Food and Agriculture Organization of the United Nations

World Organisation for Animal Health
Founded as OIE

PPR in Wildlife

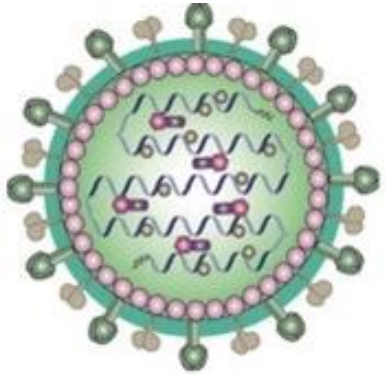
Ahmad Almajali
Professor and International Consultant
Food and Agriculture Organisation of the United Nations (FAO)
FAOSNG

PPR in wildlife

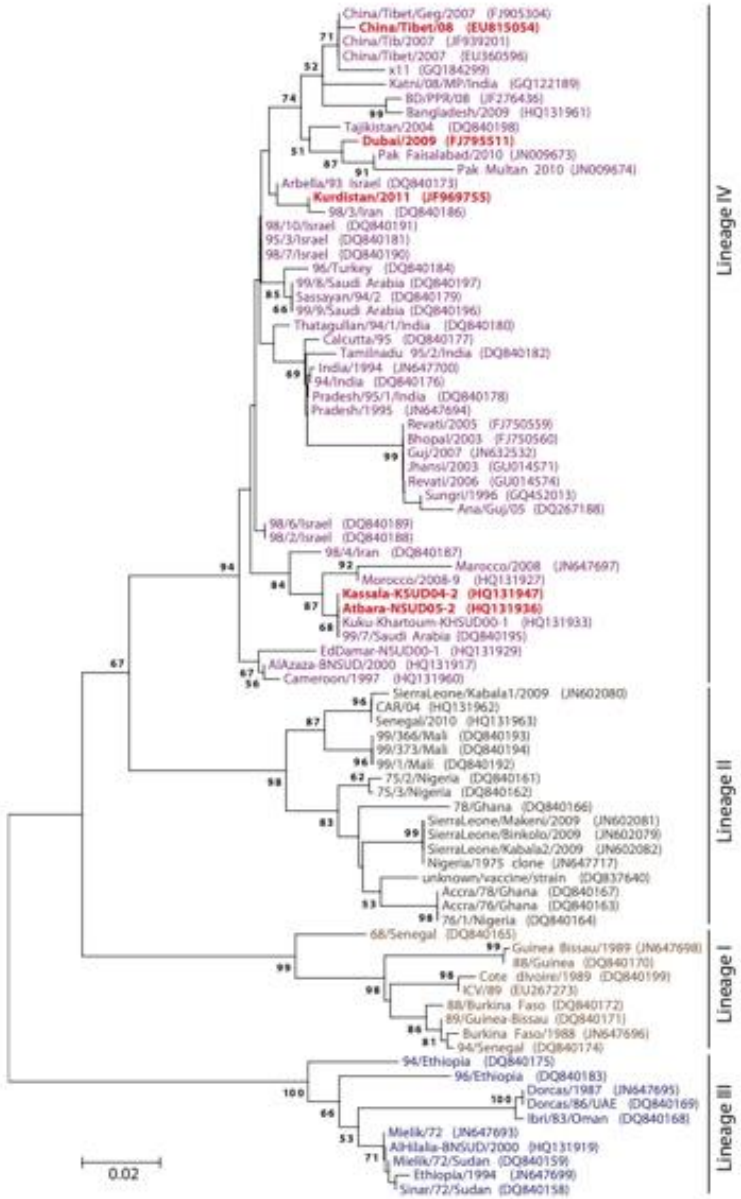
- Wildlife health and diseases are increasingly important aspects of wildlife conservation, particularly for species that are at risk for extinction.
- The majority of zoonotic diseases (72%) are originating in wild animals.
- Surveillance for infectious agents in wildlife populations, and efficient investigation of wildlife disease outbreaks, are critical for effective management of infectious diseases in wildlife, livestock, and human populations.
- Wildlife scientists are poorly equipped to participate in effective disease surveillance and management in free-roaming wildlife.

PPR in wildlife

- PPR is a major transboundary animal disease (TAD) from a socio-economic point of view.
- It is a viral disease that affects wildlife, threatens susceptible rare wild artiodactyl species and is of conservation concern.



