Member Experience on Prevention and Control for Vector Borne Disease [Nepal/South Asia]

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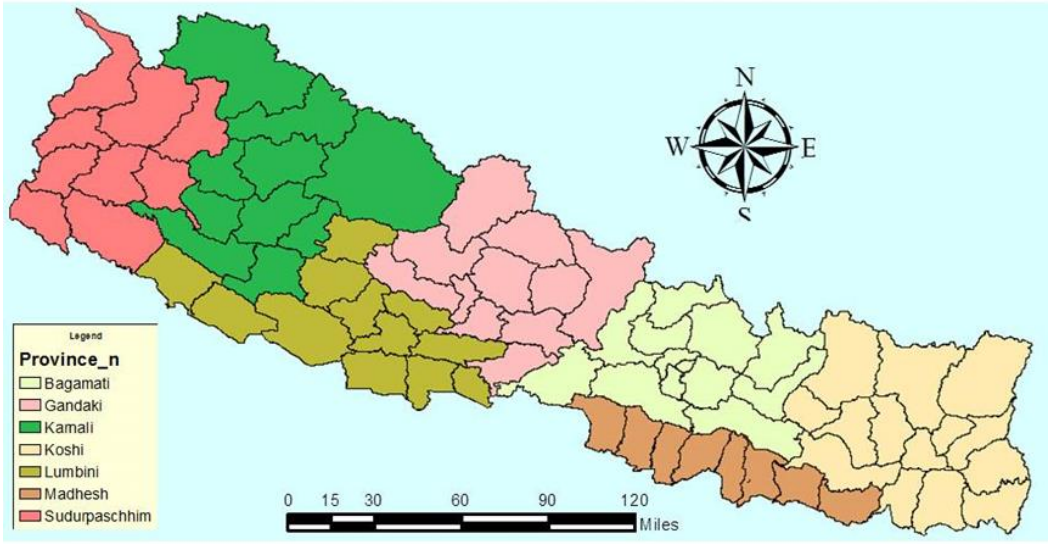
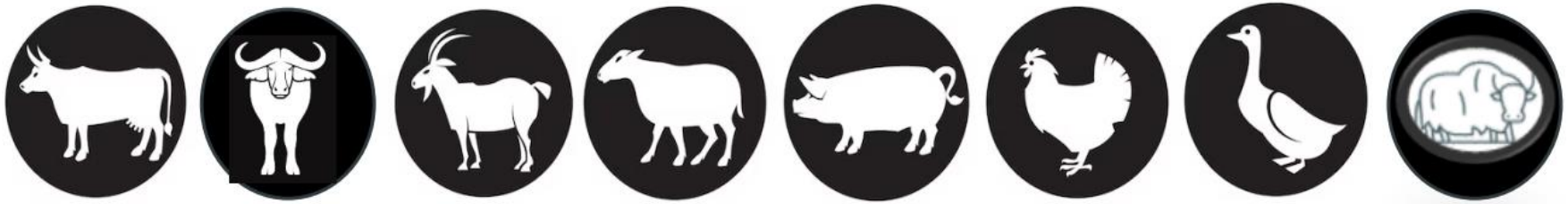
Nepal In Brief

- Population of around 29.16 million.
- Politically, 3 Tiers of Government: 7 provinces, 77 districts and 753 local levels.
- Geographically, divided into 3 eco-zones: Mountains, Hills and Terai.
- Nepal is rich in biodiversity providing house to more than 4% of world's mammals and 8% of world's birds.



