfully contained in the country in the specified period as per the specific disease prevention and containment plan.

It includes the Biosecurity prevention and containment measures carried out to prevent and contain the outbreak of notifiable diseases and exotic animal disease in the country. To achieve this, following activities are carried out:

Regulation of In-country movement of animals and products:

As the part of prevention measure, the movement of animals and their products within the country are regulated against the biosecurity measures. These are done through Bhutan Biosecurity System portal which is online based. The system has the features to take in the information of on-farm biosecurity measures of that particular animals and generate the decision based on the level of risk as High, Medium and Low. Based on the level of risk perceived, the officials take decision to allow for movement; or reject; or allow with recommendation.

Between July 2019 to June 2020, the total number of in-country movement permit issued for the movement of live animals was 1873 applicants. About 43 % (813) of the applicants were from Tsirang dzongkhag followed by Dagana with 10.1% (190) and Sarpang 7.6% (143). Similarly, the least applicants were from Gasa with 0.2% (4) and Trongsa with 0.3% (6) applicants.



Figure 10: Purpose of the movement of animals

The main purpose for the movement of animals were for breeding with 38.9% (729), followed by for sale with 33.4% (625), and for migration animals with 16.7% (312). The other purpose for the movement of live animals were for Slaughter, Tshethar, Animal show, Pet movement and for a Draft work. The majority of the movement of animals were done via vehicle (99.3%). The majority of the animal's movements were from farm (88.4%) and the rest from migratory herd.

The data showed that the majority of animal movement in the country was for cattle and yak (65.4%) followed by pigs (9%) and poultry (8.2%). This was in consonant with the higher proportion for the purpose for breeding, sale and migratory purpose. As per the record, the majority of the application was issued by Tsirang dzongkhags (41%) and by regulatory and quarantine inspectors (51%). The majority (43.3%) of the applicants were give 1-day permit period and the longest permit period issued was for 4 weeks (0.5%).



Figure 11: Movement of Animals

Inspection and monitoring of farm biosecurity

The other prevention measures carried out by BAFRA in the filed offices to prevent outbreaks of diseases in the farms is by undertaking farm biosecurity inspection and monitoring based on the risk based.

As the part of inspection and monitoring of farm biosecurity, a total of 532 commercial livestock farms in the country were covered. Dairy farm, poultry and piggery formed 39.29%, 38.33% and 22.2%. Samdrup Jongkhar had the highest dairy farms with 26.3%, followed by Chukha with 15.4% and Tsirang with 11.7%. The districts like Gasa, Haa, Trongsa and Trashiyangtse did not have single dairy farm with equal to or more than five milch animals with permanent cattle shed. Likewise, Sarpang district had the highest poultry farms with 24.2%, followed by Samtse and Chukha with 13.5% and 13%, respectively. Haa, Gasa and Bumthang had only one poultry farm each with more than or equal to 500 birds. Likewise, Sarpang district had the highest piggery farms with 21% followed by Samtse and Tsirang with 16% farms each. Bumthang, Lhuentse, Punakha, Haa, Gasa, Trashiyangtse and Trongsa had no single piggery farms with more than 5 or equal to 5 pigs.

As per the report, 40.23% of commercial livestock farm have perimeter fence or geographic features acting as a fence of which, 47% were poultry farm and 36% were poultry farms. These perimeter fencing are important biosecurity measures to minimize the trespassing and preventing entry of stray

animals (Bhutan Agriculture and Food Regulatory Authority. When we compare the compliance of farm biosecurity facilities at farm access point, 58.4% of the livestock farms have hand washing facility (water and soap), 39.6% have foot disinfection facility, 15.4% of the farm have biosecurity sign board, and 4.1% of the farms have visitor log book at the farm access point. Overall, the biosecurity facility at access point of livestock farms was very poor (< 5%). Comparatively, poultry farms had better biosecurity facility at access point than other farms.

As per the survey, more than 85 of the livestock farms have kept their animal shed premise and animal shed neat and clean during the survey period. The cleanliness of livestock farm premise was comparatively better in dairy farms followed by poultry farms. On the contrary, the cleanliness of the animal shed was observed better in poultry farms followed by pig farms. About 76% of the poultry and 68.6% of the pig farms carry out disinfection of shed and surrounding after cleaning. The practices of carrying out disinfection of shed and surrounding is below 40% in dairy farms which correlates to higher disease outbreaks reported in the dairy farms. The common disinfectant used in the livestock farms were phenol, bleaching powder and potassium permanganate. Usually, the choice of disinfectant by livestock farmers is potassium permanganate. About 45.9% of the poultry farmers and 21.53% of the dairy and pig farmers used potassium permanganate

Containment of animal disease outbreaks in the country.

Despite implementing the prevention measures, there use to be sporadic outbreak of endemic animal diseases in the country. as per the livestock rules and regulation 2017, and its tertiary documents (i.e. specific disease prevention and control plan) the BAFRA's roles in disease outbreaks are as follow:

- Enforcement of Livestock Act of Bhutan 2001 and Livestock Rules and Regulations 2017
- Enforcement of movement ban of livestock and livestock products in and out of the outbreak areas
- Quarantining of infected animals in the affected areas.
- Monitor the livestock movements from one Dzongkhag to others.
- Inspection and certification of suspected livestock products
- Carry out bio-security measures during the outbreaks (segregation, disposal, cleaning and disinfection)
- Border vigilance on the illegal movement of livestock & livestock products in the peace period.

Between July 2019 to June 2020, there were more than 63 outbreaks of notifiable diseases in the country. As per the data, there was outbreak of rabies for the whole fiscal period but the outbreaks were limited to SamdrupJongkhar, Pemagathsel, Trashiyangtse, Sarpang, Chukha, Trashigang and Tsirang. The second highest outbreaks of the notifiable disease are FMD. There were 10 outbreaks in the country.



Figure12: Notifiable disease outbreaks in the country

Similarly, there were outbreaks of other diseases such as Anthrax, Brucellosis, Black Quarter, Classical swine fever, Hemorrhagic septicemia, Infectious Bursal Disease, Newcastle disease and Strangles. As per the report, there was no outbreak of single diseases in horses.

Conclusion:

Although there were more than 63 outbreaks of notifiable diseases as listed in the Livestock rules and regulation 2017 in the country, the outbreaks were all contained as per the specific disease's outbreaks. Therefore, as per the SI description, the achievement is 100%.