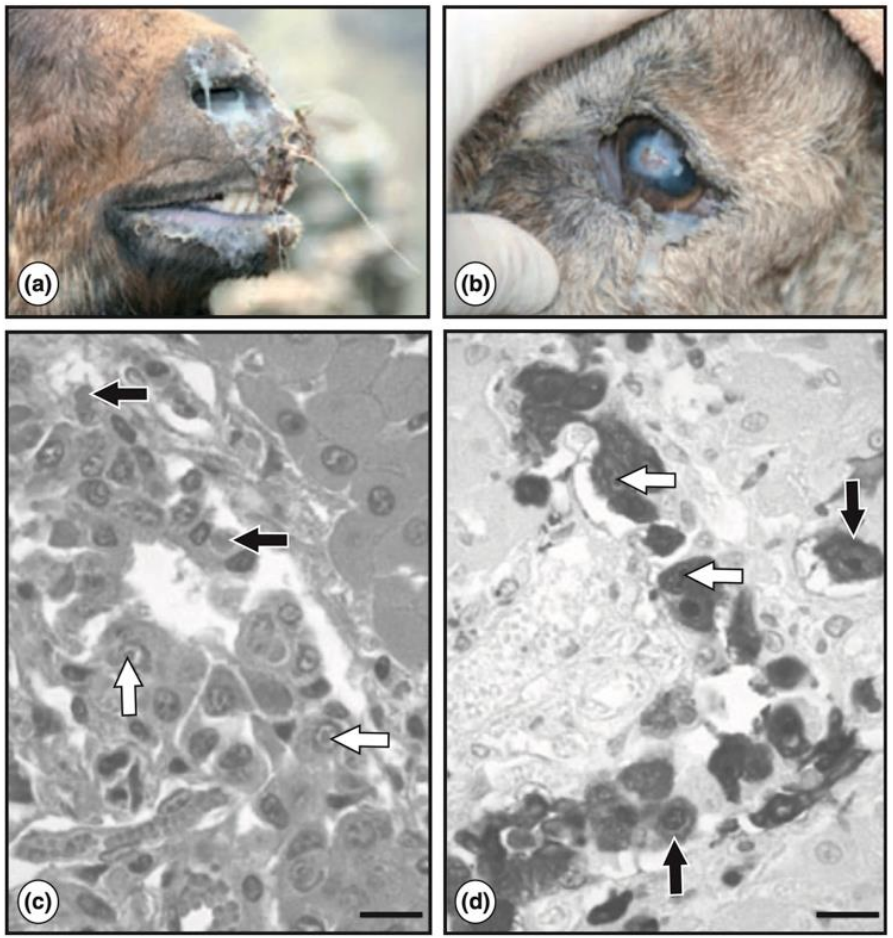
Morbillivirus



PPR isolates from wildlife are clustered in Lineage IV

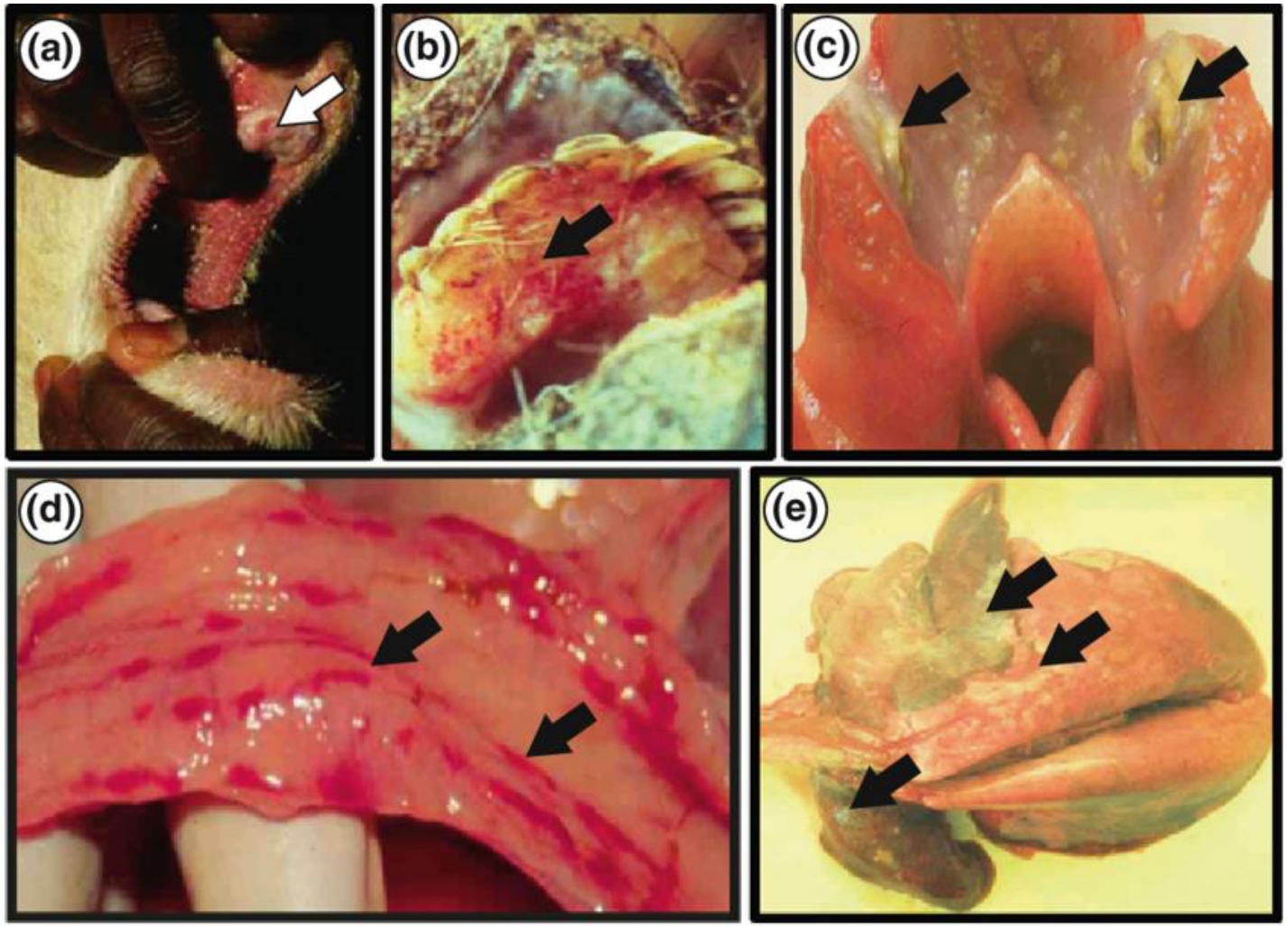
PPR in wildlife

- Susceptible wildlife: All wild ruminants
- Clinical and pathologic findings (similar to domesticated goats):
  - Mucopurulent nasal discharge
  - Ulcerative keratitis along with conjunctivitis
  - Mortalities in young
  - Pinpoint greyish areas of necrosis in the buccal cavity
  - Rumen is usually congested. Abomasum exhibits tiny haemorrhagic erosions with marked congestion Large intestine with Zebra striping due to congestion and hemorrhages.
  - Consolidated lungs leading to pneumonia