Livestock and Fisheries Statistics of Nepal

In lakh



47.50	30.81	145.41	5.01	13.60	652.10	13.2	0.53

29.16 M
Total Population

50.4%
Engaged in Agri

3.4 M
Livestock farm families

Source: NSO, 2022

24.12%
Agriculture GDP

24.01%
Livestock in AGDP

1.51 %
Fisheries in AGDP

Contribution within LGDP

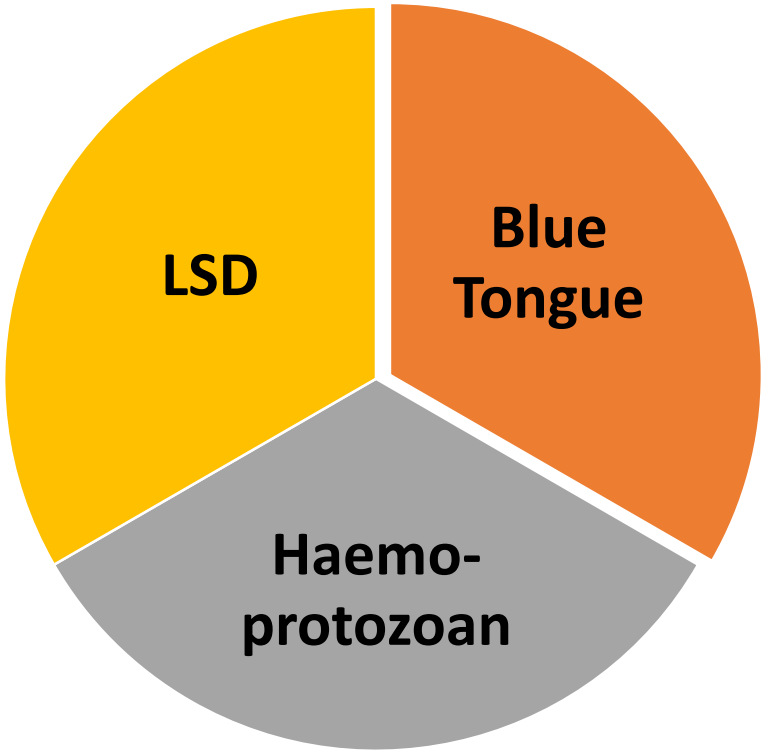
Dairy: 62.6%
Meat and Fish: 32.4 %
Eggs: 5.0 % %

Vector Borne Disease Situations in Nepal

- LSD, Blue Tongue, Tick born hemoprotozoan (Babesios, Theleriosis, Hepatozoons, Anaplasma, Ehrlichia canis), Trypanosome, Leishmania, Ephemeral fever (Frequent), Scrub Typhus (Reported in human frequently), ASF, CCHF (Regional Threat), JE are the major important Vector-borne Animal Diseases (VBADs) in Nepal (CVL,2023)

- We are in the early stages of understanding patterns of vector-borne disease (VBD) in animals.

- Several VBDs are of importance to international trade and are listed as notifiable diseases. Example: LSD included as National Notifiable disease by 2023.



Vector Borne Disease situations: LSD

- Nepal experienced the first outbreak in June 2020 in cattle farms in Morang district, a district close to Indian border.
- Created havoc in cattle farming resulting into loss of

  Affected: 1.53 million of cattle (1/3rd of total population)

  Death: 65 thousand cattle
- Since December 2022, LSD took epidemic form in Nepal and by mid 2023, almost all districts of Nepal were affected by LSD causing huge economic losses.
- Vaccination using Neethling strain is the main control strategy being implemented to control LSD outbreaks.

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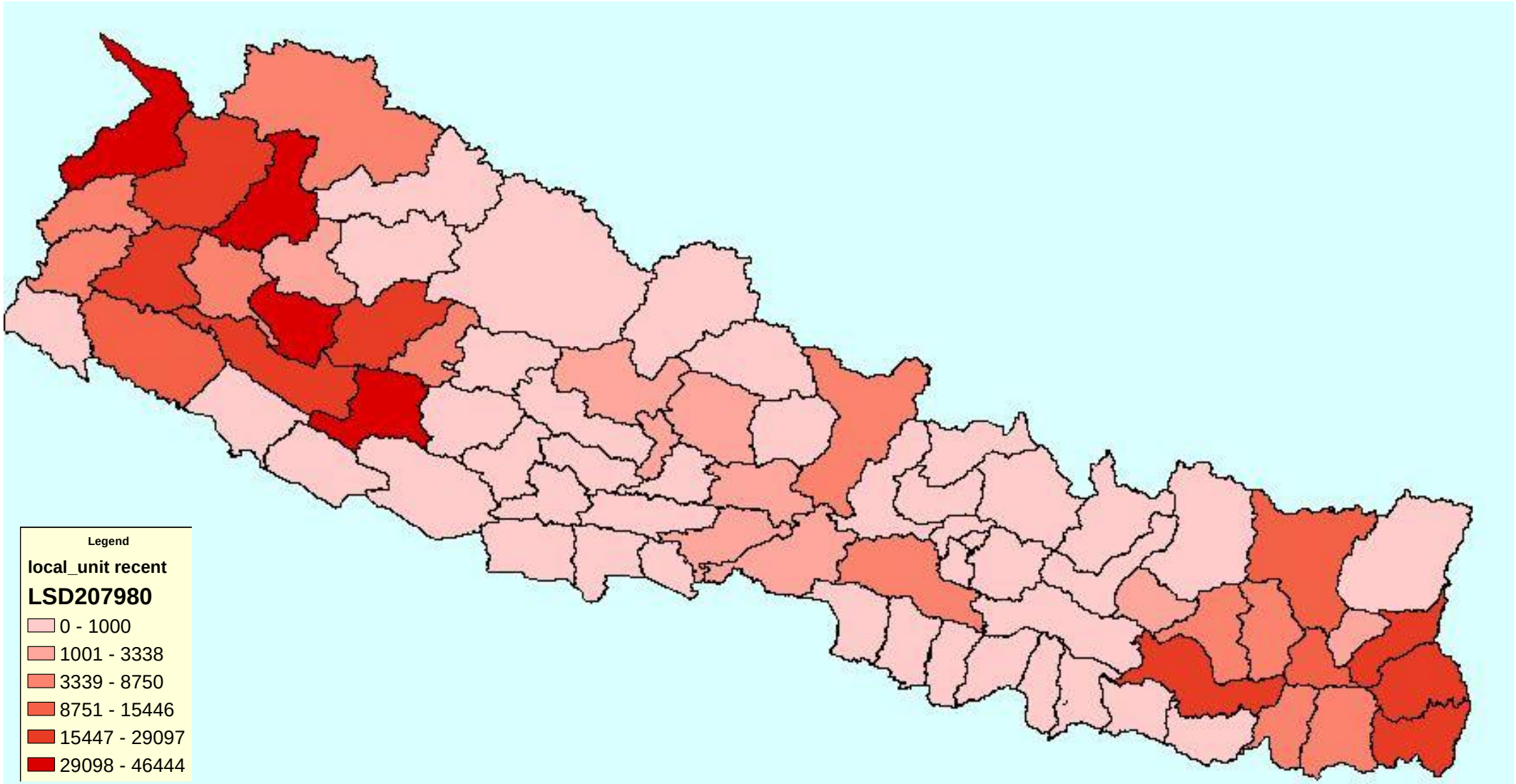
Spatial distribution of LSD in Nepal