Source: Munir et al., 2013

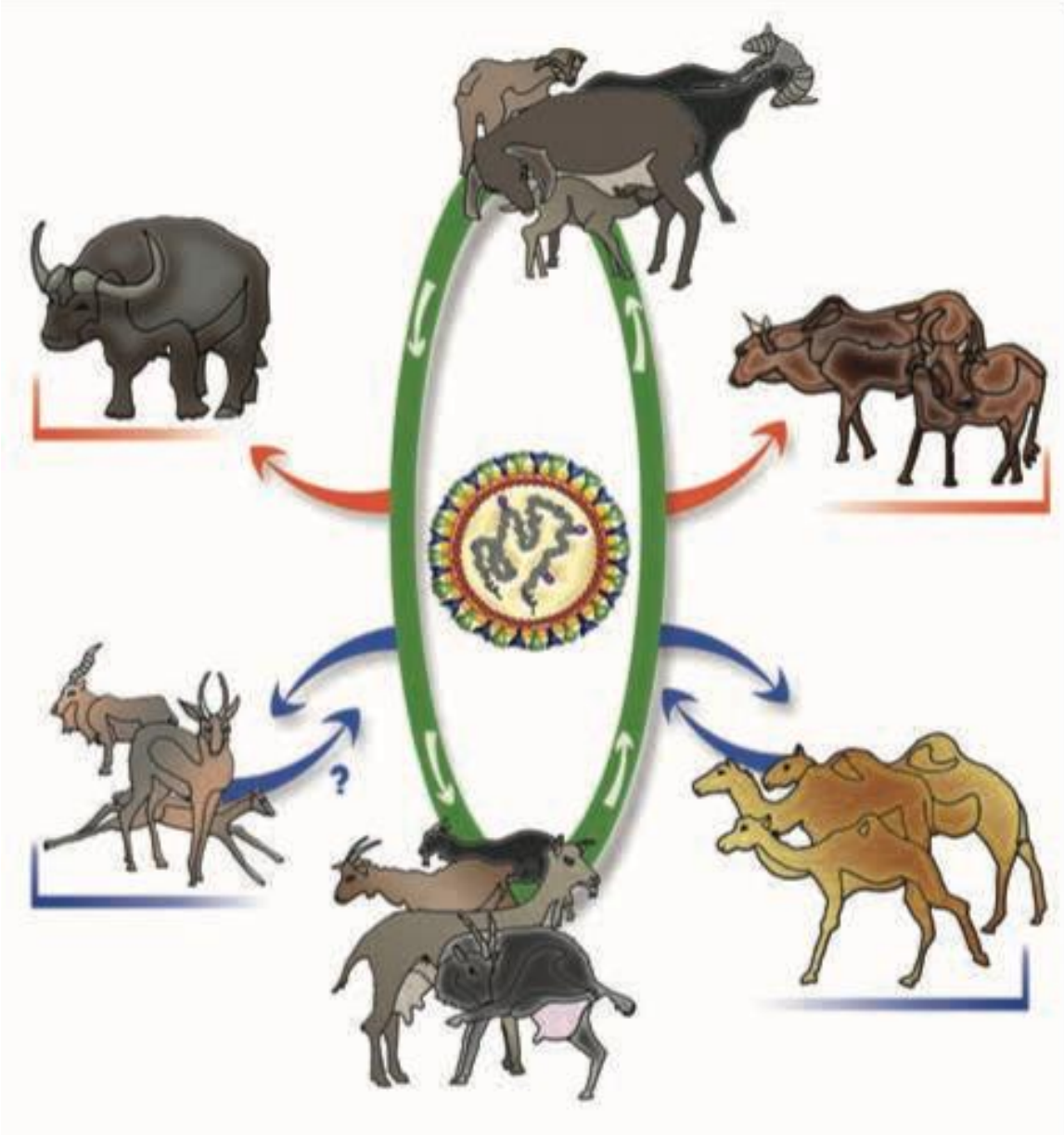
Source: Anne Jones et al, 2020



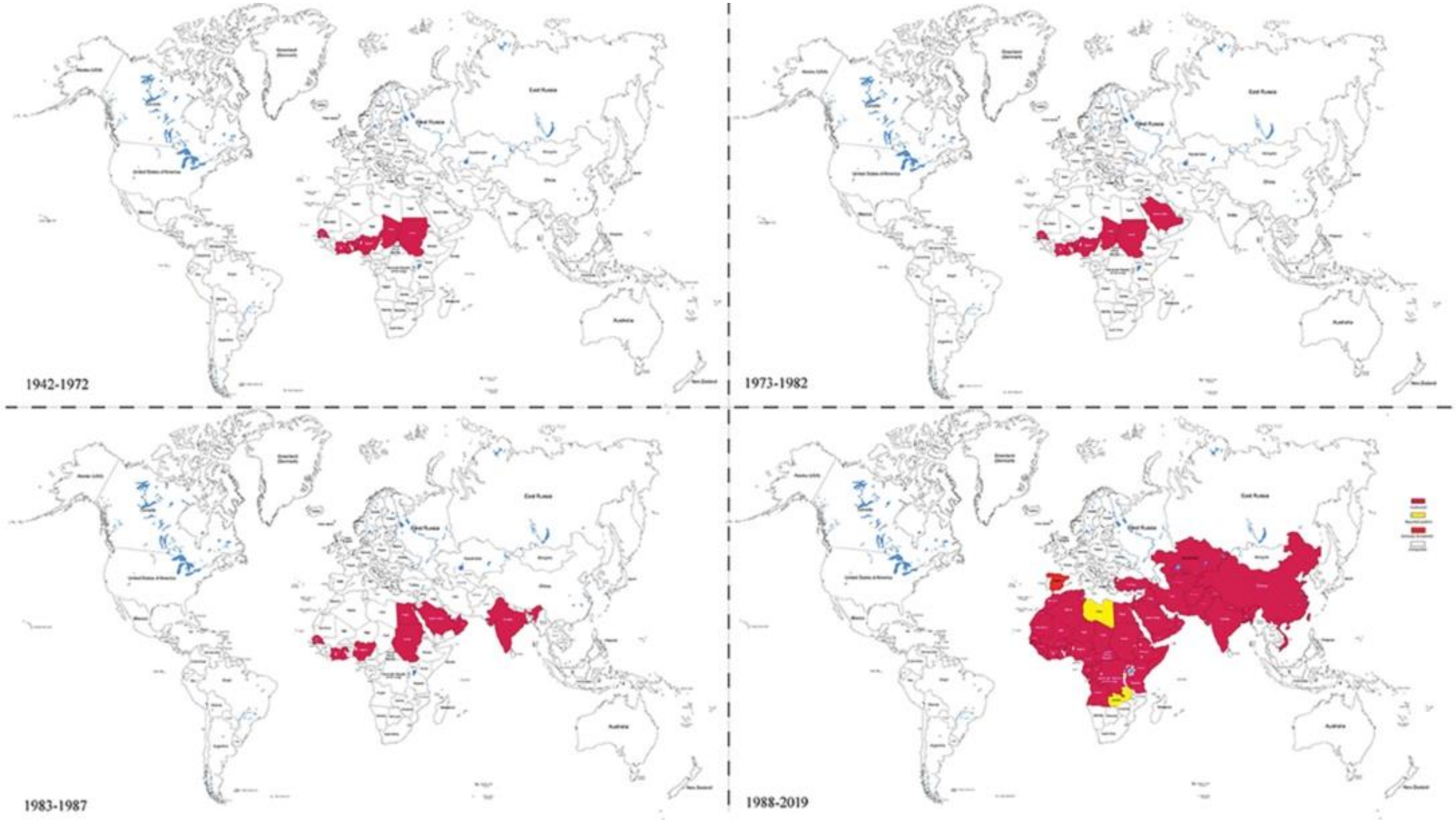
Source: Prada et al., 2015

PPR in wildlife-Spread

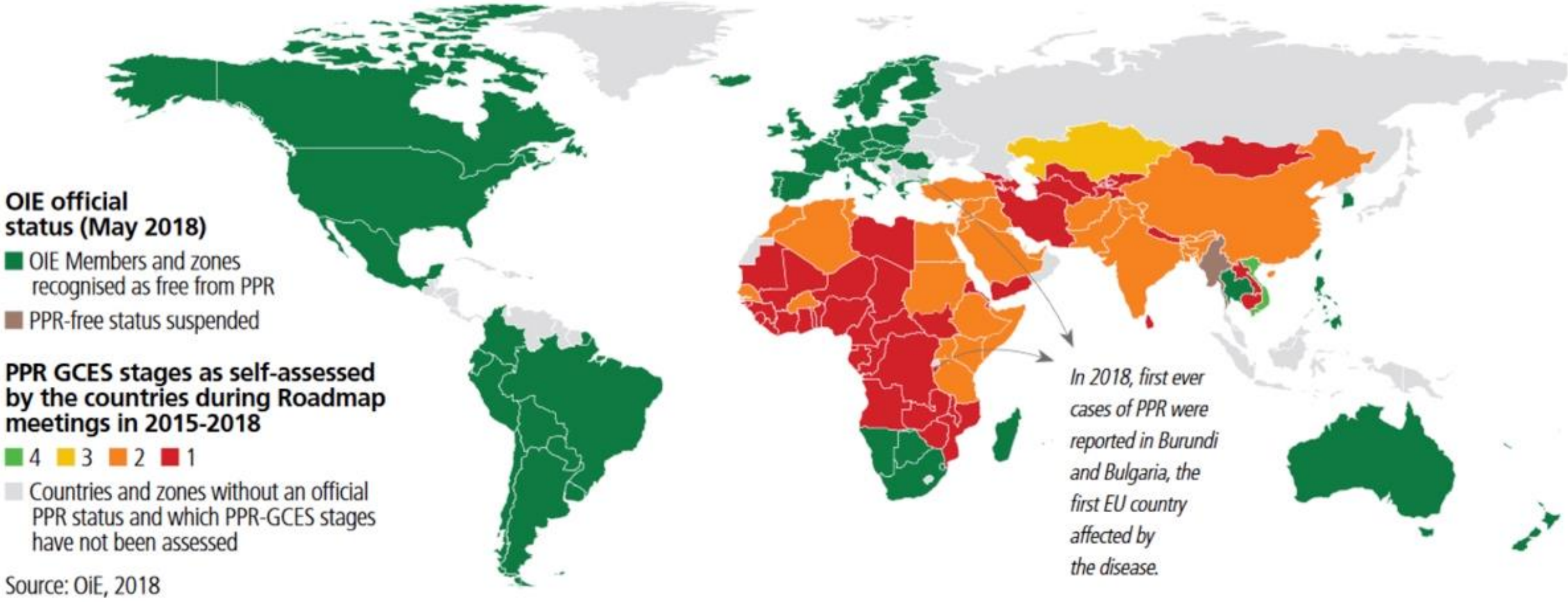
- PPR virus is spread by close contact between infected animals.
- The virus is shed in secretions and excretions of infected animals.
- Aerosol transmission of PPR virus is also an important route of transmission.
- Animals are considered infectious during the incubation period, which might range from 2 to 10 days.
- No development of carriers