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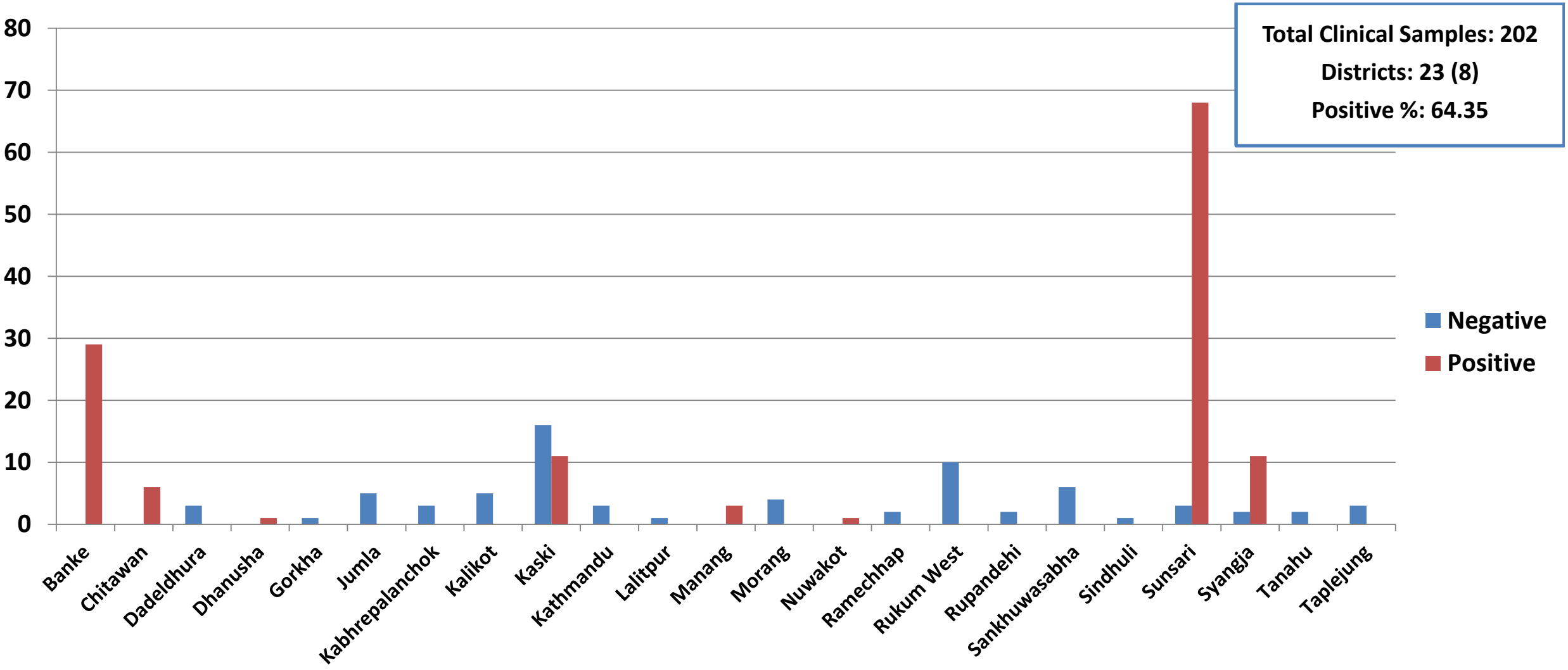
District- wise Distribution of LSDV from Suspected samples in 2024 (2080/81)



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Glimpse of LSD: Minor to Severe Lesions; Adult to Young

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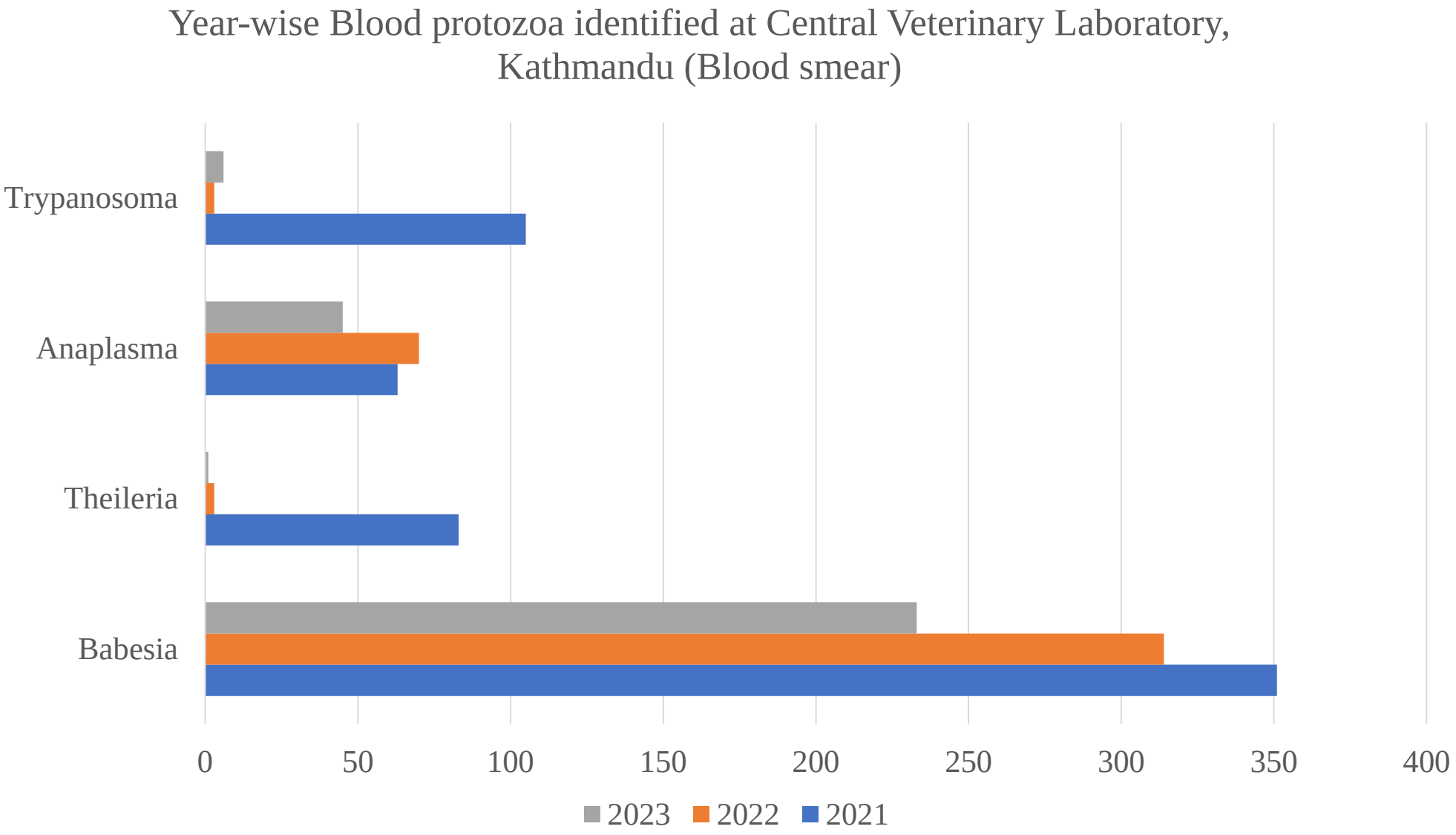
Vector Borne Disease Situations: Blue Tongue Disease