Epidemiology of PPR- Evolution



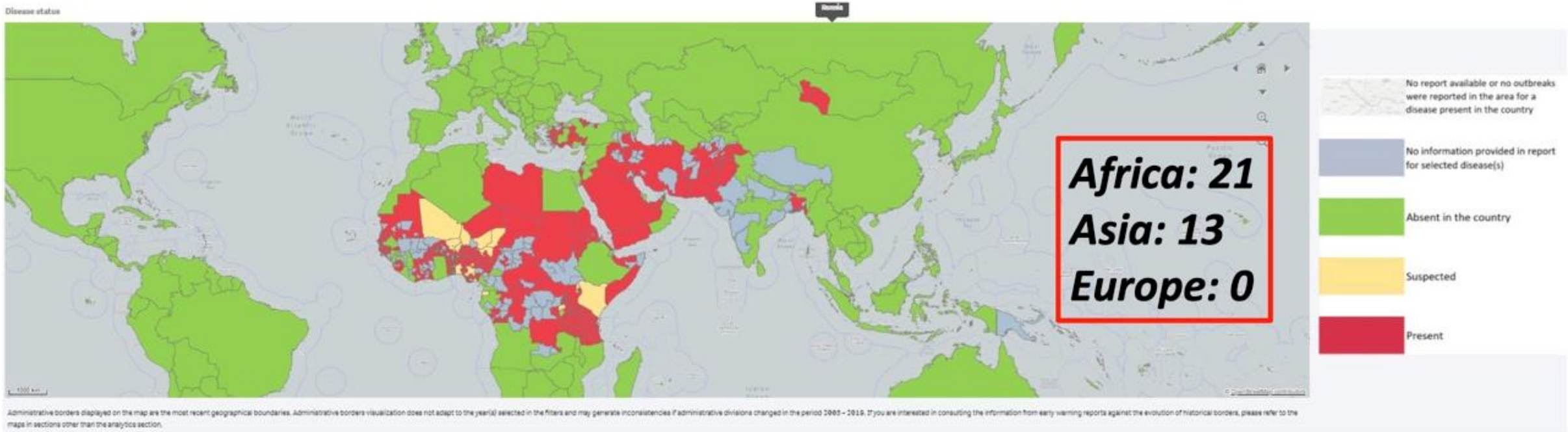
PPR -Distribution



PPR in wildlife-Distribution

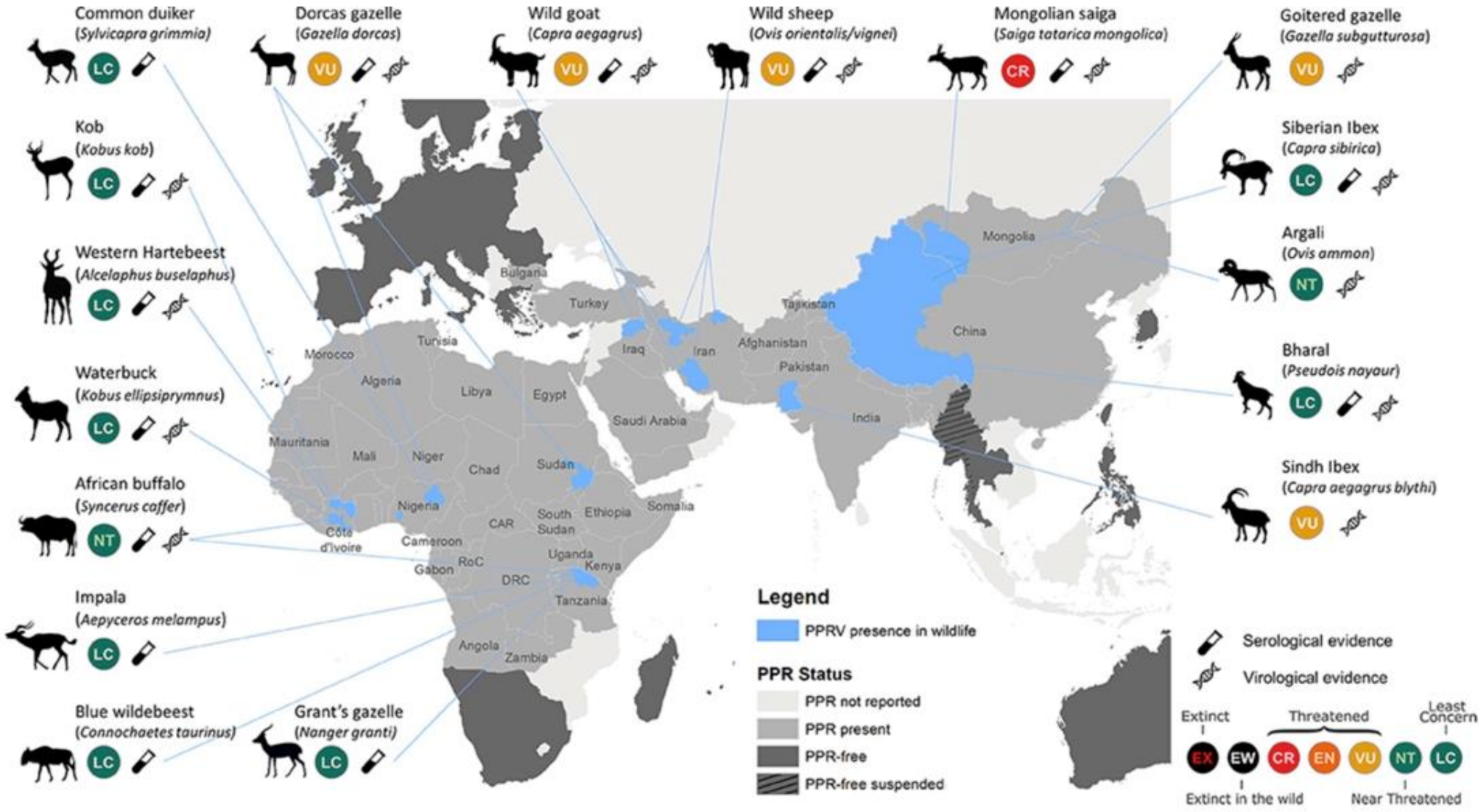
Wildlife only

2005-2019



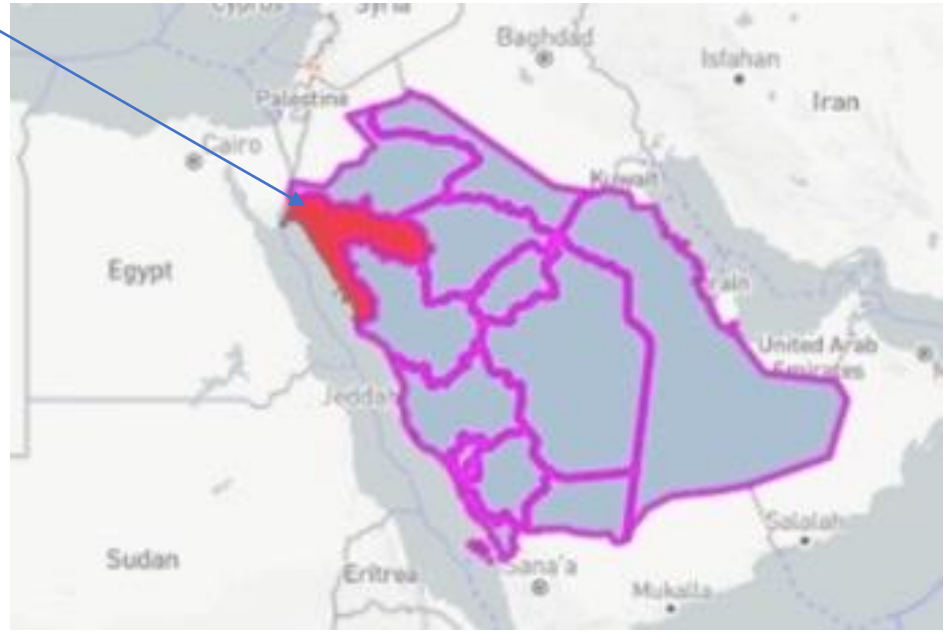
34 countries reporting disease present

PPR in wildlife-Passive Surveillance



Situation in the Middle East region

Tabuk



Country	Wild animal species
UAE	- Antelopes - Rheem gazelles, - Arabian mountain gazelles, - Springbuck, *Antidorcas marsupialis*; - Nubian ibex (*Capra nubiana*), - Barbary sheep (*Ammotragus lervia*), - Afghan Markhor goat (*Capra falconeri*)
Iran	- Fallow Deer
Occupied Palestinian Territory	- Fallow Deer - Mountain gazelle - Nubian ibex - Wild boar
KSA	NA

PPR in wildlife and effect on ecosystem health & biodiversity

- PPRV outbreaks in free-ranging wild artiodactyls can result in severe mortality and threaten wildlife populations and ecosystem stability
- Serological responses to PPRV in wildlife indicate widespread spillover at the wildlife-livestock interface
- The expansion of PPR into free-ranging wildlife negatively impact biodiversity and dim the vision of a PPR-free world by 2030
- Current surveillance for wildlife disease usually targets diseases that affect humans or livestock, not those impacting wildlife populations.