- Sero-prevalacne of BTD in domestic animal is 35.1 % (FMD and TADS lab 2022) and that in sheep and goat was 27.9% (Gaire et al.,2014).
- Bluetongue disease exists in the international border areas of Nepal and its prevalence was widespread among cattle, buffalo, sheep and goat however antigen is not detected yet.
- As vaccines against BT are not available in Nepal, antibodies detected indicated natural exposure to BTV infection.
- History of abortion and breed as factors significantly associated with the seropositivity of BTV.

Vector Borne Disease situations: Haemo-protozoan



- Out of 1928 sample 15.8 % were found to be positive for at least one blood parasites among them Babesiosis stand highest. (CVL,2023)

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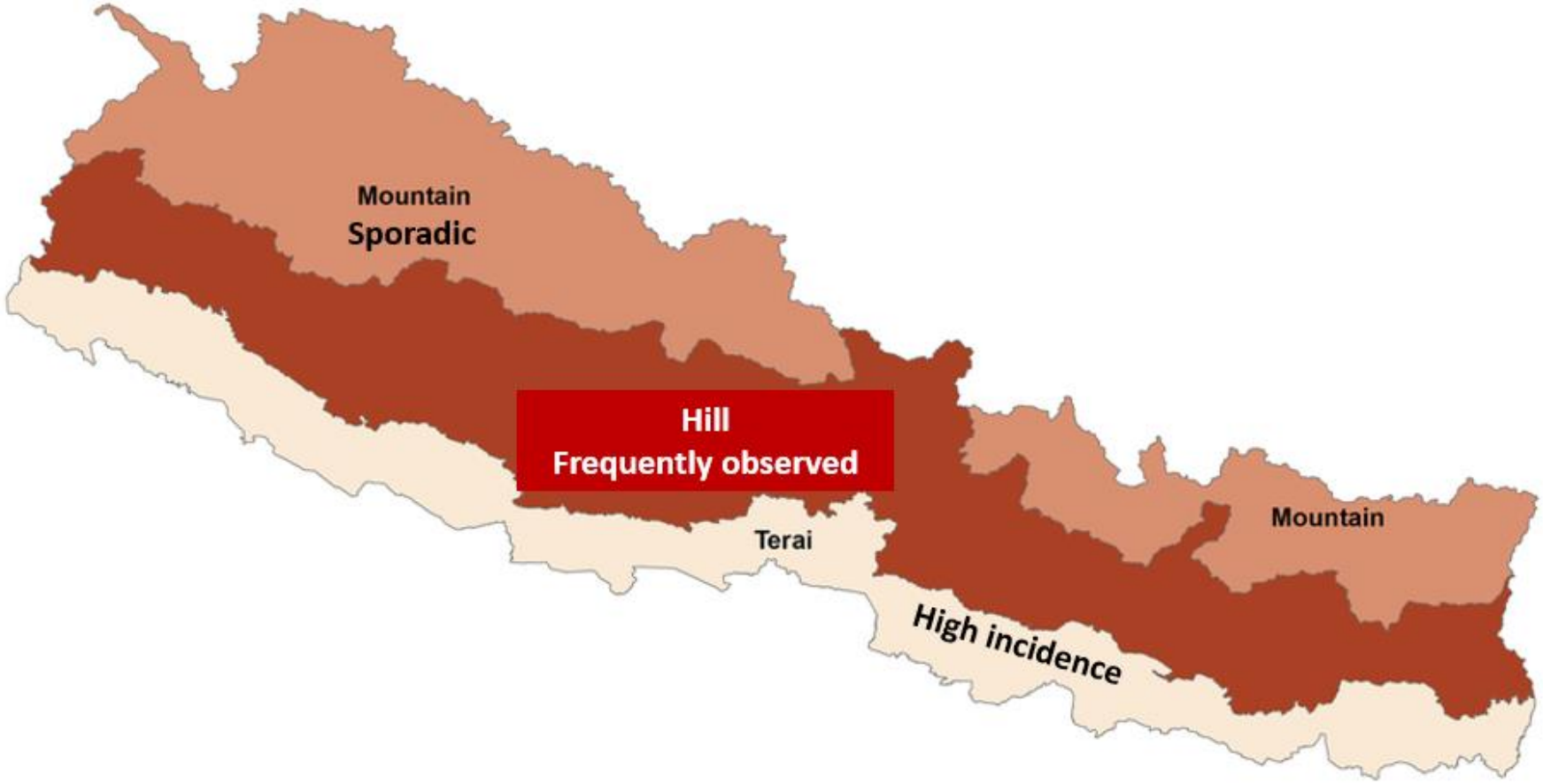
Vector Borne Disease Situations: Haemo-protozoans in three ecological zones



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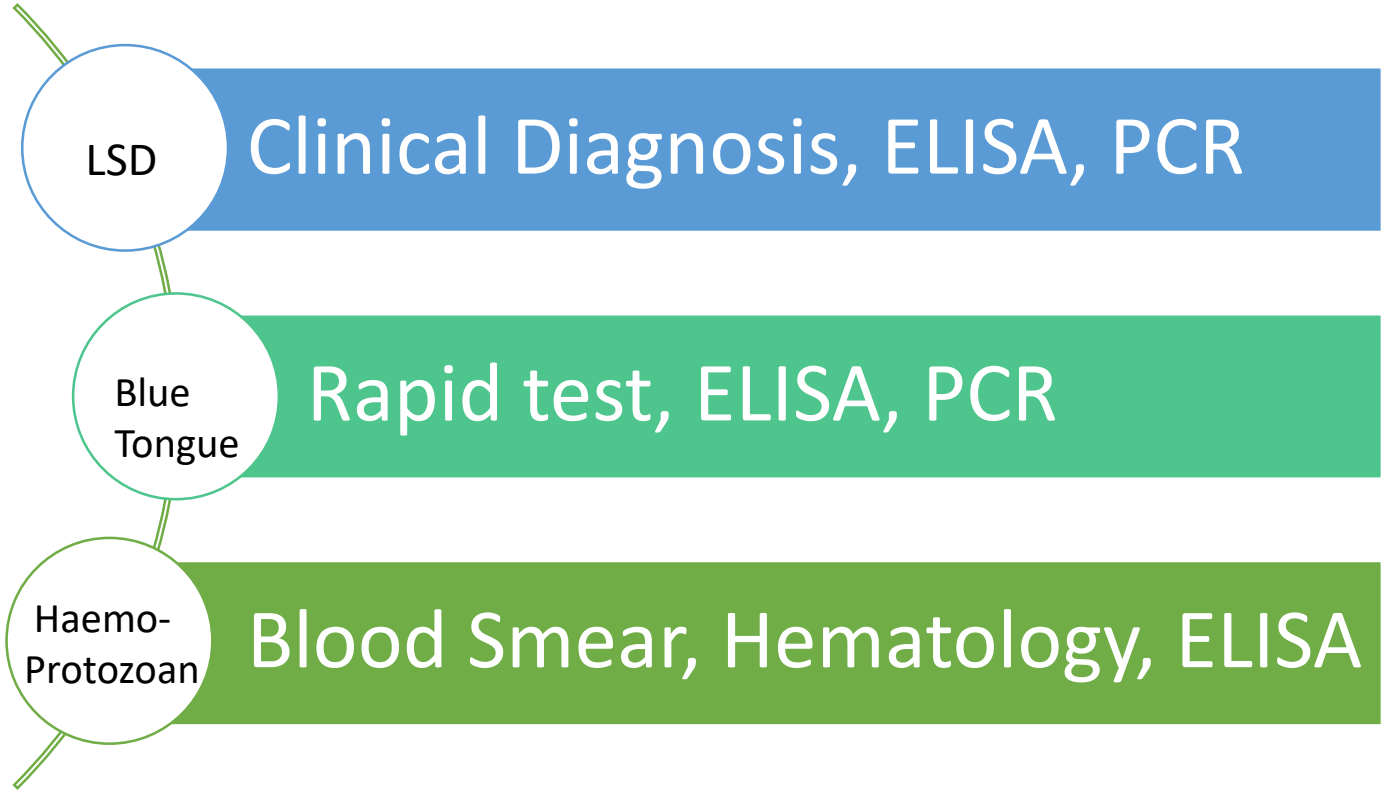
Detection capacity