PPR eradication in wildlife: Global strategy

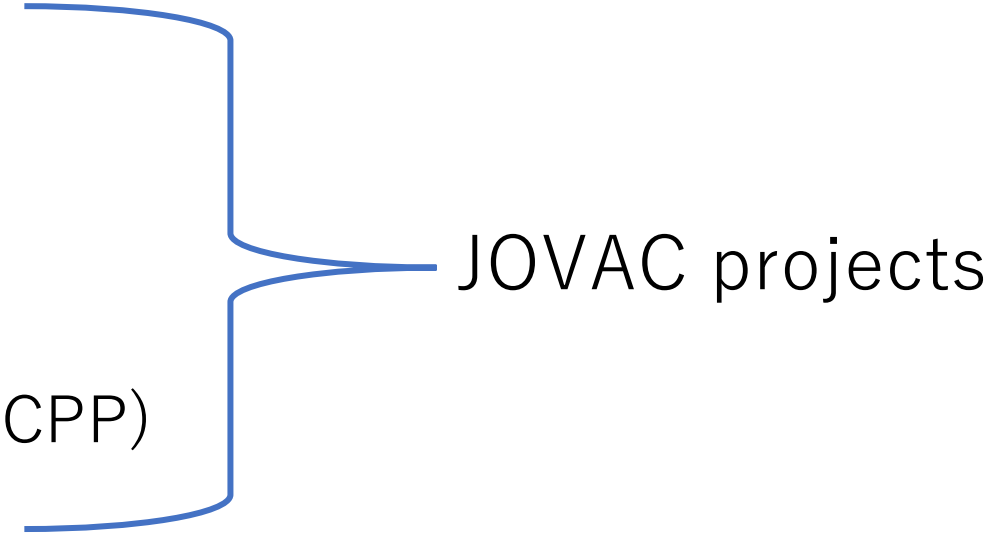
PPR Global Eradication Plan (2017-2021)	Recommendations for wildlife integration
Component 1 - Promoting an enabling environment and reinforcing veterinary capacities 1.1: PPR strategy and technical plans 1.2: Stakeholder awareness and engagement 1.3: Legal framework 1.4: Strengthening veterinary services	**Component 1 – Engage wildlife and veterinary agencies in PPRV eradication at wildlife-livestock interface** 1.1: Include wildlife in PPR GEP, regional strategies, and National Strategic Plans 1.2: Advocate for better integration of wildlife in PPR GEP 1.2: Engage wildlife agencies in planning and implementation 1.3/1.4: Standardize guidelines for PPR management in wildlife
Component 2 - Support to the diagnostic and surveillance systems 2.1: Epidemiological assessment 2.2: Strengthening surveillance systems and laboratory capacities 2.3: Regional epidemiology and laboratory networks	**Component 2 - Support wildlife diagnostic and surveillance systems** 2.1: Increase research on epidemiological role of wildlife and determinants of susceptibility 2.2: Standardize guidelines for PPRV diagnostic tools in wildlife 2.1/2.2: Improve wildlife health surveillance, including via ecological monitoring and participatory methods 2.3: Include wildlife in regional epidemiology and laboratory networks
Component 3 - Measures supporting PPR eradication 3.1: Vaccination and other PPR prevention and control measures 3.2: Demonstrating PPR-free status 3.3: Control of other small ruminant diseases in support of PPR eradication	**Component 3 - Integrated PPRV control efforts** 3.1: Adapt vaccination and control strategies to the presence of susceptible and significant wildlife populations 3.1: Consider the entire community of susceptible host 3.2: Jointly monitor the effectiveness of PPRV control measures in livestock and wildlife 3.3: Monitor overall impact on livestock, wildlife, and ecosystem health
Component 4 - Coordination and management 4.1: Global level 4.2: Regional level 4.3: National level	**Component 4 - Coordination and management** 4.1: Create a specialized group on the wildlife-livestock interface in PPR GREN 4.2: Incorporate wildlife in the European Food Safety Authority study on the risk for PPRV incursion in the EU 4.1/4.2/4.3: Ensure financial resource mobilization for the wildlife components of national, regional, and global strategies

What is needed for the region?

- Enforce the PPR GEP – (PCP-PPR)
- New vaccines that allow DIVA
  - Pirbright PPR-Prada strain (Nig 75/1)
  - CIRAD CP-PPR vectored vaccine
  - More thermostability
  - Multivalent vaccines (PPR, SGP and CCPP)

What is needed for the region?

- Enforce the PPR GEP – (PCP-PPR)
- New vaccines that allow DIVA
  - Pirbright PPR-Prada strain (Nig 75/1)
  - CIRAD CP-PPR vectored vaccine
  - More thermostability
  - Multivalent vaccines (PPR, SGP and CCPP)



Food and Agriculture Organization of the United Nations

SUSTAINABLE DEVELOPMENT GOALS

شكرا

Thank you!

Contacts us

Ahmad.Almajali@fao.org