Central Veterinary Laboratory

FMD and TADS Laboratory

District Veterinary Hospital
Regional Veterinary Laboratory
Central Veterinary Laboratory
Central Referral Veterinary Hospital

CVL Diagnostic Test Performed

Molecular Section

Avian Diseases

- AI (Subtype M gene, H5, H7, H9, N1, N2, N6, N8, N9)
- ND
- IBD

Swine Diseases

- PRRS- NA/EU
- ASF
- CSF
- Salmonella
- Erysipelas
- Nipah

Abortive Panel

- Brucella
- Coxiella
- Leptospira
- Listeria
- Campylobacter
- Cryptosporidium

Pox Panel

- LSDV
- Pseudo cow pox
- Bovine Papular Stomatitis
- ORF
- Goat pox
- Sheep Pox
- Cow pox

Small Ruminant Diseases

- PPR
- CCPP
- Pasteurella
- Capripox
- Enterotoxaemia

Equnie Disease

- Glanders

Large Ruminant

- LSD, HS

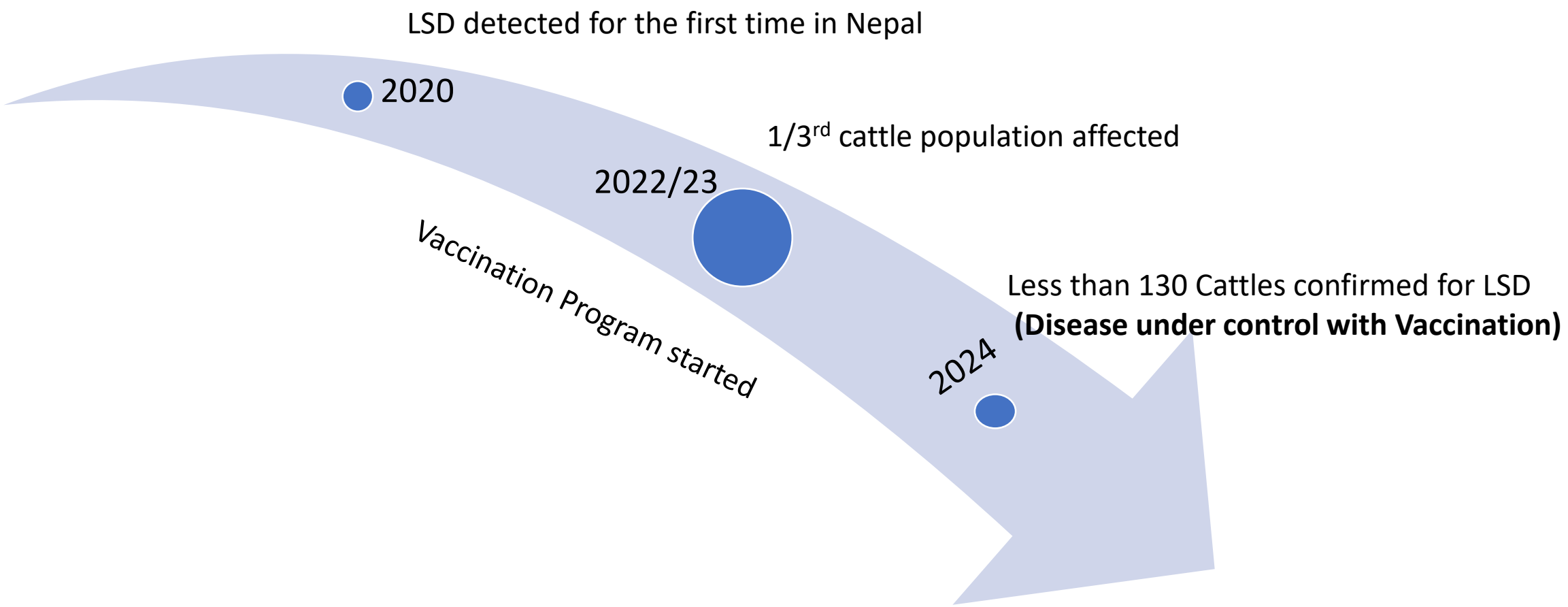
Others

- Rabies
- Anthrax
- Brucella

Response to Vector Borne Diseases

	Lumpy Skin disease	Blue Tongue	Haemo-protozoan
Surveillance (animal and vector surveillance)	Both active and Passive surveillances in cattle in place, Vector surveillance yet to be started	Only passive surveillance is in place, limited vector surveillance.	Only passive surveillance is in place, limited vector surveillance.
Responses and control	Sporadic outbreak in 2024	Endemic by Serology (Clinical condition Not diagnosed)	Endemic
Preventive measures to avoid introduction	Quarantine and Biosecurity, Movement Control	Quarantine and Biosecurity	Tick control program, Chemoprophylaxis
Vaccination	Free biannual vaccination (Imported)	Not in practice	Not in practice
Contingency plans available	No	No	No

Impact of the actions (LSD Vaccination with Neethling strain)



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Impact of the Actions (Blue Tongue and Haemo-protozoans)

Disease	Action	Impact
Blue tongue	Active sero-surveillance, Awareness	Early Diagnosis and preventive measure applied
Haemo-protozoan	Diagnostic facility Tick control program	Loss mitigation of farmers due to early detection

Challenges in Implementation of VBD Surveillance Activities and Control Programmes

- Climate change and vector distribution, Nepal stand 5th on most vulnerable country on climate change.
- Emergence of Vector born TADs
- Landscape and weather on vector distribution: Not done till now in Nepal
- Limited capacity: Human resources, Funding and Infrastructure
- Inadequate institutional coordination and collaboration: Among three tiers of Government and among One Health stakeholders
- Limited cross-border collaboration for disease control.

Actions/ideas to overcome these challenges (Way forward)

- Intergovernmental Collaboration, Coordination and Communication
- Increased regional collaboration for the control of priority Vector Borne Diseases.
- Enlisting important vector born prioritize diseases and National disease control program.
- Vector surveillance in relation to climate change
- Introduction Of Vector Tolerance Breed
- Same vector share common room for transmission of human and animal disease. So control and surveillance of vector should be done jointly.
- Chemotherapy and chemoprophylaxis
- Lobbing to Increase funding and government focus on control and prevention of vector born animal disease.

Collaboration with other sectors under One Health approach

- Vector Control: Search and Destroy for larvae and fogging for adult mosquito: (Dengue) It might have also decrease the incidence of LSD, as the same vector is involved in the transmission.

Challenge and Possible Solutions to strengthen the Collaboration

Challenges	Possible Solutions
Poor Biosecurity	▪ Trainings and awareness programs
Inadequate institutional coordination and collaboration among three tiers of government (Federal, Provincial and Local) for control of Vectors	▪ Strong and harmonized coordination among national, federal, and local governments for vector surveillance from policy level (Guideline should be endorsed on time).
Inadequate Vector mapping/Surveillance System	▪ Strengthen quarantine system on open border with neighbors ▪ Vector surveillance in relation to climate change
Limited Capacity: lab capacity, sample flow and diagnostic ability, Human resources, Funding and Infrastructure	▪ Capacity enhancement through national and international collaboration. ▪ Increased regional collaboration for the control of priority VBD ▪ Political lobby for increased funding.
Climate Change	▪ Awareness activities, international coordination.

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Thank you

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